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First name: Cara
Last name: christofferson
Organization:
Title:
Comments: 3/18/2022

Bark

PO Box 12065

Portland, OR 97212 www.bark-out.org 503-331-0374

Kameron Sam, District Ranger

Barlow and Hood River Ranger Districts Mt. Hood National Forest

780 NE Court Street Dufur, OR 97021

RE: Grasshopper draft EA

Dear Kameron,

As you are aware, Bark's mission is to bring about a transformation of public lands on and around Mt. Hood into a place where natural processes prevail, where wildlife thrives and where local communities have a social, cultural, and economic investment in its restoration and preservation. Bark has over 31,000 supporters1 who use and depend on the public land forests surrounding Mt. Hood, including the areas within the Grasshopper project area, for a wide range of uses including, but not limited to hiking, nature study, non-timber forest product collection, spiritual renewal, and recreation. We submit these comments on behalf of our supporters.

The Grasshopper project includes 5,280 acres of forest with a combination of commercial logging and pre-commercial thinning across a diverse forest ecosystem ranging from low elevation oak and pine dominated stands to subalpine mountain hemlock. Given the geographic scope of this project and its proximity to important ecological and recreational areas, it is critical that Forest Service (FS) staff take careful steps to foster public engagement by engaging with, and responding to, public comments of concern and recommendations. Over Bark's 20 years monitoring projects on Mt. Hood National Forest, we have found that when the FS has meaningfully involved knowledgeable and engaged forest users, outcomes improve - both on the ground and between the public and the agency.

1 Supporters in this case is defined as significant donors and petition-signees which Bark has identified as being active users of Mount Hood National Forest.

From 2019-2021, approximately 50 Bark volunteers field surveyed in the Grasshopper planning area and compiled extensive field notes, many of which are synthesized into comments here.

Much of this project's Purpose and Need is centered around the role of fire on the landscape. Bark recognizes the complexity in managing wildland fire. On one hand, fire is recognized as essential to forest ecosystems and the past 100 years of fire suppression have degraded the forest's ecological conditions. At the same time, the USFS must fully suppress all ignitions outside of Wilderness, in direct conflict with the best available science to date, which acknowledges much of the forest needs to burn, and fire simply cannot be controlled to the degree outlined in the Forest Plan. Complicating things further, public perception is often strongly aligned with inaccurate narratives about the presence and effects of fire on the landscape. While a significant challenge, Bark believes the FS has the authority and resources to address fire appropriately, as a natural and necessary part of a forest's lifecycle, by developing fire management practices based on site specific information and application of best available science.

LATE SUCCESSIONAL RESERVES

The Grasshopper project area proposes management on 535 acres of Late- Successional Reserves (LSRs), mostly within the Little Boulder Landscape unit of the White River LSR. According to the Northwest Forest Plan (NWFP), LSRs are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth reacted species, including the northern spotted owl. NWFP, C-11. Thinning and other silvicultural treatments inside reserves are subject to review by the Regional Ecosystem Office to ensure that the treatments benefit the creation of late-successional forest conditions. NWFP, C-13.

Units 193L, 203L, 208L, and 214L make up approximately 47 LSR acres in the units described as VDT. Bark volunteers field checked these LSR units and found that most, if not all, are never-logged, healthy intact forest. We provided detailed information about these units in our scoping comments.

The FS has stated that they are only thinning small diameter material in these units with no under burn, and that they are exempt from Regional Ecosystem Office review because "there is undesirable vegetation (competition) which delays attainment of the management objective of late successional conditions, or desirable components of the stand may be eliminated, because of such

competition".2

2 USDA Forest Service. 1995. Regional Ecosystem Office Memorandum: Criteria to Exempt Specific Silvicultural Activities in LSRs and MLSAs from REO Review.

Although the understory is dense, this is not all that unlike stands described in the White River LSR Assessment as the historic, pre-1855 transition forests containing an understory often brushy with vine maple, hazel, Ceanothus, and manzanita. Ponderosa pine and Doug fir were common in understory.

As there is a general prohibition on commercial logging in LSRs, it is the burden of the agency to show that the proposed actions are clearly needed and will not prevent the LSR from providing the habitat for which it was created. In our Scoping comments, we requested that NEPA analysis provide specific stand information for any units proposed for logging within LSRs, and the ecological rationale for the actions proposed within these stands. We also requested a discussion of the role of standing and down dead trees in enhancing biodiversity and the ecological impact of decreasing future snag retention by logging in LSRs. These issues have not been reconciled in the PA. If your rationale is incomplete or inconsistent with the projected outcomes of commercial thinning (in relation to expediting creation of late-successional structure), Bark recommends dropping these units from the project. At the least, no activities in LSRs should occur that downgrade existing suitable habitat for NSO.

RIPARIAN RESERVES

The Grasshopper PA concludes that in Riparian Reserves (RRs), thinning would result in a minor short-term reduction of available recruitment of downed woody material, and that there would be a long-term benefit as tree growth would be accelerated, ultimately providing more abundant recruitment in the larger size classes that are currently underrepresented in the Threemile Creek subwatershed. Bark has walked the majority of mapped RRs in the project area and observed a significant amount of large live and dead trees within this land allocation.

The PA goes on to say that thinning treatments proposed in the riparian zone outside of treatment buffers would hasten the development of structural complexity in stands that are currently silviculturally stagnant and would contribute to accelerated achievement of Aquatic Conservation Strategy (ACS) objectives. Bark reminds the agency that "silvicultural stagnation" as it is evoked here is not a threshold for ACS compliance.

As you know, timber harvest in RRs is prohibited, except when needed to "acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives." Northwest Forest Plan, C-31,2. Thus, the Forest Service has the responsibility to identify which ACSOs are not currently met in the RRs and explain how the proposed commercial logging is necessary to acquire the vegetation characteristics needed to meet the ACSOs.

Given sensitive and protected species dependent on healthy functioning condition of riparian areas within the Grasshopper project area, the FS should apply extra consideration to the impacts of logging and roadbuilding on these habitats. As you know, the ACS includes nine specific objectives for restoring watersheds. NWFP at B-9. Complying with the ACSOs means that the FS must manage riparian-dependent resources to maintain the existing condition or implement actions to restore the conditions. While some aquatic degradation, standing alone, does not constitute ACS noncompliance, the FS must avoid degradation that leads to the non-attainment of ACS objectives at both the short- term, localized scale and the long-term, watershed scale.3 To make a finding that the logging "meets" or "does not prevent attainment" of the ACSOs, the NWFP requires the FS to describe the existing conditions of the watersheds within the project area, assess the natural variability of important physical and biological components, and explain how the proposed logging would maintain or restore the conditions of the watershed.4

Pollock and Beechie5 reviewed the sizes of deadwood and live trees used by different vertebrate species to understand which species are likely to bene?t from different thinning treatments. In Pollock and Beechie's study, passive management created dense forests that produced large volumes of large diameter deadwood over extended time periods as overstory tree densities slowly declined. To better meet the ACSOs, and enhance wildlife habitat, Bark recommends no commercial timber harvest in RRs.

Even if the FS can adequately demonstrate how commercial logging in riparian reserves is necessary, the action still must comply with the ACSOs, on both short- and long-term timeframes. Complying with the ACSOs means

that the FS must manage riparian-dependent resources to maintain the existing condition or implement actions to restore the conditions. While some aquatic degradation, standing alone, does not constitute ACS noncompliance, the FS must avoid degradation that leads to the non-attainment of ACS objectives at both the short- term, localized scale and the long-term, watershed scale.6 To make a finding that the logging "meets" or "does not prevent attainment" of the ACSOs, the NWFP requires the FS to describe the existing conditions of the watersheds within the project area, the natural variability of important physical and biological components, and explain how the proposed logging would maintain or restore the conditions of the watershed.7 ACS Objective #8 recognizes that logging in the Riparian Reserves will thwart compliance, not improve it.

3 Pac. Coast Fed'n of Fishermen's Ass'ns v. NMFS, 265 F.3d 1028, 1037 (9th Cir. 2001).

4 Klamath Siskiyou Wildlands v. Forest Service, 373 F. Supp. 2d.

5 Pollock, Michael M. and Timothy J. Beechie, 2014. Does Riparian Forest Restoration Thinning Enhance Biodiversity? The Ecological Importance of Large Wood. Journal of the American Water Resources Association (JAWRA) 50(3): 543-559. DOI: 10.1111/jawr.12206

What is also concerning to Bark is the condition of many of the RRs within the Grasshopper project area, given their proposed silvicultural prescription. Bark volunteers walked the majority of Threemile Creek and its tributaries, and found the forest type to vary tremendously from the adjacent upslope stands. Where the upland stands surrounding RRs included oak, pine and Doug fir, the areas closer to the riparian areas contained western redcedar, yew, and hemlock. These cool moist refugia surely play an important ecological role in the area, including travel corridors for riparian late successional species. Units 13, 149, 193, and 150 (Fig.1) contained notable complex structure with multiple tree species and ages, plethora of standing and down dead trees, as well as natural stream side channels and pools (some of which included Dicamptodon copei, as noted in our Scoping comments).

Figure 1: Grasshopper Unit 150; large in-stream dead wood structure of multiple decay classes

Many riparian areas throughout the project area are dominated by cedar, spruce, and western hemlock. Where logging history is evident, it is typically older, scattered stumps that were often close to the stream. These RR units are often bordered by stands with a history of relatively heavy logging, making them the single strip of mature-old growth forest in the immediate area. Thinning could homogenize the forests by making them more similar to their surroundings and be detrimental to the species that depend on mature forest types and closed canopy by taking away these strips of habitat connectivity. The Scoping letter seemed to indicate that riparian units were included in order to add downed woody debris to streams, but these units have plenty of downed woody debris in the streams. Examples are included. Many units have areas that are either more wet than mapped and/or that the mapping of the stream wasn't entirely accurate.

The southeast and northwest sections of Unit 13 are very steep down to Threemile creek. On the north side, the canopy was very open everywhere except areas within the reserve. There is already lots of woody debris in Threemile creek at this unit. The creek was branching and braiding. The unit has a high diversity of plants, as well as a diversity of forest types in unit. The dry pine-dominated section was very open - already less dense than adjacent Unit 11 that had been previously thinned.

Unit 149 contains mature and never-logged Doug fir dominant forest (Fig. 2). Grand fir and Doug fir make up the midstory, and there is a sapling layer of western hemlock. Water is much more extensive throughout unit than depicted on the Scoping unit map. Volunteers noted wildlife habitat and riparian health with plenty of downed logs in stream. Stream had many pools and braiding throughout, groundwater springs present. Unit 149 is surrounded by previously logged units, making it a strip of unlogged, closed canopy forest structure within these logged areas.

