Comments of David Mildrexler
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I am an ecosystem scientist with expertise in forestry and a number of related fields. My comments describe some of the many problems with the proposed "Blue Mountains Forest Resiliency Project".

The scale of the proposed thinning and fuels reduction promises widespread mechanical impacts to forests across the Blue Mountains. I am generally opposed to such widespread mechanical logging of forests. In the long run, this approach to management fails to consider the effects of practices that will continue to simplify stand structure and composition, and thereby reduce biodiversity across the Blue Mountains. The negative impacts on the ecosystem from such projects far outweigh the purported benefits of reduced fire risk.

What this project does guarantee is a very large reduction in forest carbon stores from logging. Logging reduces carbon stores much more than wildfire does (wildfire leaves the main carbon storage elements of trees (trunks, large and medium branches) on the landscape). National Forest lands should be managed to enhance carbon storage and the peer-reviewed literature has clarified these issues (Campbell et al. 2007, Mitchell et al. 2009).

The project also guarantees widespread soil disturbance, with important implications for long-term forest productivity, especially loss of Nitrogen, which limits growth of mixed conifer forests in northeastern Oregon and is typically recycled via tussock moth or spruce budworm (Waring et al. 1992).

This project would necessitate opening of hundreds of miles of currently closed roads resulting in further fragmentation of an already over-roaded forest landscape. This is especially troubling given the failure to complete a Travel Management Plan or the Blue Mountains Forest Plan Revisions which should be providing guidance for such proposals. Running counter to the proposed project measures, the most commonly cited means to increase ecosystems ability to adapt to climate change, a concept closely linked with resilience to climate change, is to increase the connectivity of ecosystems. This indicates that the current project is backwards. Increasing connectivity through restoration measures should be the guiding principle to increasing forest resilience, not thinning and fuels reduction.

This proposal will also guarantee that many headwater streams and rivers are exposed to increased sediment loads from re-opening of closed roads, new temporary road construction, logging on steep slopes, stream crossings, and general landscape erosion from logging equipment.

We can also be assured that this project will reduce snags and associated habitat across the ecosystems of the Blue Mountains. Future snags will be removed from the biased selection of

large grand fir, and from removal of large trees with diseases, and current snags will need to be selected against for worker safety. There is already a deficit of snags in most managed forests.

Wildlife habitat will be negatively affected in many areas, especially in moist forests and in species that prefer denser closed canopy habitat conditions. Fuels reduction in moist mixed conifer forests is not supported by science. Scientists have warned that aggressive targets for reducing closed canopy forests, coupled with the inevitability of wildfires, could result in large over-reduction in closed canopy forests. This proposal certainly has the potential for such an outcome (Wales et al. 2007).

Invasive species will undoubtedly catch a ride on the logging equipment and find disturbed soil and open canopy conditions, perfect for establishment of new invasive species populations.

This is a short-list of what we know this project will bring to the Blue Mountains. And when all of these effects are considered, how is this project about increasing the resiliency of the forest ecosystem? This is a massive fuels reduction project, similar to the other fuels reduction projects that have occurred across the Blue Mountains in the past decades, just much more widespread. I think it is quite unreasonable for the Forest Service to assume that they could accurately assess the cumulative impacts on the forest ecosystems of the Blue Mountains from a proposal of this scope and intensity.

Regarding the principal purpose of this project, reducing fire risk:

"The purpose of the project is to enhance landscape and species resilience to future wildfire by restoring forests to their natural (historical) range of variation, reduce the risk of wildfire to high value resources both on and adjacent to National Forest System lands, and provide a diversity of economic opportunities and commodities."

The Forest Service should see the following document from some of the regions top fire scientists, "Insights from wildfire science: A resource for fire policy discussions." The piece reads as a warning for exactly the kind of approach outlined by the Blue Mountains Resiliency Project. There are a number of good citations provided in this paper.

