Data Submitted (UTC 11): 9/13/2024 4:00:00 AM
First name: Diana
Last name: Six
Organization:
Title:
Comments: National Old Growth Amendment Comment

Diana L. Six, PhD, FRES

I am a recently retired professor of forest entomology and pathology (32+ years of experience in research in forest ecology and management incorporating the areas of entomology, pathology, ecology, genetics, ecological restoration, and adaptation of pines to climate change, including 28 years at the College of Forestry and Conservation at the University of Montana). I have a broad education from microbiology to community ecology to genetics to integrated pest management. I have worked in forests in North America, Africa, and Europe on bark beetle ecology and management, tree adaptation to climate, and restoration of ecosystem function in forests being transitioned to old growth. It is with this expertise I contribute the following comments.

I have read the amendment and supporting documentation. My broad take away is that this amendment (preferred Alternative 2) provides no protection for old growth or mature forests. I went from enthusiasm to dismay the deeper I read. I attended the field day conducted by the USFS in Missoula. I was one of only a handful that attended (many fewer attendees than USFS staff), probably because very few knew about it. At the meeting, after many questions, I came to the same conclusion. It does not work and, in fact, may facilitate the loss of old growth. For the reasons listed below, I see Alternative 3 as the best option.

Strengths:

1. Addresses a serious problem that needs to be addressed quickly

2. Recognizes the diversity of old growth

3. Attempts to set a workable framework for a complex situation

4. Clearly involved considerable work and thought

Weaknesses:

1. Nowhere in the amendment do I see where ANY old growth is protected.

2. There are districts that will not designate old growth stands as old growth if they desire to include them in a timber plan. There is no incentive or muscle to get districts that do not have a culture of protecting old growth to do so. There are many current examples of this including the Kootenai National Forest which plans to clearcut/shelterwood cut (clearcut equivalent) much of its remaining primary/old growth forest.

3. The strong push for 'proactive stewardship' is one of the biggest red flags in the document. It is vague and allows basically anything to be done. That is sadly commonplace now in forest plans where fire, insects, and disease are added as a broad stamp to justify management even when many of these processes are integral to a particular forest type, including many old growth forests. Most old growth forests are quite stable (or they wouldn't

be old growth!) yet management practices are often pushed to 'improve' them resulting in alterations of their structure, function, and integrity. This can result in reductions in biodiversity and disruptions of the continuity of unique ecological relationships that have established over decades and centuries. Human intervention in old growth forests will disrupt these complex systems and is, by nature, contrary to supporting their continuing function and persistence.

Proactive management includes one-size-fits all thinning and logging of larger trees cloaked as fuels management which is appropriate for only a small subset of forests but is highly damaging to others. The USFS Wildfire Crisis Strategy is poised to drive management objectives that override the protection of old growth. This can already be seen in many forest plans (e.g., Helena-Lewis and Clark National Forest where fuels management will be broadly applied to the vast majority of the Forest including old growth and threatened whitebark pine forests, including old growth whitebark. By the Forest's own admission will destroy up to [frac34] of their whitebark pine forests. Many old growth forests are fire resistant and have very long fire return intervals. Opening these stands with fuels management will change their very nature but would be allowed as stated in 2.3.2. This will result in degradation of the old growth forest as well as its eventual loss in classification as old growth.

Plans for 'adapting' forests to the future are based on untested ideas (P. 8 bullet 3) that may be counter to true adaptation through genetic and natural shifts in composition. They are based on disproven assumptions of what practices will result in resistance and new guesses on what species and conditions are desirable. Experiments seeking to "move forests into the future" can only yield useful information if done in a controlled manner in select areas of mature forests and studied to see IF they work. Experiments in management should not be done and do not need to be done in what little remains of our old growth.