Figure 2: Doug Fir 69.5 DBH in Unit 149

Streams groundtruthers walked within Unit 150 are different from where they are mapped (consistently to the north of where it was drawn on the mapped), and more extensive than mapped. The unit contains old-growth and never logged areas (Figs. 3-5) surrounded by previously logged areas (plantation, clearcut, and thinned areas in surrounding units).

Figure 3: Unit 150 stand conditions upslope from riparian area (still in Reserve)

Figure 4: Unit 150 stand conditions at riparian area

Figure 5: Unit 150 old growth characteristics

Volunteers noted four perennial stream channels with many intermittent branches (including 3 tributaries of Threemile). One of the tributaries runs through a meadow (45[deg]16'19.92"N 121[deg]30'55.79"W) and the other one runs through 112 and under a culvert in the road.

Unit 157 contains mature forest, seemingly never logged. Many wet areas and streams were not depicted on the Scoping map, especially through the central area of the unit, flowing southeast into Threemile creek.

Unit 193/193L is a very structurally diverse and steep unit with a moist mixed conifer assemblage, including Doug fir and W. Red Cedar in overstory, and a significant amount of yew (Fig. 6). It is consistently wet throughout the unit, and the stream channel was slightly off from what was mapped in certain places (there were some areas of the stream that branched and connected with seeps). Like other units, there is a large amount of woody debris in Threemile Creek, side channels, meadows, and wet areas surrounding. Some old channels nearby are dry but presumably flood during high flows.

Figure 6: Unit 193 stand conditions

Units 208/208L, 222, 231, 232 all contain mature forest with old growth cedars, many of which are fire scarred

(Fig. Some of these units contain evidence of high grading long ago, but include old growth characteristics such as large decayed down logs, deep organic soils and large live trees (i.e. 72" Doug fir in unit 208). Some of these units, such as 222, contain steep slopes (i.e. 58%) leading down to Threemile Creek.

Figure 7: Grasshopper Unit 232

Unit 155, although not in a mapped Riparian Reserve, contains significant groundwater sources sensitive to disturbance, with bog plants such as pink shooting star, marsh marigold, corn lily, anemone, and bluebell. The unit currently has no road access and given that no proposed temporary roads are disclosed to the public, this is one unit of many that ground impacts can only be presumed, but without meaningful discourse leading up to pre-decisional objection. With the information we currently have, our recommendation is that most of this unit is not appropriate for thinning, given access and unmapped riparian concerns. The southeast boundary of this stand is also inaccurate since the Grasshopper salvage cut of the late 90s extends further into unit than indicated on Scoping maps. Additionally, the west end of unit is mostly blowdown from that same cut to the south.

Unit 161 contains at least one stream channel left off the map. The unit is mostly a three-canopy layer and complex mature forest without evidence of past logging. The unit has relatively open canopy (40-60% w/ big open gaps). There are old legacy trees, and a multitude of downed wood in various stages of decay. The multi-story canopy and forest structure is suitable for spotted owl. There are windfall trees at the southwest edge of the unit, presumably blowdown due to edge effect from the adjacent post-fire logging unit.

Given that many of the riparian units in the Grasshopper project area are intact and functioning as habitat for a multitude of aquatic species, the agency should be able to address the need to achieve ACSOs more specifically, and how that rationale relates to the current conditions of these stands as described above.

Some subpopulations of redband trout may be genetically unique to the White River subbasin above White River falls. Among the greatest risks to this species is sedimentation of spawning and rearing areas, increased stream temperatures, and loss of habitat complexity. Any riparian management in the Grasshopper project area should prioritize mitigating these impacts to redband trout habitat and restoring conditions necessary for long-term recovery of this species.

Additionally, the White River Watershed Analysis recommends that, in general, timber harvesting in Riparian Reserves should not remove any trees larger than 15 inches DBH. WRWA at 5-12. As the Northwest Forest Plan describes the Watershed Analysis as "one of the principal analyses that will be used in making decisions on implementation of the Aquatic Conservation Strategy," we request that you follow this recommendation. NWFP at B-20.

Unmapped riparian areas

The PA states that adjacent to all known aquatic features, no-cut riparian buffers along stream courses would maintain the existing level of vegetative complexity associated with these areas. In past projects, lists of riparian areas we provided with geospatial coordinates and photos were examined by the implementation team and when verified, dealt with according to the Project Design Criteria. The agency has suggested that showing buffers on maps would be premature until areas are field verified - however they have also shared that most of the areas we identified were already known. Therefore, it does not seem premature to show these buffered areas on the final

unit maps.

We share the information in Table 1 to help create a more informed representation of baseline condition, because "(i)f an EA does not reasonably compile adequate information and sets forth statements that are materially false or inaccurate the Court may find that the document does not satisfy the requirements of NEPA, in that it cannot provide the basis for an informed evaluation or a reasoned decision." Western North Carolina Alliance v. N. Carolina Dept. of Transp., 312 F. Supp. 2d 765, 776- 77 (E.D.N.C. 2003), citing Sierra Club v. United States Army Corps of Eng'rs, 701 F.2d 1011, 1030 (2d

Cir.1983). Further, a "material misapprehension of the baseline conditions existing in advance of an agency action can lay the groundwork for an arbitrary and capricious decision." Friends of Back Bay v. U.S. Army Corps of Engineers, 681 F.3d 581, 588 (4th Cir. 2012).

Table 1: Unmapped Riparian within updated unit boundaries:

Unit #GPSnotes
745[deg]16'10.91"N, 121[deg]28'36.75"WDry intermittent stream bed
8445[deg]15'52.62"N, 121[deg]28'35.39"W45[deg]15'52.91"N, 121[deg]28'32.74"WUnmapped streams
1345[deg]16'3.09"N, 121[deg]27'55.20"W45[deg]16'3.59"N, 121[deg]27'54.65"WSubterranean water in NW corner of unit going down to Threemile.Dense cedars and more wet-associated plants in a line going down to the stream.
14945[deg]16'30.07"N 121[deg]29'3.36"WGroundwater-fed stream was much more extensive than shown on map. Extended further than on map and braided throughout unit.
15045[deg]16'14.85"N 121[deg]30'32.79"W45[deg]16'15.94"N 121[deg]30'46.11"WSeeps
15045[deg]16'16.92"N 121[deg]30'11.32"W45[deg]16'16.60"N 121[deg]30'9.84"W45[deg]16'16.60"N 121[deg]30'9.84"W45[deg]16'16.92"N 121[deg]30'11.32"W45[deg]16'19.92"N 121[deg]30'55.79"W45[deg]16'14.91"N 121[deg]30'2.32"W45[deg]16'13.19"N 121[deg]29'59.27"W45[deg]16'14.91"N 121[deg]30'2.32"WThe stream that was mapped in 114 was in 150, andthe stream doesn't fork where mapped.Area was much more wet than mapped. Noted at least 4 perennial stream channels, many intermittent branches, and multiple seeps and pools. Only Threemile is mapped. One of the tributaries runs through a meadow and the other one runs through 112 and under a culvert in the road.Threemile is consistently north of where it is drawn; Unmapped stream going to Threemile (last point)
15545.267056, -121.52719445.265931, -121.52316745.266997, -121.526719Evidence of significant groundwater sources, wetlands in unit, 2 perennial streamsBogWetland w/Marsh marigold and corn lily
16145.268857, -121.518915Map is missing a main tributary of stream to southwest and another smaller headwater stream coming out of the ground to the west.
23145.251122[deg] -121.468502[deg]45.251841[deg] -121.460491[deg]SpringWet meadow with sedges

4860 FUEL BREAK

As you know, Bark believes that shelterwood logging (alternative two) of over two hundred acres of old growth

high elevation moist mixed conifer forests is not appropriate to meet the purpose and need of this project and the long-term health of the area. While we understand the motivation and intent, heavy- handed logging of these stands to prevent natural processes from occurring on the landscape (fire) does not improve forest health and vigor in many ways.

The draft Environmental Assessment does not fully consider the exceptional threat posed to these high elevation units under current climate predictions. Future climate predictions put these stands at particular risk and if logged to this extent these forest types will likely be removed permanently. The Forest Service must act locally to a global crisis by considering the value of conserving old growth stands for climate resiliency.

Mostly over 5,000 feet in elevation, the 4860 road proposed units are mostly stands of never-logged forest dominated by mountain hemlock and silver fir. As we stated in Scoping comments, this subalpine habitat is at extreme risk of being lost due to climate change and should be retained whenever possible. One associate with this type of subalpine forest is the Clark's nutcracker, which depends on high elevation forests for much of its life cycle. Bark volunteers witnessed this bird using the stands proposed for the "fuel break" as part of Grasshopper.

This cold, moist, high elevation forest would likely only burn during extreme fire weather conditions during which a fuel break would likely be largely ineffective in altering fire behavior and could put wildland firefighters' lives at risk if held as a line of defense. These hemlock-dominated stands maintained a cool, humid microclimate even into the late summer. The WRWA notes that when fires are pushed by a strong westerly wind even the White River will not provide a significant fuel break because the main method of fire spread is long-range fire spotting. WRWA at 5-34.

The "shelterwood alternative" (alternative two) claims to reduce wildfire risk however, this technique has a high rate of failure if it is not coupled with frequent maintenance and prescribed fire. The failure to do so would result in dense ingrowth and high solar loading due to loss of canopy. This likely scenario would result in a stand less resilient to wildfire than the mature, closed canopy, and cool understory that preceded it.

Counter to the stand that was visited by the Wasco County Collaborative in 2019, we observed several nearby previously logged units which contained large numbers of small, young trees including lodgepole pine, creating more hazardous fuel in the longer term. This indicates that a fuel break along the 4860 road could result in these dense stand conditions within a short time in several areas. Areas experiencing harsh winter conditions or frost pockets may only support new growth of lodgepole pine if the canopy is removed. The FS should be careful in any of their prescriptions in this area to include this factor in their silvicultural assumptions about stand response.

The WRWA acknowledged that large fires are "within the range of natural conditions in the Crest Zone" though also noting that "the consequences of such a fire are not socially acceptable" WRWA at 5-33. Instead of only focusing on logging to reduce fire risk, the Forest Service should consider reducing its open road network through closing or decommissioning unneeded roads in this area.