The proposal feels like it relies on outdated fire products such as the fire regime condition class (FRCC)? I think the Forest Service should disclose how much reliance has been placed on this FRCC. A recent discussion with my colleagues ended in a quick consensus that the FRCC is no good and simply useless for any kind of meaningful scientific comparison.

In the end, the forest ecosystem would be better off without this proposal. A project of this scale should be looking first at holistic restoration of the landscape, restore aquatic integrity, close and remove roads to increase connectivity, improve wildlife habitat, identify opportunities to work collaboratively across jurisdictional boundaries to create larger core habitats, improve recreational opportunities, and reduce fuels in dry forests around communities.

However that is not what is proposed so I must be clear about a few things.

Inventoried roadless, uninventoried roadless, potential wilderness areas and other undeveloped lands

I am strongly opposed to any mechanical treatments in inventoried roadless, uninventoried roadless, potential wilderness areas (PWAs), and other undeveloped lands. These areas are ecologically irreplaceable and any actions that eliminate wilderness potential are unwarranted. Within roadless or undeveloped lands, only minimally intrusive fuels reduction treatments using foot crews (no dragging or temp road building) in dry forest areas where these actions are ecologically appropriate and do not compromise the wilderness/roadless characteristics are possibly warranted.

Landscape connectivity

This should be the leading issue guiding this proposal. Unfortunately the project puts connectivity on the defensive. I would like to know how the proposed activities are going to increase landscape connectivity between the Wenaha Tucannon Wilderness and the Hellhole Roadless area, for example. Huge areas between these core roadless habitats are proposed for strategic fuels reduction, which means the need for temporary roads and re-opening of roads, soil compaction from harvesting equipment, and a reduction in closed canopy forest, especially in these moist forest areas. I am extremely concerned about these effects all over the Blue Mountains. I want a future with connected ecosystems thriving with wildlife. Not one of beat-up fragmented ecosystems, with wildlife pushed into ever smaller fragments. I want to know how roadless landscape connections will be affected by this proposal across the Blue Mountains.

Moist forests – limit treatments to previously logged areas

Moist forests in the Blue Mountains historically sustained moderate- to high-severity fire regimes in which some or all of the overstory trees are killed (Heyerdahl et al. 2001). Heyerdahl et al. (2001) performed an extensive multi-century study on history of fire frequency, size, season, and severity from fire scars and establishment dates of 1,426 trees sampled on grids in four watersheds representative of the Blue Mountains in Oregon and Washington. Plant associations vary along a gradient of moisture and other factors and were used to distinguish mesic (i.e. moist) and dry forests into two broad groups, with mesic forests including all associations potentially dominated by subalpine fir, and moist associations potentially dominated by grand fir (see Table 1, Heyerdahl et al. 2001). Ninety-six percent of mesic forest plots had obvious cohorts of early seral trees, implying that mesic forests historically sustained moderate- or high-severity fire regimes (Heyerdahl et al. 2001). Most dry forest plots (92%) contained fire scars, implying that these forests historically sustained low-severity fire regimes. Heyerdahl et al. (2001) also found that dry forests burned twice as frequently at northern watersheds vs. southern watersheds implying strong regional variation due to top-down climatic controls. For mesic forests, evidence of regional variation was inferred by the presence of cohorts of early seral trees in northern watersheds, and the lack of cohorts in southern watersheds, suggesting fires may have occurred more frequently in southern watersheds (Heyerdahl et al. 2001).

All treatments in moist mixed conifer forests should be limited to previously logged areas. There is no need to reduce fuels in moist mixed conifer to reduce fire risk. These treatments will be ineffective and potentially increase fire risk, with the only assurance being

degraded ecological conditions. Moist forests have been significantly altered by decades of industrial logging. These relatively intensively managed sites are the ecologically appropriate place in the moist forest zone for restoration, and the obvious candidates for utilizing ecological forestry approaches to increase forest resilience. This approach provides the additional incentive of focusing restoration efforts on the substantially roaded portion of the landscape (Brown et al. 2004). This means the greatest restoration needs are generally aligned with areas that are the least socially contentious to treat. Restoration needs include restoring ecosystem composition, recovering large fire resistant trees, improving resiliency to wildfire and insect outbreaks, recovering the forest understory community, controlling invasive species, enhancement of soils and watershed values, and consideration of road removal and rehabilitation. Thus, restoration should be holistic. Restoration of these managed lands would make very important contributions to overall landscape function (Franklin and Lindemayer 2009).

