September 6, 2019

Ruth D'Amico
Attn: Danika Carlson
Salmon/Scott Ranger District
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Sent via email and to KNF project page website

RE: Bear Country Project Scoping

Dear Danika and the Bear Country Project Planning Team,

Please accept these Bear Country Project Scoping comments on behalf of the Klamath Forest Alliance, EPIC-Environmental Protection Information Center and the Klamath-Siskiyou Wildlands Center. Our organizations have participated in nearly every timber sale on the Klamath National Forest Salmon/Scott River Ranger District for thirty years, providing substantive place based comments with the best available science. Collectively we represent over 25,000 people who deeply value the outstandingly remarkable Salmon River watersheds. Our organizations, staff and supporters, many of whom live in the Salmon River community, have a long-term interest in the protection of; mature forests, threatened plants and wildlife, biodiversity and water quality throughout Northern California and the Klamath Siskiyou region.

Located at the heart of the Klamath Siskiyou Bioregion, lies the Salmon River Watershed. The Wild and Scenic Salmon River combines lush coastal scenery with emerald green waters, steep granite gorges, numerous

waterfalls, and highly erodible soils. The main stem of the Salmon River watershed is comprised of two forks, the North Fork and the South Fork, and retains the only viable population of Spring Chinook salmon, as well as, retaining the last completely wild salmon and steelhead runs in the Klamath watershed. The Salmon River offers some of the best habitat on the west coast for salmon, steelhead, green sturgeon, rainbow trout, Pacific lamprey, and other fish. With the combination of unique geology, climate and biology the Salmon River watershed supports populations of deer, elk, black bear, and mountain lion, and is home to many rare species, including Pacific fishers and pine martens.

The Bear Country project encompasses 14,110 acres between the Wild and Scenic, yet impaired 303(d) listed Tier 1 Key watersheds, North and South Forks of the Salmon River, including Matthews, Olsen, Shiltos, Big, Negro, Indian, Crawford, Cody, McNeal, French, and Black Bear Creek 7th field watersheds and the Lower Little North Fork, Eddy Gulch, Lower Knownothing, St. Claire, Cecil, and Horn Creeks. The project is near the communities of Forks of Salmon, Sawyers Bar, and Cecilville, California, Siskiyou County. The project includes multiple land allocations including Inventoried Roadless Areas, Late Successional and Riparian Reserves, Wild and Scenic River corridors, General Forest, special habitat and partial retention areas with visual quality objectives.

The purpose of the project is threefold; enhance opportunities for community protection and firefighter and public safety, to protect, promote, and enhance a diversity of seral stages and habitat types and to complement and enhance previously planned treatments within adjacent project areas to provide for continuity and effectiveness of landscape scale strategic fuel breaks. The project proposes to utilize an undisclosed amount of system and non-system roads, construct new “temporary” roads, utilize up to 210 existing landings and construct approximately 20 new landings. The following is proposed:

3,770 acres - Complement and Enhance Previously Planned Treatments within Adjacent Project Areas to Provide for Continuity and Effectiveness of Landscape Scale Strategic Fuel Breaks, includes commercial logging

2,924 acres natural stands, 5,614 acres plantation-Promote Forest Health and Resilience, includes commercial logging

2,365 acres natural stands, 610 acres plantation-Maintain and Improve the Condition of Existing Late-Successional Habitat, includes commercial logging

1,915 acres-Ensure Safe Ingress and Egress Travel Routes, includes

commercial logging

1,768 acres prescribed fire-Restore Beneficial Fire Effects to Fire Adapted Ecosystems

984 acres - Establish strategic control features for long-term fire management, includes commercial logging

308 acres- Reduce Wildfire Threats to Communities

While we support the purpose of the project we have serious concerns with; the proposed logging of natural mature stands in the Eddy Gulch Late Successional Reserve, the Black Inventoried Roadless Area, Northern spotted owl (NSO) Activity Centers and nesting/roosting habitat, helicopter logging in the steep river canyons of the Wild and Scenic North and South Forks of the Salmon River, possible targeting large trees for "forest health", the potential loss of canopy and amount of treatment within the project area, which is currently serving as a stronghold for the Northern spotted owl (*Strix occidentalis caurina*). The expanse of the proposed project treatments and the amount of extraordinary circumstances necessitate the need for a full environmental impact statement. We look forward to working with district staff and interested parties on developing an alternative that would best meet the purpose and need for the project, one that would protect late seral forests, water quality, wildlife and the adjacent rural river communities.