Forest fires result from, and are driven by, a multitude of factors including topography, fuel loads, the fire history of the environment in question, and most importantly, weather.8 The overwhelming factors driving large blazes are drought, low humidity, high temperatures and most importantly, high winds. Because weather is often the greatest driving factor of a forest fire, and because the strength and direction of the wildfire is often determined by topography, fuels reduction projects cannot guarantee fires of less severity.9,10 In general, large fires are driven by several conditions that completely overwhelm fuels.11 It is commonly accepted that reducing fuels does not reliably prevent large fires nor significantly reduce the outcome of large fires.12 In fact, "Under very moderate conditions, fire behavior may be so benign regardless of fuel bed characteristics that there will be little detectable difference between treated and untreated areas."13 According to this analysis of fuel reduction effectiveness, in about a third of cases reviewed mechanical fuel reductions increased fire spread.

The effectiveness of fuels reduction is inconsistent, there are places where it appears to reduce fire spread under moderate fire weather conditions but tend to fail under severe fire weather. With climate change likely to bring more frequent and regular occurrences of severe fire conditions, the FS should not rely on the inconsistent and often counterproductive practice of mechanical fuels reduction. In addition, some research suggests that fuel reduction actions like fuel breaks may exacerbate fire severity where projects leave behind combustible slash, open the forest canopy to create more ground-level biomass, and increase solar radiation which dries out the understory. High winds, steep slopes and highly combustible slash contribute to fire severity. The FS's Juncrock EIS notes that without comprehensive follow up to remove slash piles, chances of ignition rise. We heard anecdotally that untreated slash in the Crystal Clear project area contributed to some high intensity burning in the eastern part of the White River Fire perimeter. Considering there has historically been a systemic failure to properly dispose of slash piles forest-wide, please analyze the impact of existing piles and future slash.

8 Wilderness Society, 2003, Fire & Fuels: Does Thinning Stop Wildfires?

9 Carey, H. and M. Schumann. 2003. Modifying Wildfire Behavior-the Effectiveness of Fuel Treatments: the Status of our Knowledge. National Community Forestry Center.

10 Rhodes, J. and W. Baker. 2007. The Watershed Impacts of Forest Treatments to Reduce Fuels and Modify Fire Behavior. Pacific Rivers Council, Portland Or.

11 Meyer, G and Pierce, J. 2007. Long-Term Fire History from Alluvial Fan Sediments: The Role of Drought and Climate Variability, and Implications for Management of Rocky Mountain Forests. Jennifer Pierce and Grant Meyer. International Journal of Wildland Fire 17(1) 84-95

12 Lydersen, J., North, M., Collins, B. 2014. Severity of an uncharacteristically large wild?re, the Rim Fire, in forests with relatively restored frequent ?re regimes. Forest Ecology and Management 328 (2014) 326-334

13 Martinson, Erik J.; Omi, Philip N. 2013.Fuel treatments and fire severity: A meta-analysis. Res. Pap. RMRS-RP- 103WWW.Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 38 p.

Lastly, Bark shared information about existing unauthorized motorized trails off the 4860 in our Scoping comments. Given that the 4860 is a common route for motorcycles, and there is a history of folks taking detour loops off the main road and creating new small dispersed sites along the way, we request that you to develop robust PDCs for preventing illegal trail building and human-caused fire starts in the area as a result of increased access via temporary roads (although the proposed locations are not disclosed, they are presumed to be required in this area), landings, and skid trails.

B5 LAND ALLOCATION

The White River WA cites evidence of pine marten presence within the Grasshopper project area. WRWA 6-13.

Martens are associated with dense mature forests, are important indicators of a forest's biodiversity, and are vulnerable to management activities such as fuel reduction treatments that open the forest canopy or remove woody debris. 363 acres of this project are designated as B5 Pileated Woodpecker/Pine Marten Habitat Area that has the primary goal of providing mature and old growth forest habitat blocks of sufficient quality & quantity and distribution to sustain viable populations of pileated woodpecker & pine marten. LRMP at 4-240.

Desired future conditions for B5 include mature and over-mature forest, a high density of high-quality den and nest snags and defective green trees, prevalence of dead and down woody material, and healthy, older forest with a mid-level canopy reaching maturity.14 Bark notes that, where needed, tree mortality from insect and disease could help to create den and nesting snags and a prevalence of dead and down woody material needed for these animal habitats. The areas proposed for treatment in the Grasshopper project currently have uneven aged stands with a wide diversity in densities. Almost all stands we visited have definitive signs of woodpecker activity and several snags with varying cavities that seemed suitable for a range of cavity nesters. These heterogeneous stands fare better against beetle outbreaks15 and are generally better habitats for the animals prioritized in the B5 land allocation.

14 USDA Forest Service. (1990). Land and Resource Management Plan: Mt. Hood National Forest. Page Four-240.

In Bark's previous comments, we referenced a recent Pacific Northwest Research Station16 study investigating the effects of thinning on marten use of forest stands compared to untreated areas. In this study, martens were 1,200 times less likely to be detected in openings and almost 100 times less likely to be detected in areas structurally simplified by fuel-reduction treatments compared to structurally complex forest stands in the study area. Marten behavior was more erratic, with increased speeds and decreased complexity of movements, in open and simplified stands compared to forested and structurally complex stands. Martens move 3 to 4 miles daily, which is energetically demanding and increases their vulnerability to predation compared to animals that have a smaller daily range. Since martens selected home ranges with fewer openings and avoided stands with reduced structural complexity, the researchers of this study concluded that populations would benefit from increased stand connectivity within home ranges and at a landscape scale.

All of this is to say that Bark supports the PDC that all units within B5 with 50% or greater canopy cover will be maintained at 50% post commercial treatment. However, the FS should also specify whether they are decreasing canopy cover in stands that are already under 50%.

Additionally, the agency must ensure compliance with the following Standards and Guidelines:

Within Pileated Woodpecker Habitat LRMP at 4-242.

[middot] B5-008: At least 300 acres of mature and or old growth forest habitat shall be maintained within each 600-acre Management Area Id.

[middot] B5-009: Each 300 acres of mature and or old growth habitat should be contiguous Id.

Within Pine Marten Habitat

[middot] B5-010: At least 160 acres of mature and/or old growth forest habitat shall be maintained within each 320-acre Management Area.

[middot] B5-011: Each 160 acres of mature and/or old growth habitat should be contiguous. Id. B5-012: Habitat improvement projects for mature and old growth species shall be encouraged. Id.

15 USDA Forest Service. (2005). Bark Beetle Outbreaks in Western North America: Causes and Consequences. Beetle Bark Symposium. https://www.fs.fed.us/rm/pubs_other/rmrs_2009_bentz_b001.pdf

16https://www.fs.fed.us/pnw/sciencef/scifi192.pdf

[middot] B-5-020, 021: Commercial thinning may occur within the nonmature/old growth habitat component, i.e., stands less than 100 years of age. Crown closure within the forest canopy shall be at least 50% within commercial thinning activity areas. Id.

[middot] B5-032: Open road density shall not exceed 2.0 miles per square mile.

RMP at 4-244.

[middot] B5-037: At least 24 snags greater than 20 inches diameter shall be maintained within the 160 acres of mature and/or old growth pine marten habitat. Id.

NORTHERN SPOTTED OWLS

There are seven historic home ranges that overlap analysis area for the Grasshopper analysis area. Of these, five overlap with units identified for proposed treatments. Both action alternatives may affect and are likely to adversely affect (LAA) spotted owl by habitat impacts. Alternative 2 would further reduce canopy cover and delay the attainment of suitable habitat by as much as

75 to 100 years compared to Alternative 1. In Northern spotted owl Critical Habitat, both action alternatives may affect and are likely to adversely affect (LAA) critical habitat by impacts to nesting, roosting and foraging habitat.

According to the PA, under both action alternatives, activities that downgrade suitable habitat on 1,223 acres and remove habitat on 11 acres may affect and are likely to adversely affect (LAA) spotted owl. Alternative 2 would remove 267 acres more suitable habitat than Alternative 1.

Of the 5,360 acres proposed for treatment there are approximately 4,428 acres of critical habitat. Activities that downgrade habitat 1,181 acres may affect and is likely to adversely affect (LAA) spotted owl critical habitat.

Spotted Owl Recovery Plan and the Mt. Hood LRMP at FW-175 ("Habitat for threatened, endangered and sensitive plants and animals shall be protected and/or improved."). Grasshopper, along with other management projects in the Eastside, would exacerbate the degraded habitat conditions for this threatened species that already exist in the watershed.

Units that we have field-verified high-quality structure for owl habitat, and are in suitable habitat include 214L,

214, 159, 219, 201, 173, 186, and 3.

Units that we have field-verified high-quality structure for owl habitat, are in mapped suitable habitat and are in Riparian Reserves include 231, 232, 193L, 193, some of 210, 13, 7, 149. 211 and 208, 150, 157 and 161.

Unmanaged stands in the eastern portion of the White River watershed have allowed NSOs to persist where logging has greatly reduced suitable habitat elsewhere (before 1855, suitable habitat conditions in the Eastside Zone only appeared on steep north aspects and topographically sheltered areas along perennial streams, whereas now it appears on the uplands as well). The White River Watershed Analysis also recognized that nesting habitat would likely decline over the long-term in the eastern portion of the watershed, and that habitat must be rebuilt in the "Transition and Crest Zones" to the west. To this end the WRWA recommended maintaining existing NSO suitable and dispersal habitat in the Eastside Zone until increases in such habitat have been achieved in the Transition and Crest Zones.

Section 7(a)(2)of the Endangered Species Act requires the Forest Service, in consultation with and with the assistance of the Secretaries of the Interior and Commerce, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. (16 U.S.C. 1536(a)(2)). The U.S. Fish & Wildlife Service updated the definition of destruction or adverse modification of critical habitat to mean: a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species.

The 2011 Recovery Plan for the Northern Spotted Owl, the blueprint for management of this species on federal lands in the region, contains the provision that long-term benefits to spotted owls of forest thinning treatments must clearly outweigh adverse impacts from commercial logging for fuels reduction. The following Recovery Actions are relevant here:

[middot] Recovery Action 10: Conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl populations.

[middot] Recovery Action 32: Because spotted owl recovery requires well distributed, older, and more structurally complex multi-layered conifer forests on Federal and non-federal lands across its range, land managers should work with the Service to maintain and restore such habitat while allowing for other threats, such as fire and insects, to be addressed by restoration management actions. These high-quality spotted owl habitat stands are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees.