Old growth forest and trees (sorry, no time to provide complete references)

Forests in their potential state are simply one of the most important ecosystems to preserve on Earth. The reasons for protecting old growth forests continue to accumulate, indicating the life-giving and supporting nature of these complex, interconnected ecosystems. Recent findings have shown the immense value of old growth forests for protecting carbon stores (Smithwick et al. 2002, Luyssaert et al. 2008, Hudiburg et al. 2009, Keith et al. 2009) and for continued accumulation of carbon in soils (Zhou et al. 2006). Unfortunately, old growth forests have been heavily targeted for logging in the Blue Mountains for over a century. Rainville et al. (2008) states:

> "From its beginning, logging preferentially removed large, old-growth ponderosa pine trees (Langston 1995). Management of the national forests emphasized efficient and productive forests capable of meeting the Nation's demands into the future. The emerging discipline of forestry at the time held that "inferior" diseased and decadent trees needed to be removed and replaced with young, healthy, rapidly growing trees."

The Forest Service attempts to persuade the public and itself that old growth forests need mechanical treatment, and then once in these stands are quick to apply stand density metrics derived from the industrial crop style forestry mentality. The Forest Service openly admits removing large old growth trees from designated old growth stands because they have a native disease such as dwarf mistletoe and Indian Paint Fungus that create wonderful wildlife habitat, especially in old growth trees. It is the same mindset as expressed in the quote above, and overtime, this practice will progressively simplify stand structure and cause depletion of old growth characteristics such as snags and downed logs. Biodiversity will be systematically lost through this approach. Furthermore, the entire mentality implies subsequent entries when the next "crop" of trees are ready to be harvested. We simply cannot maintain ecologically complete old growth forests in this manner.

The peer-reviewed literature warns that efforts at restoration of fire-adapted forests are jeopardized from economic pressure to cut larger trees than can be ecologically justified (Brown et al. 2004). The repercussions of succumbing to this economic pressure are heightened in relatively rare unlogged old growth forests that have a high value for conserving biodiversity (Noss and Cooperrider 1994; Strittholt and DellaSala 2001; Crist et al. 2009) and serve as refugia

for sensitive terrestrial and aquatic species, have lower rates of invasions of non-native species, and provide reference conditions for understanding natural ecosystem processes (Crist et al. 2009). The peer-reviewed science repeatedly urges for a cautious approach to restoration of dry forests, especially in unlogged ponderosa pine/Douglas-fir forests (Keeling et al. 2006, Noss et al. 2006), and for excluding logging from moist forest areas where past human disturbances (like timber harvesting) have been limited (Cochrane & Barber 2009; Lindenmayer et al. 2009).

Protect and Restore

All of the remaining old growth forests need to be protected and restoration efforts in dry forests should be firmly based on the best available science with no compromise. Restoration of the remaining old growth forests should not have to make money, or financially hold up other parts of a timber sale project. If the Forest Service's concern for old growth forests does not extend beyond the financial demands of the commercial logging program then old growth forests are best left unmanaged.

Restoration of remaining unlogged lower-elevation sites should focus on the reintroduction of fire and protection from activities that may cause degradation or loss of existing old growth.

1) Evaluate passive opportunities for introducing fire without any mechanical treatment.

2) Use the minimal amount of mechanical treatment needed to safely reintroduce fire. This will typically include trees mostly in the 3-8" in DBH range and no larger than 12" DBH. Only hand crews should be permitted to enter existing old growth and previously unlogged forests.

In summary, the Forest Service must disclose and consider the issues that I have raised above.

Respectfully submitted,

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