Black Inventoried Roadless Area (IRA)

The Black IRA encompasses about 6,565 acres of the Bear Country Project area. Currently there are 250 acres of logging within natural stands that are proposed in the IRA, with a majority proposed for helicopter logging. While released roadless areas need not be managed to retain wilderness characteristics they are none-the-less increasingly important large tracts of intact ecological systems.

The scoping document states, "The areas identified for thinning with product removal are tied in with key ridge features within the IRA and would make these features more effective in managing fire across the project area. Treatment proposed within the IRA is strategically placed to provide protection to adjacent northern spotted owl habitat that has been determined to be high value …". The units depicted on the scoping map do not appear to be adjacent to high value NSO areas and the boundaries seem to line up with what is currently proving NSO suitable habitat, not necessarily the ridgeline features. While we support treating flammable plantations there is a lack of specificity for unit delineation. Please describe the current condition of the

specific natural stands proposed for logging in the forthcoming NEPA document and consider where these stands fall in priority.

Wild & Scenic Steep River Canyons

Much of the proposed helicopter logging in the project area lies within the steep, rugged and often unstable areas of the Wild and Scenic corridors of the North and South Forks of the Salmon River. Most of the unit boundaries uncannily line up with nesting/roosting habitat for the NSO. Further a majority of these stands are on northern aspects, which generally have dense forest canopies, critical to the survival of old-growth dependant species. North facing slopes offer moist and cool microclimates that are less prone to high severity fire and are increasingly important for plant and wildlife climate adaption.

Helicopter logging leaves a large amount of logging slash on steep slopes, which would significantly increase ground fuels and thus fire behavior. Many of these units are also on unstable slopes or Riparian Reserves. Logging in the Wild and Scenic River corridors may harm the values for which they were designated. We urge planners to drop these units for the reasons above and because they are of low to no priority for treatment and would diminish and degrade habitat.

Late Successional Reserves

Late Successional Reserves (LSRs) were designated, "To protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional old-growth related species including the northern spotted owl. These reserves are designed to maintain a functional, interacting late-successional and old-growth forest ecosystem." If the objective is to protect, enhance, and develop habitat in the quantity and distribution necessary to provide for the long-term recovery of northern spotted owl and other late-successional dependent species, than retaining the largest trees and dense canopy is in order. Removing large trees with late successional characteristics and opening forest canopies is contrary to purpose of the project, the Northwest Forest Plan and the Klamath Land Resource Management Plan.

We are extremely concerned at the prospect of targeting large fire resilient trees within LSRs for "forest health". The Jess and Petersburg Pines projects had dozens of late seral trees targeted for removal for this reason. See Jess and Petersburg Pines Late Seral Tree Mark Photographs attached to these comments. This same type of prescription is contrary to the purpose and need of this project. We urge project planners to consider a diameter limit as was

done in the Eddy Gulch LSR, the Johnny O'Neil LSR and the Thom Seider LSR projects on the Klamath National Forest. For further discussion on the importance of large trees please see the Active Management and increased Fire Risk, Climate and Biodiversity Crisis and Northern Spotted Owl portion of these comments. Again, removing large fire resilient trees with late successional characteristics and forest canopy reduction is contrary to the Northwest Forest Plan and the Klamath Land Resource Management Plan. Focus must be prioritized on younger stands and flammable plantations within the Eddy LSR, here the district is targeting 2,365 acres of logging in natural stands and 610 acres of plantations.