In addition to the ESA's prohibition on destruction or adverse modification of Critical Habitat, the rule that designated this section of the forest as Critical Habitat determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat. The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

In its Designation of Revised Critical Habitat for the Northern Spotted Owl, the USFWS provided the following suggestions17 regarding active forest management for consideration by land managers within critical habitat as consistent with the recommendations of the Revised Recovery Plan for the Northern Spotted Owl:

[middot] Focus active management in younger forest, lower quality owl habitat, or where ecological conditions are most departed from the natural or desired range of variability.

[middot] Avoid or minimize activities in active northern spotted owl territories (or the high-quality habitat within these territories).

[middot] Ensure transparency of process so the public can see what is being done, where it is done, what the goal of the action is, and how well the action leads to the desired goal.

[middot] Practice active adaptive forest management by incorporating new information and learning into future actions to make them more effective, focusing on how these actions affect northern spotted owls and their prey.

The EA does not clearly fulfill these recommendations and instead focuses heavy treatments in high quality spotted owl habitat.

Wildfire vs thinning impacts

A recent study, Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl18 concludes that the long-term benefits of commercial thinning do not clearly outweigh adverse impacts, even if much more fire occurs in the future. In this study the authors analyzed fire and forest recruitment in dry forests in the Klamath and in the Cascades provinces. Using empirical data, they calculated the future amount of spotted owl habitat that maybe maintained with fixed rates of high severity fire and ongoing forest re growth rates with and without commercial thinning. In the scenario most comparable to the current project (one time entry in the dry Cascades), the authors found that fuels- reduction thinning reduced six times more NSO habitat than it increased (by preventing it from burning in high-severity fire). If the Forest Service intends to maintain fuels reduction through maintaining the open canopy, the combination of thinning and maintenance reduced 6.7 times more late-successional forest than it increased.

17 USFWS, Designation of Revised Critical Habitat for the Northern Spotted Owl, 2012, at 32.

18 Odion, Dennis & Hanson, Chad & Dellasala, Dominick & Baker, William & Bond, Monica. (2014). Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Orthopaedics Journal. 8. 37-51. 10.2174/1874213001407010037.

The authors found that even an immediate doubling of fire rates due to climate change or other factors would result in far less habitat affected by high-severity fire than thinning. In addition, much of the high-severity fire might occur regardless of thinning, especially if the efficacy of thinning in reducing high- severity fire is reduced as fire becomes more controlled by climate and weather. Clearly, the strategy of trying to maintain more dense, late-successional forest habitat by reducing fire does not work if the method for reducing fire adversely affects far more habitat than would high-severity fire, and the high-severity fire might occur anyway because it is largely controlled by climate and weather. In addition to the loss of habitat from thinning being much greater than the loss from a future potential fire, the adverse impact to owls from fire, even high- severity fire, are often overstated. Owls may actually benefit from wildland fire, as recognized out in the NSO Recovery Plan: "For spotted owls nesting in burned areas, reproductive rates are generally similar to unburned areas (Gaines et al. 1997, Bond et al. 2002, Clark 2007)." III-30. "Bond et al. (2009) found owls selecting burned areas, including high-severity burns, over unburned areas for foraging when those areas were within 1.5 kilometers of a nest roost site." III-30. "There is evidence of spotted owls occupying territories that have been burned by fires of all severities." III-31.

Spotted owls evolved with fire and they extensively use forests that have burned. Hanson et al point out that: "Fire has been incorrectly perceived as a risk to NSO [northern spotted owl when in fact it may be a key source of habitat heterogeneity required by the NSO in parts of its range . . . Natural heterogeneity from mixed- severity fires may also offer some insurance against unexpected disturbance or severe effects of climatic change."19

The Critical Habitat Rule advises that forest managers should focus active management in younger forest, lower quality owl habitat, or where ecological conditions are most departed from the natural or desired range of variability. Federal Register, 71882/ Vol. 77, No. 233 / Dec. 4, 2012. These are clearly not the conditions that describe the land proposed for commercial logging in this project.

The Northwest Forest Plan assumed that eventually 80% of the agency- designated reserves would grow old and provide late successional habitat, while at any given time approximately 20% of the reserves might be affected by disturbance. As a result of climate change these proportions are likely to shift toward greater disturbance and younger forests. FS should adopt a decision for Grasshopper that protects the short- and long-term viability of all existing suitable owl habitat, so it may become a larger part of the landscape and be given a chance to continue to mature and provide complex habitat for owls.

19More-Comprehensive Recovery Actions for Northern Spotted Owls in Dry Forests: Reply to Spies et al. onJSTOR

Increased competitive pressure from barred owls

The owl's Revised Recovery Plan identifies competition from the barred owl as an important threat to the spotted owl20. Recent project analyses have made no or little mention of combined impacts of logging with the known effects of competition and trophic cascades associated with the barred owl. In the Paci?c Northwest, the recent invasion of barred owls with loss and fragmentation of intact forest are combining to reduce population sizes of native species with limited adaptive responses to novel and fast-acting threats. As noted in the comprehensive work, Population Demography of Northern Spotted Owls21, the fact that barred owls are increasing and becoming an escalating threat to the persistence of spotted owls does not diminish the importance of habitat conservation for spotted owls and their prey. In fact, the existence of a new and potential competitor like the barred owl makes the protection of habitat even more important, since any loss of habitat will likely increase

competitive pressure and result in further reductions in spotted owl populations.

In a recently published report, Holm et al. describe the potential trophic cascades triggered by the range expansion of the barred owl in our region. The authors suggest that the addition of the barred owl to PNW ecosystems may result in restructuring of communities or even potential local extinctions. If the rate of increase barred owl population continues, forests could experience a loss of prey species as well as loss of important ecological processes.22

Holm et al. discuss several potential indirect effects on ecosystem processes, which include a decline in tree and shrub growth and establishment through increased predation pressure on seed dispersing species as a consequence of barred owl predation. Increases in barred owls could also result in a decline in arboreal squirrel abundance, which could indirectly lead to reduced recruitment and growth of these forests that rely on spore dispersal. A potential decrease in soil processing may also occur with the expansion of barred owls, since reduced numbers of burrowing small mammals would lead to subsequent declines in the rates of decomposition of organic matter and litter, and mixing of forest soil.23 These impacts need to be included in the Grasshopper analysis.

20 USDI, U.S. Fish and Wildlife Service. February 2011. Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls. Region One U.S. Fish and Wildlife Service, Portland, OR.

21 Forsman, et.al, 2011, published for Cooper Ornithological Society.

22 Holm, S.R., B.R. Noon, J.D. Wiens and W. J. Ripple. 2016. Potential Trophic Cascades Triggered by the Barred Owl Range Expansion. Wildlife Society Bulletin; DOI: 10.1002/wsb.714

Roads impacts to owls

Northern spotted owls on average create an avoidance buffer of 1,312 feet from forest roads.24 The Grasshopper draft environmental assessment provided no maps of the proposed road work for the project, so it is difficult to assess the impacts of road building and if it overlaps with any suitable habitat. If the owls have a more than 1,000 foot avoidance buffer from roads, how will the logging operations affect their use of the area? And, while Bark knows the FS deems these roads temporary, they will have an impact during operations and likely remain unofficial travel corridors for much longer. The proposed project is expected to remove 4.0 acres of roads in suitable habitat and is likely to adversely affect spotted owl and their designated critical habitat. Up to 3.3 acres of PBF 2 (nesting, roosting) would be permanently removed due to temporary road building activities. However, temporary road locations are not being disclosed in this analysis and therefore, the public cannot determine site specific recommendations for these effects.

Cumulative impacts to spotted owls

As in the Crystal Clear Restoration project25, it appears that the USFS also failed to identify and meaningfully analyze the cumulative impacts of the Grasshopper. When the EA did acknowledge the possibility of the project's impact, such as in the section that analyzed the project's effects on spotted owls, it noted only that "[t]imber harvest on federal, tribal, and private land, and utility corridor operations have reduced the amount of suitable habitat . . . on the landscape and could continue to do so in the future," but the relevant section of the document limited its analysis to only the Project area and a 1.2-mile buffer surrounding it (as did CCR). Such a small buffer zone fails to distinguish the EA's cumulative impact analysis from an analysis of the direct effects of the Project. See Klamath-Siskiyou Wildlands Ctr., 387 F.3d.at 997 (assessing cumulative effects at the critical habitat unit scale). The USFS's failure to engage with the other projects currently being planned and implemented in the area leaves open the possibility that several small forest management actions will together result in a loss of suitable owl habitat. Preventing or adequately mitigating this potential loss is the fundamental purpose of NEPA's requirement that agencies analyze cumulative impacts, and we have no basis to assess whether the USFS has taken the necessary steps to consider this possibility.

23 Pearce, J., and L. Venier. 2005. Small mammals as bioindicators of sustainable boreal forest management. Forest Ecology and Management 208:153-175.

24 Wasser, S.K., K. Bevis, G. King, and E. Hanson. 1997. Noninvasive physiological measures of disturbance in the northern spotted owl. Conservation Biology 11(4): 1019-1022.

25CCR/ Bark v. United States Forest Service, No. 19-35665 (9th Cir. 2020)

SURVEY AND MANAGE AND OTHER SENSITIVE SPECIES

Bark anticipates that surveys for Survey and Manage species are being completed for all proposed units 80 years and older. For example, C-3 species in the Grasshopper area include several species of Ramaria fungus. We remind the agency that sufficient buffers are required for ALL survey and manage species, and that these buffers must be identified in sale and NEPA documentation. The PA did not indicate how the FS will manage the located species. We request that the agency make this disclosure in forthcoming NEPA documents. Below are some species of interest found by Bark in the project area thus far.

Table 2: Locations of Ramaria

GPSnotes
45.272025N, 121.471717WUnit 3
45[deg]16'1.90"N 121[deg]32'18.34"W-
45[deg]16'5.66"N 121[deg]31'10.66"W-
45[deg]15'50.24"N 121[deg]31'3.21"W-
45[deg]15'48.12"N 121[deg]30'53.11"W-
45[deg]15'46.93"N 121[deg]32'8.91"W-

45[deg]15'48.17"N 121[deg]32'13.54"W-
45[deg]15'53.63"N 121[deg]32'20.11"W-
45[deg]15'46.93"N 121[deg]32'8.91"W-
45[deg]15'48.17"N 121[deg]32'13.54"W-
45[deg]15'48.12"N 121[deg]30'53.11"W-

45[deg]16'5.66"N 121[deg]31'10.66"W-
45[deg]16'1.90"N 121[deg]32'18.34"W-
45[deg]16'38.04"N 121[deg]32'38.96"W-
45[deg]16'13.25"N 121[deg]30'37.82"WUnit 150
45[deg]15'50.24"N 121[deg]31'3.21"W-

LOGGING IN MATURE AND OLD GROWTH FOREST

Having field surveyed much of the project area, it is not a surprise to Bark that 80% of the proposed treatment units are over 80 years old, and around 500 acres meet the MHNF's criteria for old growth. However, we note that variable density thinning in mature and old growth stands has not been a topic discussed at any great length by Mt. Hood collaborative groups and was one of the topics of recent divisive litigation. Therefore, it is prudent to approach this topic with patience and care.