Allowing most old growth forests that are already protected in various ways (roadless, wilderness etc.) to remain unmanaged and adding protection to others by should be done by designating them as old growth (contrary to Page 13 2.2.1, Management Approach 1.a (NOGA-FW-MA-01a vi. Management Approach 1.b (NOGA-FW-MA-01b). Designation of climate refugia (something the USGS/Climate Adaptation Centers are working on and where agency cooperation could really benefit our forests) would be a powerful strategy to protect some old growth forests along with conserving considerable biodiversity and supporting carbon sequestration. See "P. 66 "At finer scales, recent research has underscored how climate refugia - small areas that are relatively buffered from contemporary climate change - play a disproportionately large role in the long-term persistence of species and ecosystems (Pradhan et al. 2023, Morrelli et al. 2016). Similarly, fire refugia - areas that burn less severely or less often than the surrounding landscape - have been shown to promote persistence or expansion of old-growth forests (Krawchuk et al. 2020). Because they are less vulnerable to severe wildfire or climate change, old-growth forests located in refugia Draft EIS - Amendments to LMPs to Address Old-growth Forests Across the NFS 67 may disproportionally sustain biodiversity, improve carbon stewardship and ecosystem functions over upcoming decades (Krawchuk et al., 2020; Morelli et al., 2020)". (Desired Condition 2 (NOGA-FW-DC-02)Intent: 'Emphasize the importance of the ability of current old-growth forest to persist in those areas that do have the inherent capability (e.g. areas of climate or fire refugia) to sustain these conditions over time, while also recognizing that not all areas have this inherent capability, also see overall intent of desired conditions' as described for Desired Condition 1.) However, this designation is only a suggestion in the NOGA, and there is no directive or incentive to make it happen. The NOGA should add teeth to this and require interagency cooperation to make it happen.

Almost all old growth should be hands off except a relatively few such as southwestern ponderosa pine (which need restoration primarily because of previous human management or degradation). Management in old growth forests should be allowed ONLY through a through a rigorous environmental review process designed to ensure 'management' does not degrade the ecological integrity of the forest, instead of being left to districts. If such a review is not required and assessed by rigorous external review, management in old growth should not proceed.

4. The strong focus on proactive management in old growth is likely to destroy the very characteristics that make old growth old growth. Big and/or old trees alone do not make old growth forests. Reductions in dead wood, shifts in communities of fungi, soil microbial communities, insects, birds, plants, etc., due to 'proactive management' (usually thinning and logging and selection for 'desired' species) change ecological webs, moisture, light, and nutrients to a degree that even though old or big trees are allowed to remain, the old growth forest is essentially changed to something different. Wet forests become drier and more flammable. Loss of dead wood and moisture results in a decline in microbial function and biodiversity and more. The question then is what is the USFS's aim? Is the focus to keep a certain number of large trees per hectare or to preserve old growth forest with all its biodiversity, function, and services? As written, this document does not address the latter, which should be its intent. Old growth designation should go beyond silvicultural descriptions and management. See Page 28- 'Old-growth definitions and associated criteria are typically developed and managed at a regional silviculture program (or other similar program)'.

5. Regarding timelines and priorities See page 27 objectives 2-4, the focus is on getting out and treating old growth very quickly, requiring a certain number of proactive management projects within a few years. This will result in the flow of funds designated for management which is the equivalent of a strong push to spend and treat very quickly. This is backwards. There should be immediate funding to look closely whether any management is warranted and is well-justified and to produce a well thought out ecology-based plan that moves through an external review process to ensure it is sound for old growth. Then, and only then, should management be applied (or not).

6. In this amendment, old growth forests that experience disturbance (for example, a bark beetle outbreak) can be removed from their designation as old growth (because of the loss of some big trees). This allows the forest to be salvage logged, clearcut, or otherwise moved into a different management designation that will alter its ability to recover naturally in a trajectory driven by old growth legacy characteristics. These forests should be allowed to recover naturally and to do so they should not lose protection. This is one more reason to designate some old growth as old growth and leave that designation in place. Additionally, and importantly, as old growth forests are lost over time (as occurs naturally), this amendment does not protect the mature forests that will be needed to replace them, nor does it push for prioritization of particular ones to maintain connectivity among the few remaining old growth forests. This is suggested only by "Identifying and prioritizing areas to be managed for the recruitment and development of future old-growth forests is more appropriately considered as part of developing the Adaptive Strategy (see intent for Management Approach 1.a second column 'what changed') rather than as a Guideline to be complied with during project development'". There is no incentive or muscle behind these suggestions, and as such, they are unlikely to be implemented. This sets up a trajectory for the eventual complete loss of old growth and the species dependent upon them.

7. Old growth forests buffer disturbance. When they are altered by typical management actions (thinning, etc.) their resistance and resilience to disturbance declines. For example, cool, wet forests full of decaying wood and complex physical structures that are thinned become hotter, drier, and windier, shifting biotic communities to those closer to those found in younger stands and reductions in old growth specialists. This increases rather than decreases the potential for severe fire and removes the ability of old growth to buffer surrounding forests against natural disturbance.