To state that the entire late-successional habitat within the project area is experiencing increased fuel loading and fuel continuity conditions is a very broad, generalized and arguable statement. To assume that the large patches of high severity fire in recent fire footprints is solely related to the fact that they were contiguous stands of forest habitat would make much of the Klamath Siskiyou bioregion and beyond threatened by wildfire. Weather and topography are the primary drivers of fire behavior. Further, ground fuels are the greatest priority for treatment, which have a greater influence on fire behavior than does canopy density. While the risk of wildfire exists nearly everywhere in these mountains due to extreme weather events, our communities, wildlife and watersheds would best be served by and benefit from *prioritized* treatment areas within; the WUI (17% of the project area), flammable plantations, strategic ridgelines (that can be maintained in the long-term) and an increase of prescribed burning. See Active Management and Increased Fire Risk section of these comments.

The scoping notice states, "Stands that currently contain the structural components to be considered late-successional are in some cases experiencing a level of mortality that may prohibit the function of this habitat in the longer term. Treatment prescriptions that are designed to reduce inter-tree competition while preserving key structural components can result in a stand that functions as late-successional habitat for a longer period of time." Please describe exactly which stands are referenced here. Snag retention and recruitment are part of the natural process that is to be allowed, encouraged and promoted in LSRs.

The scoping notice states that, "Active management to restore ecosystem function of late-successional habitat through combinations of hand and mechanical treatments along with prescribed fire are recognized as the most effective way to promote diversity of forest types and the spatial heterogeneity necessary to reduce tendency toward large-scale fire regime and forest structure shifts and further habitat loss (Lesmeister)." However in a closer reading of Lesmeister 2019 it states that active management degrades habitat suitability and may not decrease fire severity. An extremely

important point here is that prescribed fire must be used in conjunction with *fuel-reduction* treatments (not "forest health" treatments) for effectiveness and should be maintained with fire to be effective over the long-term, however that is not what is being proposed. We know from experience that planned prescribed fires rarely, if ever, take place. Please see the Active Management and Increased Fire Risk section of these comments for more detail and the following excerpts from Lesmeister (emphasis added):

> **Our results indicate that northern spotted owl habitat can buffer the negative effects of climate change by enhancing biodiversity and resistance to high-severity fires**, which are predicted to increase in frequency and extent with climate change. Within this region, **protecting large blocks of old forests could be an integral component of management plans that successfully maintain variability of forests in this mixed-ownership and mixed severity fire regime landscape and enhance conservation of many species.**
>
> **Active management actions that include mechanical treatments degrade suitability of forests for nesting and roosting by northern spotted owls** (Lesmeister et al. 2018) **and may not always decrease risk of high-severity fire.** Further, considering trends and forecasts for earlier spring snowmelt and longer fire seasons, climate change may exacerbate the effects of wildfire (Dale et al. 2001,Westerling et al. 2006), and thus the framed conundrum between northern spotted owl habitat and fire management in mixed-severity regimes. **Our results indicate that <u>older forest in late-successional reserves</u>** (i.e., northern spotted owl nesting/roosting habitat) **<u>with no active management can serve as a buffer to the effects of climate change and associated increase in wildfire occurrence</u>. These multi-storied old forests in these environments enhance biodiversity and have the highest probability to persist through fire even in weather conditions associated with high fire activity.**
>
> Fuel-reduction treatments such as mechanical thinning can effectively reduce fire severity in the short term, but these treatments, by themselves, may not effectively mitigate long-term dynamics of fire behavior under severe weather conditions and may not restore the natural complexity of historical stand and landscape structure (Schoennagel et al. 2004). On the other hand, prescribed fire that mimics severity and return intervals of natural fire regimes in forests that historically experienced fire can result in landscapes that are both self-regulating and resilient to fire (Parks et al. 2015). Prescribed fire is generally considered to be the most effective way to reduce the likelihood of high-severity fire in combination with mechanical treatments (Stephens et al. 2009).
>
> Within the Klamath-Siskiyou ecoregion, flexible and multi-scale land management approaches that promote diversity of forest types will likely enhance conservation of a range of species requiring different forest