Bark believes the best way for the FS to ensure that there is an overall increase of old growth forest habitat in the future is to avoid logging mature and old growth trees and let mature forests grow unmanaged. Furthermore, there is a new urgency to protect mature forests to store carbon to mitigate climate change.

Bark believes that commercial logging, including thinning mature stands and/or removing mature trees, can reduce the quality of habitat and delay attainment of defining old-growth characteristics such as snags and dead wood that provide essential ecological services, including fish & wildlife habitat, carbon storage, slope stability, and capture-storage-release of water and nutrients. Furthermore, there is new urgency to protect mature forests to store carbon in order mitigate climate change, and to provide additional habitat as soon as possible to increase the chances that the spotted owls can co-exist with the invading barred owl.

Studies included in a 2016 bibliography released by the USFS and BLM26,27 addressed a variety of characteristics of old-growth forest structure and found that while thinning can positively affect certain aspects of old-growth development, such as minimally increasing diameter size, there is generally a lack of, or inconsistency in, evidence that thinning improves old-growth characteristics. This is especially true regarding impacts of thinning on the abundance and size of snags and downed wood; these old-growth structural features were largely overlooked and the evidence that does exist suggests thinning does not adequately manage for these features. Based off this lack of compelling evidence, it is most appropriate to implement a precautionary approach towards managing and thinning mature forest stands.

26 Powers, M., and S. Wessell. 2016. Management impacts and developmental patterns in mature Douglas-fir

forests of the Pacific Northwest: An Annotated Bibliography.

27Reed, P. 2016. Reviewing the US Forest Service and Bureau of Land Management's "mature stand thinning" bibliography. Available by request.

Bark has seen on the ground that old-growth characteristics often begin to be present in mature stands such as large trees, snags, multiple layers, slope stability, and carbon storage. Scientific literature demonstrates how "(s)ites that do not have the full complement of old-forest characteristics can partially function as old forests for those attributes that are present."28 When old-growth forests are in such short supply, as they are in the Grasshopper project area, these mature stands act as important "lifeboats" that will carry closed-canopy dependent wildlife through the habitat bottleneck created by decades of overcutting. Bark has observed that old-growth characteristics, such as large trees, snags, multiple layers, and slope stability, often begin to be present in mature stands (defined here as being over 80 years old).

If retained, mature forest stands in Grasshopper will continue growing and removing carbon from the atmosphere for decades. These mature forests have not yet reached their full potential for carbon storage and will continue to sequester additional carbon in both wood and soil for a long time. Old-growth forests in the moist portions of the Pacific Northwest store more carbon per-acre than any other temperate forests in the world.29

In a recent study, Lutz and 95 co-authors compiled detailed forest plot data from 48 sites around the world and found that because large-diameter trees constitute roughly half of the mature forest biomass worldwide, their dynamics and sensitivities to environmental change represent potentially large controls on global forest carbon cycling. They recommended managing forests for conservation of existing large-diameter trees or those that can soon reach large diameters as a simple way to conserve and potentially enhance ecosystem services.30

28 Everett, R., P. Hessburg, J. Lehmkuhl, M. Jensen, and P. Bourgeron. 1994. Old Forests in Dynamic Landscapes: Dry-Site Forests of Eastern Oregon and Washington. Journal of Forestry 92: 22-25.

29 Smithwick EAH, Harmon ME, Acker SA, Remillard SM. 2002. Potential upper bounds of carbon stores in the Pacific Northwest. Ecological Applications 12(5): 1303-1317. "The C densities we measured in old-growth forests of the PNW are higher than C density values reported for any other type of vegetation, anywhere in the world. [hellip] Results showed that coastal Oregon stands stored, on average, 1127 Mg C/ha, which was the highest for the study area, while stands in eastern Oregon stored the least, 195 Mg C/ha. [hellip] the highest C density was at stand CH04 at Cascade Head, ORCOAST, with 1245 Mg C/ha."

Furthermore, recent assessments of current forest conservation in the western United States found that beyond the 43 million acres of forests currently protected in the Pacific Northwest, an additional 25 million acres of protection is needed to achieve protection of 30% of the land by 2030 (30 [times] 30), a target established by world governments to avoid the most catastrophic effects of climate change31,32. To help meet this regional target, A "strategic forest reserve" framework was developed that prioritizes forestlands for protection using spatial metrics of biodiversity and/or carbon within each ecoregion. This framework is designed for greater protection of species habitat, current carbon stocks, future carbon accumulation, and surface drinking water. 33

Where these mature forest structures exist (large down wood, large snags, large live trees, minor trees), Bark recommends retaining no less than 60% of the canopy cover, retaining as much mid-story component of the stand as is feasible, retaining the largest trees in the stand, as well as retaining all legacy features.

CLIMATE CHANGE

The extremely brief discussion in the PA fails to take a "hard look" at the impacts of the Grasshopper project on the carbon cycle & climate change and on the impacts of the changing climate on the project area. Despite the Ninth Circuit's admonition that "general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided" this is exactly what the Grasshopper PA provides. Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372,1380 (9th Cir. 1998). Once again, the Forest Service is squandering a valuable opportunity to substantively engage with one of the most pressing environmental issues of our time and instead making general statements unsupported by the best available science.

30 Lutz et al (2018). Global importance of large-diameter trees. Global Ecology and Biogeography. 2018:1-16. DOI: 10.1111/geb.12747.

31 IPBES. (eds Brondizio, E. S., Settele, J., D[iacute]az, S. & Ngo, H. T.) 56 (IPBES, 2019).

32https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/

33 Law B.E., Berner L.T., Buotte P.C., Mildrexler D. 2021. Strategic forest reserves can protect biodiversity and mitigate climate change in the western United States. Nature Communications Earth & Environment.

1) What a "hard look" means in the context of analyzing climate

change

While the state of the law about analyzing climate change in the NEPA process is still in development, the Ninth Circuit established a rule regarding timber sales that a NEPA analyses must consider a project's "impact on global

warming in proportion to its significance." Hapner v. Tidwell 621 F.3d 1239, 1245 (9th Cir. 2010). Given that Oregon's forests are increasingly well-known as important carbon sinks, and that climate change may be the most significant ecological crisis of our times, the proposed Grasshopper timber sale's impact on climate change is far greater than the extremely brief, inaccurate and out of date discussion included in the EA and specialist report.

In addition, we remind the Forest Service that an agency's defense of its positions must be found within the body of the EA itself, not somewhere in project files. ONDA v. Rose, 921 F.3d at 1191; Blue Mtns. Biodiversity Project v. Blackwood, 161 F.3d 1208, 1214 (9th Cir. 1998); see also e.g. Sierra Club v. Bosworth, 199 F. Supp. 2d 971, 980 (N.D. Cal. 2002) ("[I]t is not an adequate alternative, however, to merely include scientific information in the administrative record."). As is currently written the few paragraphs in the EA give no useful information regarding

the climate and carbon impacts of the Grasshopper project.

As the Ninth Circuit recently found in a case regarding the Crystal Clear Timber Sale on Mt. Hood National Forest: "In its responses to these comments the USFS reiterated its conclusions about vegetation management but did not engage with the substantial body of research cited by Appellants." Bark v.United States Forest Serv., 958 F.3d 865, 870 (9th Cir. 2020) (emphasis added). In that case, the Forest Service's failure to engage the submitted science led the court to invalidate the Crystal Clear EA. We encourage the Forest Service to follow the guidance of the court and substantively incorporate comments into the final Grasshopper EA.

2) Please prepare a quantitative analysis regarding this project's impact on the carbon cycle

In recent projects, Bark has observed that the FS has made a choice not to pursue a quantitative carbon analysis, or address current OSU forest carbonresearch and its recommendations34 which were provided to them in multiple ways during Scoping, and since that time have been supported by the OregonGlobal Warming Commission's Forest Carbon Accounting Project Report35.

These findings highlight the importance of project-level tracking of carbon emissions, and question whether converting standing timber into wood products can be an effective strategy for maintaining or increasing overall forest carbon storage.

34https://www.pnas.org/content/115/14/3663

35https://static1.squarespace.com/static/59c554e0f09ca40655ea6eb0/t/5c094beaaa4a99fa6ad4dcde/1544113138067/

2018-OGWC-Forest-Carbon-Accounting-Report.pdf

We encourage the FS to reconsider preparing a quantitative carbon analysis and engage with Land use strategies to mitigate climate change in carbondense temperate forests36, a paper released in 2018 which explores PNW forests' role in the regional carbon cycle. In this paper, reforestation, afforestation, lengthened harvest cycles on private lands, and restricting harvest on public lands increase net ecosystem carbon balance 56% by 2100, with the latter two actions contributing the most. Resultant co-benefits included water availability and biodiversity, primarily from increased forest area, age, and species diversity. Increasing forest carbon on public lands reduced emissions compared with storage in wood products because the residence time is more than twice that of wood products. Hence, temperate forests with high carbon densities and lower vulnerability to mortality have substantial potential for reducing forest sector emissions.

3) Please correct inaccuracies regarding carbon and "long-lived" wood products

(Figure)

As we noted in the scoping comments, the FS mistakenly conflates the carbon sequestration with carbon storage when it asserts that utilizing trees to create "long- lived" wood products sequesters carbon. This mistake is still glaringly present in the draft EA, accompanying the myth that wood products hold more carbon than trees and soil in in-tact forests. Studies have found that approximately 15% of a tree's carbon ends up in long-lived wood products, releasing the other 85% into the atmosphere.

36 Beverly E. Law, Tara W. Hudiburg, Logan T. Berner, Jeffrey J. Kent, Polly C. Buotte and Mark E. Harmon Land use strategies to mitigate climate change in carbon dense temperate forests. PNAS March 19, 2018. 201720064; published ahead of print March 19, 2018. https://doi.org/10.1073/pnas.1720064115

Contrary to the outdated assertion in the Report, recent research suggests substitution benefits of using wood versus more fossil fuel-intensive materials may have been overestimated by at least an order of magnitude.37 While product substitution reduces the overall forest sector emissions, it cannot offset the losses incurred by frequent harvest and losses associated with product transportation, manufacturing, use, disposal, and decay.