8. Some management activities run counter to supporting adaptation to change in times when adaptation is especially crucial. Disturbance plays a crucial role in forest integrity and function by promoting genetic adaptation by removing trees less suited to new conditions and leaving those behind that are better suited to the new environment. This crucial process is almost never considered in forest management and it is not considered in the NOGA. Treatments focusing on reducing or stopping disturbance, by cutting are blind to which trees have genetic adaptive potential and thus slow or even reverse natural selection and adaptation to stressors. Old growth (and mature) forests are also repositories of genetic diversity that can be crucial for natural selection. Additionally, different cohorts of trees have different contributions to the genetic pool that are crucial to support

natural selection. As libraries of genetic information, they should be protected from selective cutting since we do not know a priori which are most valuable to provide genetic material to forests of the future. In the NOGA the USFS acknowledges on P. 72 "Similar to other ecological disturbances, low to modest levels of tree-killing insects and pathogens in forests can increase ecological diversity, species diversity, and structural diversity as many organisms have evolved along with their plant hosts." The point is they are still evolving and can evolve fairly rapidly to new stressors if we don't apply practices that counter evolution. Large scale disturbances create more rapid evolution (adaptation) compared to small disturbances. The scientific studies showing the role of natural disturbance promoting genetic adaptation in forests is ignored here. In sections on lodgepole pine, management is suggested to be required due to climate change, but it is recognized that management can't stop outbreaks and evidence is accruing that surviving lodgepole are genetically different and may be more resistant to beetles and better adapted to new climatic conditions. As such, outbreaks may help forests adapt more rapidly.

9. Exceptions that allow cutting old growth for projects are not restrictive enough to protect old growth. Clearly, management in the WUI (define?) makes sense. Unfortunately, WUI definitions are being wrongly altered and broadened to include remote areas with low or no human habitation (see Green Union Forest Plan, WY; Yaak region in Kootenai National Forest, MT). That is a problem that needs to be addressed or the designation becomes meaningless as a tool to protect human communities and gives carte blanche permission to logging in remote areas including old growth. Incidental take allowances as written do not encourge the development of creative approaches to avoid cutting old growth such as re-routing new trails or roads. For example, from P. 17 "Should incidental cutting or removal of trees need to occur for reasons other than those listed in the exceptions (or for management activities that may otherwise be prohibited by the plan) or to the extent an area would no longer continue to meet the definition of old-growth, responsible officials would have the discretion to forego the management activity altogether or complete a project-level plan amendment allowing for the management activity to continue".

10. Proactive management encourages cuts that pay for themselves which will, in part, direct what is done rather than what should be done. Since a district will determine what management should be done without outside review this is an opening and incentive for commercial logging. See P. 127. "Agency funds will go further under Alternatives 2 and 4 and treat additional acres of old-growth with the sales of commercial products covering a portion of restoration costs or "goods for services". In Alternative 3 extractive actions would be less attractive and less incentivized because 'appropriated funds will be needed to treat acres". Dis-incentivizing extraction, in the case of old growth, should be a positive not a negative. The statement "The ability of proactive stewardship to positively affect old-growth is partially dependent upon the ability to sell forest products to manufacturing companies and to use harvesting processes (including the residual slash disposal activities) to positively affect the forest vegetation and reduce hazardous fuels. If the forest products industry declines in areas surrounding NFS units to the degree that it is difficult to sell forest products, or if "stumpage prices" decrease substantially, it would affect how many acres could be treated. While some treatments could be accomplished by using prescribed burning only, it is generally very risky in the wildland-urban interface and expensive, leading to fewer acres treated" could also be interpreted that stewardship relies on logging. It is understandable that many people, ecologists included, would be quite wary of the big push for proactive management in this amendment. Logging old growth to save it is a hard sell if protection of old growth is the goal. This incentivizes unnecessary and heavy-handed management and and damaging entries into old growth become more likely. It is stated "However, NOGA-FW-STD-2 clearly stipulates that vegetation management in defined old-growth areas "may only be for the purpose of proactive stewardship" (emphasis added). This sole purpose of the standard limits the risk of commercial incentives influencing the decision-making process" but this is not convincing given the vagueness of 'proactive stewardship'.

11. The USFS lumps natural disturbance in with human-caused loss of old growth. These should be treated independently of human-caused losses such as logging that shift forest successional trajectories towards a different state while natural processes such as insects, disease, and fire are typically beneficial and help maintain

forest structure, adaptation to change, and composition over time.

12. The biodiversity and ecological integrity that are the result of long-term continuity are not addressed. A major oversight of this amendment is failure to define old growth forests only in terms of density or size. Old growth is much more than a forest with a particular density or area of old and/or large trees.