> conditions for long-term persistence. **An integral component of these approaches could include resistance strategies (i.e., no active management) to protect high-value older forest (Millar et al. 2007) and prescribed fire to promote and maintain a mix of forest conditions** in this landscape characterized by mixed-ownership and mixed-severity fire regime. Ultimately, spatial heterogeneity that includes the buffering effects of northern spotted owl nesting/roosting habitat may serve as a stabilizing mechanism to climate change and reduce tendency toward large-scale catastrophic regime shifts.

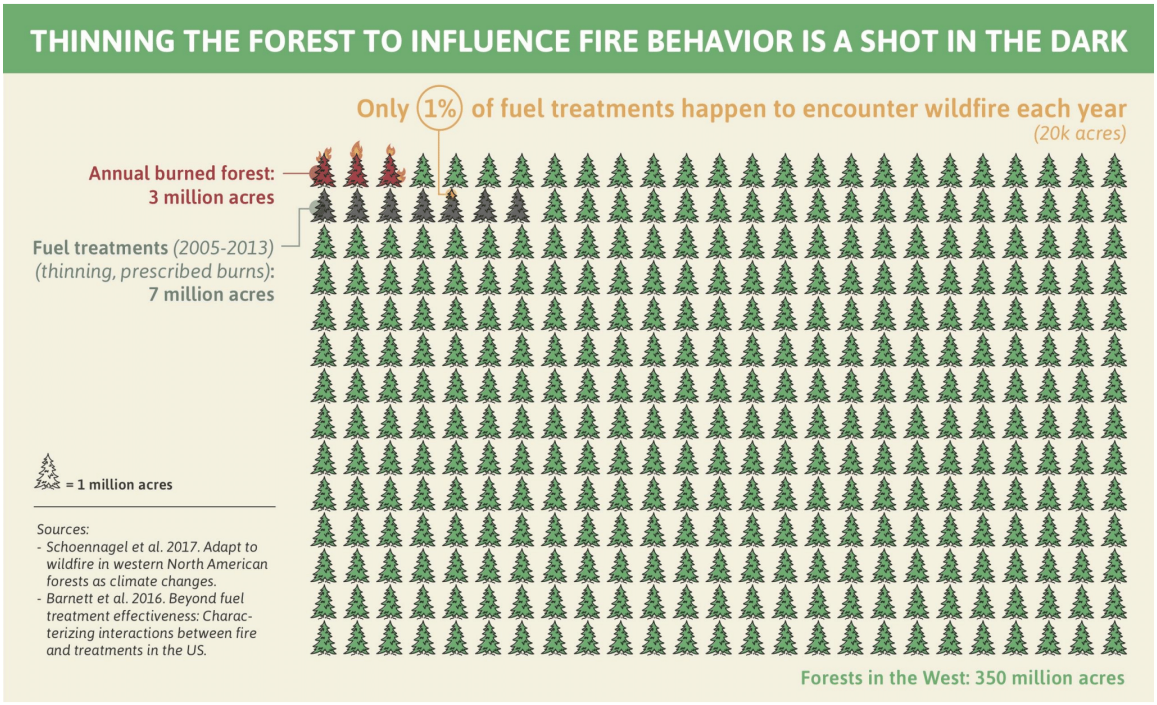
We urge project planners to forgo logging in nesting/roosting habitat and mature natural stands throughout the project area and within the Eddy Gulch LSR, as directed and as guided by the best available science.