Another discredited assertion is that younger forests are better at sequestering and storing carbon. More recent research finds that older forests in the westside Cascade Mountains have an extremely high potential carbon sequestration and low vulnerability to future drought and fire. 38Carbon sequestration and biodiversity co-benefits of preserving forests in the western USA,? the Pacific Northwest's high-productivity, low-vulnerability forests have the potential to sequester up to 5,450 Tg CO2 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 yrs. of current regional fossil fuel emissions. Additionally, these forests currently have high above- and belowground carbon density, high tree species richness, and a high proportion of critical habitat for endangered vertebrate species, indicating a strong potential to support biodiversity into the future and promote ecosystem resilience to climate change.

These results show considerable potential for forests in the western United States to sequester additional carbon over the coming century and demonstrate that protecting high-carbon-priority areas could help preserve components of biodiversity. Preserving high-carbon-priority forests avoids future CO2 emissions from harvesting and mitigates existing emissions through carbon sequestration.

37 Beverly E. Law, Tara W. Hudiburg, Logan T. Berner, Jeffrey J. Kent, Polly C. Buotte and Mark E. Harmon, Land use strategies to mitigate climate change in carbon dense temperate forests. PNAS March 19, 2018. 201720064; published ahead of print March 19, 2018. https://doi.org/10.1073/pnas.1720064115

38 Polly C. Buotte, Beverly E. Law, William J. Ripple, Logan T. Berner. Carbon sequestration and biodiversity co-benefits of preserving forests in the western USA. Ecological Applications, 2019; DOI: 10.1002/eap.2039

(Figure)

Forested land in the western conterminous United States classified into priority for preservation to mitigate climate change based on the spatial co-occurrence of low vulnerability to drought and fire and low, medium, and high potential carbon sequestration. WA, Washington; ID, Idaho; MT, Montana; OR, Oregon; CA, California; NV, Nevada; UT, Utah; CO, Colorado; AZ, Arizona; NM, New Mexico.

This is supported by recent research showing that growing existing forests intact to their ecological potential[mdash]termed proforestation[mdash]is the most effective, immediate, and low-cost approach that could be mobilized across suitable forests of all types. Proforestation serves the greatest public good by maximizing co-benefits such as nature-based biological carbon sequestration and unparalleled ecosystem services such as

biodiversity enhancement, water and air quality, flood and erosion control, public health benefits, low impact recreation, and scenic beauty.

For example, a study of 48 undisturbed primary or mature secondary forest plots worldwide found, on average, that the largest 1% of trees [considering all stems [ge]1 cm in diameter at breast height (DBH)] accounted for half of above ground living biomass (The largest 1% accounted for ~30% of the biomass in

U.S. forests due to larger average size and fewer stems compared to the tropics). Each year a single tree that is 100 cm in diameter adds the equivalent biomass of an entire 10-20 cm diameter tree, further underscoring the role of large trees. Intact forests also may sequester half or more of their carbon as organic soil carbon or in standing and fallen trees that eventually decay and add to soil carbon. Some older forests continue to sequester additional soil organic carbon and older forests bind soil organic matter more tightly than younger ones.

Proforestation has the potential to provide rapid, additional carbon sequestration to reduce net emissions in the U.S. by much more than the 11% that forests provide currently.39

4) Use Best Available Science to analyze carbon emissions from the Grasshopper Project

The Oregon Global Warming Commission states in its 2018 Forest Carbon Accounting Project Report: "Based on credible evidence today, forest harvest does not appear to result in net carbon conservation when compared to carbon retention in unharvested forests[hellip]Current analysis suggests that treatments which include medium to heavy thinning result in reduced carbon stores that do not recover in any meaningful time periods."

The FS has often claimed the short-term carbon emissions and the difference in long-term carbon storage that could be attributed to the Proposed Action are of such small magnitude that they are unlikely to be detectable at global, continental or regional scales. Additionally, it has asserted that changes in carbon stores are unlikely to affect the results of any models now being used to predict climate change. The same thing could be, and is, said about every individual timber sale in National Forests in the Pacific Northwest. The failure of federal agencies to place projects within the context of emissions from logging on a regional or statewide level has led the public to believe that the forestry sector is no longer a contributor to global greenhouse gas emissions.

5) Failure to provide sufficient analysis of the Grasshopper project under current climate predictions

Despite the legal standard for NEPA that "general statements about possible effects and some risk do not constitute a hard look absent a justification

regarding why more definitive information could not be provided," general statements are all the EA/Report contain. Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372,1380 (9th Cir. 1998). This is especially troubling because there is such a wealth of resources available, many from the Forest Service or USDA, that you could be using to create this analysis.

Bark advises the Forest Service to meaningfully incorporate the Climate Vulnerability Assessment for The Columbia Gorge Scenic Area and Mt. Hood & Willamette National Forests which provides many specific models and projections for regional trends and local impacts. The Grasshopper project area contains high elevation cold mixed conifer habitat which is at particular risk under climate predictions. Habitat types which are under particular risk due to climate change should be analyzed cumulatively and systematically to avoid further loss and fragmentation.

39https://www.frontiersin.org/articles/10.3389/ffgc.2019.00027/full

We also invite you to review the USDA Climate Hub, which encompasses Alaska, Idaho, Oregon, and Washington. The purpose of the Hub is to deliver science-based knowledge and practical information to farmers, ranchers, forest managers, and Native American tribes that will help them to adapt to climate change.40 The Climate Resilience Data Explorer is also helpful. It is a web application that allows users to view, summarize, and generate reports regarding 10 key metrics related to climate resilience. The goal of the Data Explorer is to support conservation management that increases the adaptive capacity of the landscape and its ability to support native species and ecosystems into the future by protecting areas which play a key role in facilitating climate adaptation and mitigation.41 There are also extensive scientific resources regarding impacts of the changing climate on the website for OSU's Climate Impacts Research Consortium42 that the Forest Service could use to update its outdated scientific research. With the wealth of resources available to inform the Forest Service's climate analysis, there is simply no" justification regarding why more definitive information could not be

provided." Neighbors of Cuddy Mountain, 137 F.3d at 1380.

6) Impact of Management on Ecosystems Experiencing Climate Change

Human-caused climate change will not only affect natural systems, it will also intensify the impacts of human activities such as off-road vehicles, roadbuilding and logging. Looking at climate impacts in National Forests, one report concluded that, "climate change will directly affect the ecosystem

services provided by national forests and will exacerbate the impacts of current natural and anthropogenic stress factors."43 Climate change is predicted to result in more flood events and fires across the Pacific Northwest.44 Many Oregon streams will experience higher winter flow and reduced summer flows as temperature rises and the variability of precipitation increases. The well documented shift from snow to rain, coinciding with increases in temperature, affects hydrologic trends. Snow cover typically accumulates at temperatures close to the melting point, and thus is at risk from climate warming because temperature affects both the rate of snowmelt and the phase of precipitation.

With a projected 2[deg]C winter warming by mid-century, almost 10,000 km[sup2] of currently snow-covered area in the Pacific Northwest could receive winter rainfall instead.45

40https://www.climatehubs.usda.gov/hubs/northwest

41https://adaptwest.databasin.org/

42https://pnwcirc.org/our-science

43 Blate, G.M., et. al, Adapting to climate Change in United States national forests, Unasylva 231/232, Vol. 60, p57, 2009.

44 USDA Forest Service, Pacific Northwest Region, Aquatic and Riparian Conservation Strategy, p. 30 (2008).

Climate change, combined with effects from past management practices, is exacerbating changes in forest ecosystem processes and dynamics to a greater degree than originally anticipated in the NWFP.46 This includes changing patterns of fire, insect outbreaks, drought, and disease.47 Land managers need to consider this

uncertainty and how best to integrate knowledge of management-induced landscape pattern and disturbance regime changes with climate change when making spotted owl management decisions.

In a recent study, the influence of weather and climate on spotted owl populations was evidenced in northern California, Oregon, and Washington. Climate related factors accounted for 84% and 78% of the temporal variation in population change of spotted owls in the Tyee and Oregon Coast Range study areas, respectively. Climate and barred owls together accounted for nearly all (~100 percent) of the changes in spotted owl survival in the Oregon Coast Range.48 The presence of high-quality habitat appears to buffer the negative effects of cold, wet springs and winters on survival of spotted owls as well as ameliorate the effects of heat. The high-quality habitat might help maintain a stable prey base, thereby reducing the cost of foraging during the early breeding season when energetic needs are high. In general, climate change can increase the success of introduced or invasive species in colonizing additional territory. Invasive animal species are more likely to be generalists, such as the barred owl, than specialists, such as the spotted owl and adapt more successfully to a new climate than natives.49

The recommended form of protecting the biodiversity in riparian areas is through landscape connectivity. This is especially relevant in terms of a changing climate. Rivers encounter many types of terrain along their route and are used directly by animals as thoroughfares between different habitats, or indirectly as rivers' tributaries create a multitude of microhabitats in one given terrain which help sustain groups of populations. Rivers themselves also act to support different population directly or indirectly through the provision of food sources.

45 Heejun Chang, Julia Jones, Climate Change & Freshwater Resources in Oregon, Oregon Climate Change Research Institute, Oregon Climate Assessment Report, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR (2010) at 84.

46 Revised Recovery Plan for the Northern Spotted Owl, Recovery goal, objectives, criteria and strategy II-11.

47Id. at III-5.

48 Revised Recovery Plan for the Northern Spotted Owl, Recovery goal, objectives, criteria and strategy III-9.

49 Id.

50 Seavy NE, Gardali T, Golet GH, Griggs T, Howell CA, Kelsey R, Small SL, Viers JH, Weigand JF. 2009. Ecological Restoration, 27:3; 330-338.

In climate change events of the past, riparian areas acted as a refuge for organisms as a heat buffer and heat sink and are expected to act similarly in the next climate change event. Thus, vegetation restoration to provide shade over riparian zones will be crucial to the success of riparian inhabitants, as well as provide the latent effects of water purification and filtration. As flooding is an impending issue of climate change, the reunion of rivers to their floodplains will help reduce storm surge and flooding effects far greater than that of levees.50

Research suggests that increased atmospheric CO2 may increase tree growth through increased water use efficiency but this will depend on the local factors limiting tree growth.51 Using a spatially comprehensive network of Douglas fir chronologies from 122 locations that represent distinct climate environments in the western United States, Restaino et al. show that increased temperature decreases tree growth via vapor pressure deficit (VPD) across all latitudes.52 As temperature continues to increase in future decades, we can expect deficit- related

stress to increase and consequently Douglas fir growth to decrease throughout its US range.