13. The document only lightly addresses carbon and climate change. That is a huge flaw and alone should negate this version of the NOGA. The write up wrongly portrays the cutting trees as good for sequestering carbon P. 75. It also suggests it is needed to mitigate carbon loss from disturbance such as bark beetles. Studies have instead shown that carbon release after outbreaks is neutral or minimal while logging is a major source of carbon release and suppresses sequestration over a long period. The write-up avoids addressing the negative effects of 'proactive management' on carbon release and loss of sequestration and does not highlight (or prioritize) the benefits of leaving old growth alone (including the protection soil carbon stores). Mature and old growth forests trees, dead wood and soils hold massive amounts of carbon. These older forests, most of which are on federal lands, are one of our best solutions for carbon sequestration. Protecting this function should be a major priority for the USFS as well as a way for the USA to honor our national and international commitments to end forest degradation by 2030 (e.g. Glasgow Forest Leaders Pledge, Paris Climate Agreement, etc.). The NOGA does not work toward supporting these commitments in any way.

14. The statement on P. 119, "Alternative 3 may be less beneficial for the provision of ecosystem services from old-growth forests on National Forest System lands, due to the expectation that less proactive stewardship will be feasible under this alternative", is misleading. whether or not this alternative is less beneficial depends on how and where and why 'proactive management' is conducted'. Forest ecologists would argue less-is-more when it comes to old growth forests. All in all, Alternative 3 is a much better choice if old growth protection and carbon sequestration is the aim.

15. Statements on P. 109, "As such, the old-growth amendment does not prevent vegetation management actions that may preserve, restore, or protect rare plant or animal non-old growth habitat or necessary ecological Draft EIS - Amendments to LMPs to Address Old-growth Forests Across the NFS 110 conditions so long as that management is not detrimental to old-growth. Small forest openings can be maintained in order to manage habitat. Thinning could still occur as a means of preventing or limiting intense wildfires. Early seral stages can be maintained" imply that clearcuts, early seral stages (clearcuts), thinning can be done in old growth if not detrimental. Leaving the word "detrimental" open to subjective interpretation leaves old growth forest vulnerable to any practice of management, no matter how damaging its effects. Restoring non-old growth habitat in old growth habitat is contradictory and given how little old growth remains and how abundant early-seral forest are in most areas, this argument does not hold water.

16. The statement "Section 7(a)(2) of the ESA requires federal agencies to ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any threatened or endangered species or to adversely modify critical habitat", is not the safeguard it portends to be. The Fish and Wildlife Service regularly applies the Section 9 4(d) rule of the ESA to allow actions that have negative effects on threatened or endangered species if the action does not affect their persistence 'across their range'. Such a broad application of "across their range" ignores serious local effects as well as the cumulative effect on threatened species from degradation of multiple sites.

17. The need for logging in old growth to support local economies and keep mills open is false. Old growth is a small portion of our overall forests and if current logging is so sustainable and restoration of degraded forests is so pressing as is often touted, then logging in these smaller remnants is not needed. If it is needed to keep a mill open, what happens when we run out of old growth to log? Then we are without both.

18. Throughout this document, the best available science is not used. Instead, there is a strong reliance on

internal reports and management-focused literature when, for this document, the ecological literature should be in the forefront. Some references in the text are not in the citations making it hard to check the information. The amendment would have benefitted from the inclusion of available research data and external reviews by scientists that specialize on old growth forest ecology, carbon dynamics etc. Outside reviews were garnered from agencies and NGOs but strikingly missing are university researchers - the dominant group conducting research in old growth and forest ecology. The ecological literature on old growth forests has grown exponentially in recent years. It should be used.

This document is clearly well intentioned and involved a huge amount of effort. It is a good start but as written it does not achieve its goal if Alternate 2 is chosen. I hope my comments are considered and I suspect you will receive many that are similar from forest ecologists, conservationists, and concerned citizens from around the country. We are at a place in time where if we don't protect old growth, we will lose it, and such forests are not replaceable by just regrowing forests that have been logged or otherwise degraded- Old growth forests have a continuity of interactions among the organisms and abiotic conditions that don't just magically reappear when newer forests age. Protection of old and mature growth trees will require a mind shift from timber production (which is a primary goal of the USFS see P 107. "Notwithstanding the fact that timber harvest and production are primary aspects of the agency's mission, there is an interest in the role that economic incentives play in shaping agency decision making, particularly as it relates to achievement of ecological management objectives") to one that recognizes the value and complexity of nature and the value of a hands-off approach and a very judicial use of proactive management. Such a mind shift is also needed to match that which has occurred in the American citizenry to whom these forests belong. To make the NOGA work, it requires such a mind shift and some teeth.

[REFERENCES CITED IN LETTER]

Pradhan et al. 2023

Morreli et al. 20216

Glasgow Forest Leaders Pledge

Paris Climate Agreement