Active Management and Increased Fire Risk

In his 2017 testimony before the U.S. House of Representatives Natural Resources Committee, Subcommittee on Oversight and Investigations (attached), Chief Scientist of the Geos Institute Dominick Dellasala discussed "Exploring Solutions to Reduce Risks of Catastrophic Wildfire and Improve Resilience of National Forests":

> Thinning small diameter trees from below while maintaining appropriate canopy cover can in certain circumstances change fire behavior. However, there are some significant drawbacks to relying on landscape-scale thinning to address increased fire activity in a warming period. These are: (1) there is a very low probability (2-8%) that a thinned site will encounter a fire during the narrow period of 10-15 years of reduced "fuels;" (2) excessive thinning can increase wind speeds in a stand that consequently increases rates of fire spread; (3) opening up a stand to greater light penetration results in rapid understory growth that in turn contributes to future fire spread; (4) thinning needs to be followed by prescribed fire; and (5) thinning can damage wildlife habitat because it often removes medium and large diameter trees. When extreme fire-weather (high temperatures, low fuel moisture, low humidity, high winds) encounters a thinned stand there can be little to no reduced fire intensity (Schoennagel et al. 2017). In a warming climate, thinning will become increasingly less effective.
>
> The study that I cited by Bradley et al. (2016, I am a co-author) was the most comprehensive analysis ever done to address the management vs. protection question around fires and it went through rigorous peer review. To reiterate, we examined 1500 fires using 4 decades of government fire records and conducted a massive computer (GIS) analysis of 23 million acres of burned areas to test the assumption that fires burn more intense in "unmanaged" areas (e.g., wilderness, national parks, roadless areas) compared to "actively managed" areas. What we found was the opposite – fires burned unnaturally intense in areas of intense management.

Thinning of small trees in certain forest types, maintaining canopy closure and in combination with prescribed fire can reduce fire intensity but treatment efficacy is limited in extreme fire weather, and by the small chance that a thinned site will encounter a fire during a very narrow window when fuels are lowest.



In an open letter 2018 letter to congressional leaders, concerning wildfires in the west (attached) over 200 scientists concluded that:

> *Thinning Is Ineffective in Extreme Fire Weather* – Thinning is most often proposed to reduce fire risk and lower fire intensity. When fire weather is not extreme, thinning-from-below of small diameter trees followed by prescribed fire, and in some cases prescribed fire alone, can reduce fire severity in certain forest types for a limited period of time. However, as the climate changes, most of our fires will occur during extreme fire-weather (high winds and temperatures, low humidity, low vegetation moisture). These fires, like the ones burning in the West this summer, will affect large landscapes, regardless of thinning, and, in some cases, burn hundreds or thousands of acres in just a few days. Thinning large trees, including overstory trees in a stand, can increase the rate of fire spread by opening up the forest to increased wind velocity, damage soils, introduce invasive species that increase flammable understory vegetation, and impact wildlife habitat. Thinning also requires an extensive and expensive roads network that degrades water quality by altering hydrological functions, including chronic sediment loads.

A 2014 report by Jay Lininger for the University of Montana (attached) on Fire History And Need For Fuel Management In Mixed Douglas-Fir Forests Of The Klamath-Siskiyou Region, Northwest California And Southwest Oregon, USA states:

> Unmanaged forests tend toward wildfire resilience-
> A key feature of most unlogged mixed-conifer forests in the K-S region is the prevalence of very large (>20 inches in diameter), older trees that have survived numerous fires (Arno 2000, Frost and Sweeny 2000, Willis and Stuart 1994). The structural diversity of unlogged mature forests in the form of high closed canopies and large down trees tend to inhibit hot fires (Agee and others 2000, DellaSala and Frost 2001). Shade provided by a closed forest canopy shields the ground surface from direct solar radiation, reduces ground temperature and increases the relative moisture of ground fuel (Countryman 1955). Large down trees slow the horizontal movement of wind and thus, fire spread, and they store huge amounts of water that can take heat energy out of fire (Amaranthus and others 1989). As noted above, unmanaged older forests are not immune from high severity, stand-replacing fires. Indeed, some measure of high severity fire disturbance is an important influence on the biological diversity of K-S forests.