Climate change will not only affect natural systems, it will also intensify the impacts of human activities such as off-road vehicles, roadbuilding and logging. The FS must analyze the impacts of these activities in the broader context of climate change and acknowledge that the historic impacts of these activities will be exacerbated by climate change. The FS must then commit to specific management actions to address the increased impacts of these threats now and to take additional actions as necessary.

A common assumption is that as climate change intensifies, so do the stresses on the forest system, and thus the forest needs to be managed to remove those stresses. This logic often fails to account for the effect that logging has on mycorrhizal growth. Thinning can impact the health and prevalence of ectomycorrhizae in forests, which also help mitigate the effects of drought on individuals trees and increases availability of nutrients to trees included in the common mycorrhizal network.61 Additionally, wood debris from current or future fallen snags act as an inoculum for mycorrhizal species and also as a water retention site in the soil. In fact, exporting organic matter out of the forest only limits the ability of mycorrhizae to respond to soil compaction as woody soil debris act as a refuge for certain species. In addition, harvesting equipment compacts the soil, limiting the movement of oxygen and water through the soil and destroying soil structure. These effects of soil compaction on forest ectomycorrhizal networks can last up to 45 years.52,53

50 Seavy NE, Gardali T, Golet GH, Griggs T, Howell CA, Kelsey R, Small SL, Viers JH, Weigand JF. 2009. Ecological Restoration, 27:3; 330-338.

51 Penuelas, J., Hunt, J.M., Ogaya, R. and Jump, A.S., 2008. Twentieth century changes of tree - ring [delta]13C at the southern range - edge of Fagus sylvatica: increasing water - use efficiency does not avoid the growth decline induced by warming at low altitudes. Global Change Biology, 14(5), pp.1076-1088.

In regards to climate change's effects on species, the Intergovernmental Panel on Climate Change (IPCC) states that: (1) about 20-30% of known plant and animal species are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5-2.5[deg]C; (2) types of changes seen in plants include range shifts (in both latitude and elevation) and changes in growing season length, and threatened systems include those with physical barriers to migration (e.g. montane ecosystems); (3) non-climate stresses can increase vulnerability to climate change by reducing resilience and adaptive capacity; and (4) unmitigated climate change would, in the long term, be likely to exceed the capacity of natural and managed systems to adapt.54

Organisms can respond to climate change by existing in less affected microclimates, by adapting, or by migrating. By assisting the abilities of creatures to do these three things, greater amounts of biodiversity can be maintained and preserved. The FS can do this by avoiding fragmentation of habitat zones and increasing connectivity between habitats, as well as increasing ecosystem redundancy. Increasing redundancy has the beneficial effect of allowing a species to persist even if a local population dies out.

Redundancy can be done literally or functionally, i.e. creating lots of similar habitats or lots of different and distinct habitats with similar purposes[mdash]both are useful. Protecting currently "unmanaged" areas helps establish habitat for existing organisms and increases ecosystem health and biodiversity, which help mitigate the stress of climate change and increase resilience.55

The FS may be missing opportunities to practice adaptation planning, which could allow harm from climate change to occur on sensitive wildlife habitat in the future. The FS can: (1) increase or maintain carbon

sequestration by avoiding forest removal, replanting forests, and restoring ecosystem function; and (2) facilitate response to climate change by sustaining genetic and species diversity through more forest preservation, enhancing landscape connectivity for migration/dispersal of plant and animal species, and by aiding dispersal to favorable climates. Id.

52 Amaranthus, MP, Page-Dumroese D, Harvey A, Cazares E, Bednar LF. 1996. Soil Compaction and Organic Matter Affect Conifer Seedling Nonmycorrhizal and Ectomycorrhizal Root Tip Abundance and Diversity. US Department of Agriculture Forest Service. Pacific Northwest Research Station, Portland, Oregon. Research Paper PNW-RP-494.

53 Froehlich, Henry A.; Miles, D.W.R.; Robbins, R.W. 1985. Soil bulk density recovery on compacted skid trails in central Idaho. Soil Science Society of America Journal. 49: 1015-1017

54 Statement Of Dr. Beverly Law Professor, Global Change Forest Science Oregon State University And Ameriflux Network Science Chair Before The United States Senate Subcommittee On Public Lands And Forests Of The Senate Committee On Energy And Natural Resources November 18, 2009 Concerning Managing Federal Forests In Response To Climate Change, Including For Natural Resource Adaptation And Carbon Sequestration

55 Dunwiddie PW, Hall SA, Ingraham MW, Bakker JD, Nelson KS, Fuller R, and Gray E. 2009. Rethinking Conservation Practice in Light of Climate Change. Ecological restoration, 27:3; 320-329.

7) Administrative direction on Climate Change

The agency claims that the "Forest Plan, as amended, does not contain

direction related to climate change." While this may be true, existing environmental law does require the Forest Service to address both the impact of the project on climate change, and the impacts of climate change on the project.

In responding to comments, the Forest Service has recently claimed that "climate change is a global phenomenon" with the implication that it is impossible to assess the impact of any given project. This excuse was thoroughly rejected by the Ninth Circuit, which found the fact that "climate

change is largely a global phenomenon that includes actions that are outside of [the agency's] control . . . does not release the agency from the duty of assessing the effects of its actions on global warming within the context of other actions that also affect global warming." The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct. Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008).

Again, the FS insists that the scale of climate impact is inherently global, ignoring the fact that all emissions are local and the point sources of impact on global climate trends. Additionally, it is possible for the Forest Service to quantify the amount of carbon sequestered in the Grasshopper project area (see, for example, the BLM's Hole in the Road EA in which did just that).

The FS should quantify climate change emissions from its projects and take the analysis a step further to

examine the carbon tradeoffs, including carbon emitted from the project and the loss of future carbon sequestration because of the project.

The CEQ guidance also requires the FS to consider alternatives that would make the action and affected communities more resilient to the effects of a changing climate. The FS should also choose mitigation measures to reduce action related GHG emissions or increase carbon sequestration in the same fashion as they consider alternatives and mitigation measures for any other environmental effects.

A recent California case discussed the government's failure to take a hard look at how a changing climate exacerbates the adverse impacts of the proposed project, finding that to meet the hard look requirement, "NEPA requires an evaluation of the impact of climate change." AquAlliance v. U.S. Bureau of Reclamation, 287 F.Supp.3d 969, 1028 (E.D. Cal. 2018). The court in AquAlliance found that failure to consider climate change is a "failure to consider an important aspect of the problem" facing the proposed action. Id. at 1032, citing Wild Fish Conservancy v. Irving, 221 F.Supp.3d 1224, 1233 (E.D. Wa. 2016) (Biological Opinion was arbitrary and capricious for failing to adequately consider impacts of climate change). In your PA, please recognize that mature forests are the most climate-resilient ecosystems and provide important habitat refugia for organisms stressed by a changing climate. In this context, old-growth forests take on new significance, thus logging them has greater impact.

To take a hard look at climate change, the questions that the FS should be answering are: How many tons of carbon will the Grasshopper Timber Sale emit into the atmosphere during and after project implementation from logging operations and decay? How much carbon sequestration does the project area currently sequester? How much sequestration capacity will be lost, and for how long? How will the forests' resiliency to a changing climate be affected by the logging and road building? We request you analyze the impacts of the Grasshopper project in the context of a rapidly changing climate, and not rely on the results of past logging to inform your analysis as the baselines are rapidly changing.

SYSTEM ROADS

Given that the Mt. Hood NF is considering changes to a number of miles of roads, and given the large geographic scale of this project, this is precisely the type of project where the Forest Service must consider the recommendations of the Travel Analysis Report (TAR) for the Forest and identify the Minimum Road System (MRS). Furthermore, the White River Watershed Analysis, in its recommendations for restoration projects, acknowledges that the Mt. Hood Forest Plan requires MHNF to reduce open road densities to 2.5 miles per square mile in big game summer range, 2 miles per square mile in inventoried winter range, 1.5 miles per square mile in A1 (White River National Wild and Scenic River), B2 (Scenic Viewshed) and B10 (Deer and Elk Winter Range) land allocations. WRWA at 7-1.

FSR 4880-015 is a high clearance, native surface road with low use. The road is blocked by fallen trees less than halfway to Unit 56. Once the road reaches unit 56 it intersects the wet areas and completely disappears. We recommend closing this road and decommissioning it if possible, as was proposed in the original Increment 3 process. FSR 4880-014 is a similar situation, and we offer the same recommendation there. There is an old, unmapped roadbed directly adjacent to FSR 4880-014, on the same side of the road but headed south. This

TEMPORARY ROADS

In the PA, the potential locations of temporary roads associated with the project have not been disclosed but 17 miles are expected to be required.56 The locations of these roads are not included in the Proposed Action, and this project proposes final temporary road placement to be determined during project implementation. There is no information in the PA about how many miles of new versus existing roads are expected to be built, and how many miles of these existing roads are reused system roads or old temporary road alignments. To fully understand the impacts of this project on the environment, the agency and interested public should be able to come to a shared understanding of where and how the effects of roadbuilding will occur within the project area. This should happen before the decision is signed.

The PA discusses acres of suitable and dispersal habitat removed as a result of new temporary road building. These types of estimates indicate that the agency does have at least a rough idea of the lengths of new temporary roads being proposed. Similarly, the agency states that existing temporary road alignments may be used in Riparian Reserves. Again, it would be useful for the analysis to have more explicit information on the mile lengths and locations of these roads in order to better understand their impacts to the listed species and riparian values.

If the locations of temporary roads as they relate to the issues the public are concerned about are not disclosed, they will have no way of knowing to what extent their recommendations were or were not followed. For example, members of the public who advocate for the recommendation of minimizing temporary road stream crossings will read PDCs that contain language like "generally", "wherever feasible" and "wherever practical" as a response to their concerns but will not know how many stream crossings will be built, where they will be built, or if there are alternatives that exist elsewhere. In past projects it has been very useful to know the locations of proposed temporary roads and has prompted substantive feedback from the public.

56 26 days into the 30-day comment period for this project, the agency posted a map on the Grasshopper project webpage identifying "Areas where Temporary Roads are Likely or Unlikely", which included highlighted areas within approximately 2/3 of the treatment areas as a whole.

While the agency has made it seem like putting these roads on a map is premature, in our experience the proposed locations vary little overall from their ultimate locations within units. In Bark's recent surveys of the Lava EA project area for example, we found very few additional temporary roads which were built compared to ones mapped in the initial analysis. And most of these built temporary roads corresponded almost perfectly with the previously mapped locations.

Indeed, the agency seems to be opting to use the controversial "conditions-based management approach." This means that instead of providing a map with proposed locations of temporary roads, the "[e]xact location and temporary road length would be determined on the ground during project implementation and would be constructed while adhering to the PDC. It is anticipated that approximately eight miles of temporary roads would be constructed." Waucoma EA at 57.

We understand that the Forest Service is trending toward greater use of condition-based analysis and management, and we are very concerned that this is causing unnecessary conflict between the agency and the public. This approach has been the subject of recent lawsuits, including a recent case regarding the Tongass National Forest where the court just invalidated the Forest Service's EIS. See Southeast Alaska Conservation Council (SEACC) v. U.S. Forest Service, 2020 WL 1190453, Case No. 19-00006-SLG (D. Alaska Mar. 11, 2020).

While the Prince of Wales project in Alaska was on a larger scale than the Grasshopper project, the Forest Service's approach to conditions-based analysis and its plan to rely on post-decision implementation checklists to consider details and site-specific information is similar. When assessing the Prince of Wales EIS, the court found that the conditions-based framework undermines the purpose of NEPA because the Forest Service's approach improperly allows the agency to forgo public scrutiny of actual, site-specific actions, essentially creating a blank check for a range of future activities. SEACC at *12 ("NEPA favors coherent and comprehensive up-front environmental analysis to ensure . . . that the agency will not act on incomplete information.").

Recently, several environmental attorneys sent a request to the Council onEnvironmental Quality (CEQ) on behalf of several organizations and individuals that CEQ take action to preserve the integrity of NEPA and correct what they interpret to be unlawful federal agency efforts to avoid site-specific NEPA analysis and disclosure before they make decisions with site-specific consequences. NEPA commands federal agencies to look before they leap and tell the public what they see, but the Forest Service and other federal land managers are at the forefront of an unlawful trend of agencies attempting to sidestep NEPA by deploying "condition-based management." These emerging practices may be unlawful, and in many ways do undermine basic NEPA principles.

The Forest Service has repeatedly referred to Project Design Criteria as "sideboards". Project Design Criteria often include language such as "generally" and "where practical". These are not actual sideboards because there is nothing about PDCs that says that an impact will not at some point be decided to occur. Relying only on PDCs for temporary roads will mean the public will never know which impacts occur and where, or if there was a better alternative that could have avoided an impact.

Bark provides the following brief examples of recent Mt. Hood projects where knowing the locations and types of proposed temporary roads was important to project planning and/or the discussions resulting from what later occurred on the ground:

[middot] Polallie Cooper EA (HRRD) - Temporary roads were mapped to cross existing trails, and even use these trails as temporary roads. This led to a more robust discussion in the collaborative about impacts to recreation from this project.

[middot] Zigzag Integrated (ZZRD) - A temporary road is currently proposed to be built straight through a known stand of remnant trees and snags. This information was available in pre-scoping and was able to be discussed by the public in a public pre-scoping meeting in 2019.

[middot] Goat Mtn EA (CRRD) - Temporary roads were proposed to re-open and use previously rehabilitated illegal OHV trails (previously closed with Retained Receipts). This led to discussion and recommendations by the CSP about unauthorized access via reopening illegal OHV trails, and increased access to OHVs from timber sales in general. It also opened the discussion about the appropriateness to undo work recently completed with retained receipts.

[middot] Jazz EA (CRRD) - A temporary road was built over a stream to access a unit, and later pit rock was left there which had to be removed after the FS got involved and directed the contractor to go back and fix it. This led to conversation between Bark and the FS about clarity and intent of contract language, and how it translates over from the intent of language within EAs and PDCs.

[middot] Upper Clack EA (CRRD) - The CSP used temporary road maps to plan a 2017 Clackamas Stewardship Partners field trip with the FS. 100% of temporary roads that were planned were built. At least one temporary road is still not closed several years after the contract ended.

[middot] Grove EA (CRRD) - A temporary road was proposed to be built over stream, which according to the EA

was supposed to use drainage via a French drain, but did not include this during implementation. The stream has been left with a road built over it. This was discussed and visited by Bark and the FS, and highlighted in this 2015 article in Street Roots.

[middot] No Whisky EA (CRRD) - Temporary road was not closed before contractor equipment was moved offsite, then accessed by OHV users. This led to a discussion about the timing and effectiveness of temporary road closures, and the sale administration that is available onsite.

[middot] Hunter EA (CRRD) - Closed system roads that were repeatedly breached were proposed to be used as temporary roads, with "new" temporary roads being proposed to be built off of these breached roads. This led to public discussion about road closure timelines, effectiveness, and prevention of unauthorized access.

[middot] Quarry Timber Sale (2007 Thin EA, CRRD) - Some temporary roads were never closed after being used for the timber sale, resulting in increased access, dumping, invasive weed establishment, soil erosion. No one would have known about this issue if areas were not mapped with temporary roads.

[middot] Airstrip EA (BLM, North Fork Clackamas) - A temporary road was proposed to be built straight through a stand of the last remnant old growth trees in the entire Airstrip sale area. This led to the eventual dropping of this road from the proposal.

Instead of doubling down on this controversial and legally shaky approach to NEPA analysis, we again ask the Forest Service to do what it has done for decades and provide project specific information. The Forest Service states that it wants to "[e]nsure we are striving to make every possible effort to meet the expectations of the public regarding temporary road location transparency, by sharing the most accurate and complete information available." Waucoma FONSI at 14. Please do so. We know the Forest Service has a layer of potential road locations (subject to changes as needed, of course, as it always has been shared). We have recognized previously that exact temporary road locations are always tentative, and including that caveat is entirely appropriate when sharing these tentative road locations. In the future, please share this information with members of the public and provide an opportunity for public comment on the road placement before you issue your final decision.

Access questions

[middot] Unit 155: How will contractor access the unit? Are there temporary roads proposed? If so, where from? If from they are proposed from 4811- 022, then they will cross both riparian and mature native forest.

[middot] Unit 12 south of Threemile Creek: There is a cliff or steep talus slopes bordering most of the southern edge of the unit. How will operators access the section between Threemile creek and the southern border?

Temporary road building impacts

It is well-documented that road construction vastly elevates erosion for many years, particularly in the first two years when the construction causes a persistent increase in erosion relative to areas in a natural condition. 57,58,59. Specifically, major reconstruction of unused roads can increase erosion for several years and potentially reverse reductions in sediment yields that occurred with non-use. Id.

Available scientific information shows that reconstruction of closed and abandoned roads, could persistently elevate erosion and sediment delivery in several ways. Reconstructed roads cause elevated erosion and sediment for many years after decommissioning.60 The USFS Region 5 method for estimating cumulative watershed effects indicates that even 10 years after road decommissioning, a mile of decommissioned road is equivalent to 0.2 miles of new road in terms of adverse cumulative effects.61 After 50 years, a mile of obliterated road has still has impacts equivalent to 0.1 mile of new road. Thus, as it is apparent that decommissioning will not instantaneously eliminate the persistent impacts of roads on erosion and sediment delivery, building these roads will likely have adverse impacts to the aquatic and terrestrial environment.

57 Potyondy, J.P., Cole, G.F., Megahan, W.F., 1991. A procedure for estimating sediment yields from forested watersheds. Proceedings: Fifth Federal Interagency Sedimentation Conf., pp. 12-46 to 12-54, Federal Energy Regulatory Comm., Washington, D.C.

58 Rhodes, J.J., McCullough, D.A., and Espinosa Jr., F.A., 1994. A Coarse Screening Process for Evaluation of the Effects of Land Management Activities on Salmon Spawning and Rearing Habitat in ESA Consultations. CRITFC Tech. Rept. 94-4, Portland, Or.

59 Beschta, R.L., Rhodes, J.J., Kauffman, J.B., Gresswell, R.E, Minshall, G.W., Karr, J.R, Perry, D.A., Hauer, F.R., and Frissell, C.A., 2004. Postfire Management on Forested Public Lands of the Western USA. Cons. Bio., 18: 957- 967.

60 Id.

61 Menning, K. M., D. C. Erman, K. N. Johnson, and J. Sessions, 1996. Aquatic and riparian systems, cumulative watershed effects, and limitations to watershed disturbance. Sierra Nevada Ecosystem Project: Final Report to Congress, Addendum, pp. 33-52. Wildland Resources Center Report No. 39, Centers for Water and Wildland Resources, University of California, Davis.

Road construction is by far the greatest contributor of sediment to aquatic habitats of any management activity.62,63 Even temporary road construction can cause resource damage including erosion and sedimentation, exotic species spread and disruption of wildlife.64 Unpaved roads and stream crossings are the major source of erosion from forest lands contributing up to 90% of the total sediment production from forestry operations.

Bark requests that the FS should strive for no new "temporary" roadbuilding, since it is not debatable that temporary roads have a permanent impact on the forest around them and create a blueprint for future entries resulting in further impacts.

CONCLUSION

Bark has some key suggestions for moving forward with the Grasshopper project, and request that the agency take these suggestions as separate alternatives or combinations of alternatives which the agency can then assess for their economic feasibility and value.

1. Do not approve activities in LSRs that downgrade existing suitable habitat for NSO;

2. With unit-specific rationale, demonstrate how proposed Riparian Reserve treatments are needed to achieve ACSOs;

3. Buffer unmapped riparian area locations provided by Bark;

4. Pursue Alternative 1 (no shelterwood alternative);

5. Significantly reduce acres of degradation to suitable spotted owl habitat and mature/old growth forest;

6. Complete a comprehensive climate change and forest carbon analysis;

7. Provide locations of proposed temporary roads on a map;

In the comments above, Bark has provided ample suggestions to improve this project - based on our field surveys of the project area and relevant scientific literature pertaining to thinning, roads, and forest health. We anticipate a thorough review of these comments and look forward to the necessary changes made to both the forthcoming decision and the project itself.

62 Meehan, W.R. (ed.). 1991. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. Am. Fish. Soc. Special Publication 19.

63 Robichaud, P.R., L.H. MacDonald and R.B. Foltz. 2010. Fuel management and erosion. Ch. 5 in: W.J. Elliot, I.S. Miller and L. Audin (eds.). Cumulative Watershed Effects of Fuel Management in the Western United States. USDA For. Serv. Rocky Mtn. Res. Sta. Gen. Tech. Rep. RMRS-GTR-231. Fort Collins, CO.

64 Trombulak, S.C. and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18-30.

Thank you,

Michael KrochtaForest Watch Director, BarkCara ChristoffersonForest Policy Advocacy Coordinator, Bark