The Northern Spotted Owl Recovery Plan also illuminates and reiterates these facts at pages III 36-37 (references omitted, emphasis added):

> Vegetation management for the purpose of altering fuels to modify fire behavior at specific locations can be effective. This assumes, however, that surface fuels generated from the stand treatment were reduced or removed. Otherwise, **severities can actually be higher with treatment**. In addition, **retaining structures that are fire resistant (e.g., retaining the largest trees) will improve effectiveness.**
>
> Fire severity, however, results from a complex interaction of fuels (including composition and moisture), topography (including slope percent, elevation, and aspect), and fire weather (including wind and temperature). Variations in each of these components and interactions among them will influence fire behavior and its resultant burn severity. Understanding how these components interact within local fire regimes is important to implementing effective restoration treatments. For example, thinning and underburning have resulted in lower fire severities than those observed in untreated stands across a variety of geographical areas and vegetation types. **However, the mixed evergreen forests of the Klamath Province may exhibit stand development pathways that result in different fire susceptibilities. For example, lower fire severities were observed in stands with longer fire-free periods as well as in untreated stands with closed canopies or with larger, more mature forest conditions, when compared to treated stands**…Finally, extreme fire weather events can overwhelm a stand's resistance to fire, resulting in high severity burns regardless of the topography, fuel condition or prior management. Thus,

> treatments to reduce fire severity need to be strategically located and designed with specific objectives and a clear understanding of how the local landscape responds to the many variables that influence fire severity.
>
> Fuel treatments have other limitations that need to be considered in their application. **Treatments require maintenance if they are to remain effective.** In addition, **treatments that are not maintained may actually result in fire behavior that is more deleterious than expected without treatment.** Finally, given the stochastic nature of fires, without extremely large-scale treatments that may be neither economically nor socially feasible, there is a low probability of fires intercepting fuel breaks. However, modeling indicates that strategic placement can improve treatment leverage (i.e., increase the ratio of acres experiencing reduced fire severity to acres treated). Fuel treatments need to be strategically located with clear objectives. They should not be used for the purpose of "fireproofing" the forest. Rather, they should be designed to increase the acceptability of wildfire through reducing fire behavior and severity in local areas, rather than simply to reduce fire occurrence, size, or amount of burned area per se.

As science and USFS fire modeling shows, older mature forests with dense forest canopies are not only serving as vital habitat for hundreds of rare and lesser known species and threatened species but these forest stands are also much less prone to high severity fire affects, are more capable of surviving fire and serve as a buffer to the negative effects of climate change by enhancing biodiversity and resistance to high-severity fires. Therefore we urge planners to prioritize treatments where it is most needed, within the WUI, plantations and the most strategic highest priority ridges and roads and forgo logging within mature older stands.

High Severity Fire

On project field trips, in the scoping notice, throughout our communities and beyond, high severity fire has been vilified and viewed in the most negative light. We point out that high severity fire is a healthy part of these forest landscapes and recent scientific evidence shows that patch sizes are not necessarily increasing in the west. Please see the most recent peer reviewed science, excerpts below, just published today, that expands on this issue and reiterates the biological importance of large patches of complex early seral habitat[1].

> Abstract: High-severity fire creates patches of complex early seral forest (CESF) in mixed-severity fire complexes of the western USA. Some managers and researchers have expressed concerns that large high-severity patches are

[1] DellaSala, Dominick A. and Hanson, Chad T. Are Wildland Fires Increasing Large Patches of Complex Early Seral Forest Habitat? Diversity 2019, 11, 157; doi:10.3390/d11090157

increasing and could adversely impact old forest extent or lead to type conversions. We used GIS databases for vegetation and fire severity to investigate trends in large (> 400 ha) CESF patches in frequent-fire forests of the western USA, analyzing four equal time periods from 1984 to 2015. We detected a significant increase in the total area of large patches relative to the first time period only (1984–1991), but no significant upward trend since the early 1990s. There was no significant trend in the size of large CESF patches between 1984 and 2015. Fire rotation intervals for large CESF patches ranged from ~12 centuries to over 4000 years, depending on the region. Large CESF patches were highly heterogeneous, internally creating ample opportunities for fire-mediated biodiversity. Interior patch areas far removed from the nearest low/ moderate-severity edges comprised a minor portion of high-severity patches but may be ecologically important in creating pockets of open forest. There was ample historical evidence of large CESF patches but no evidence of increases that might indicate a current risk of ecosystem-type shifts.

Conclusions: Our findings have specific management and policy relevance. In particular, we counter claims made by some researchers, and often used by decision-makers, to justify large-scale forest "thinning" and post-fire logging projects—specifically, the assumption that such logging projects are needed to prevent type conversion in response to a perceived increase in CESF patch sizes and conifer regeneration failures in "megafires"

Lack of a biodiversity perspective has created underlying tensions among researchers over the role of high-severity fires in maintaining CESF, and we hope that our findings will now inform this ongoing discussion. Additionally, contrary to assumptions made by land managers in the course of proposing extensive post-fire logging and creation of artificial tree plantations following large fires, we found ample evidence of patch heterogeneity–and presumably natural conifer establishment–in large severely burned patches, in addition to the occurrence of large high-severity patches in the historical record. This finding has key relevance to current forest management policy, since the assertion that current large CESF patches are unprecedented is not substantiated by our data but is being used to justify legislative and regulatory proposals to severely weaken environmental laws on U.S. federal lands.

Notably, numerous studies have found high levels of native plant and animal richness and abundance in large fires of mixed severity that produce CESF patches in severely burned areas. Such fires facilitate high levels of beta diversity at landscape scales, providing a broad suite of habitat for both fire-seeking and fire-avoiding species, including many early seral birds that have been declining due to a lack of "diverse early seral habitat". Thus, far from being indicative of "catastrophic" (or "megafire") ecosystem shifts, large CESF patches have consistently been found to support a unique ecological community that is otherwise most often post-fire logged because of perceptions that this forest type has limited wildlife value. Instead, we found that large CESF patches are extremely infrequent at landscape scales in

> ponderosa/ Jeffrey-pine and mixed-conifer forests of the western U.S., and whether high-severity fire that produces this important seral stage is increasing in western USA forests remains debatable.
>
> Regarding the human implications of our findings, we recommend that land managers focus limited resources on community fire safety and defensible space of homes as a means of getting to coexistence with wildfire and for managing wildfire under safe conditions for a myriad of ecosystem benefits.

We urge forest planners to try and honestly consider a biodiversity perspective, one that credits high severity fire for its beta diversity and unique ecological communities. Attempting to stop high severity across entire landscapes is not in the best interest of these watersheds, rather the Bear Country project should focus limited resources on protecting communities and implementing prioritized fire strategies in areas that provide the most benefit and can be maintained over the long-term.

Connectivity

We are very concerned with wildlife connectivity within the project area. Two Forest Sensitive species American Marten and Pacific Fisher and one Candidate Species that is state threatened, the California Wolverine, could be using the project area along with the Threatened NSO and all those species are reliant on forest connectivity. The Bear Country project area and the Eddy LSR serve as an important corridor between the Trinity Alps Wilderness, the Russian Wilderness and the Marble Mountain Wilderness Areas. The forthcoming NEPA document should address the significance of connectivity in this area and analyze and disclose any potential effects to wildlife from logging, road building and proposed treatments.

Please include the current functioning of any LSR's and NSO Critical Habitat in/near/adjacent the project area. Due to continued degradation to habitat and range-wide bared owl encroachment, connectivity for the spotted owl is a particular concern. Given the fact that population numbers and surveys for the Pacific fisher have not been performed, cumulative effects on fisher populations are also of concern.

Endangered, Threatened and Sensitive Species

"Project areas should be surveyed for the presence of Sensitive species before project implementation. If surveys cannot be conducted, project areas should be assessed for the presence and condition of Sensitive species habitat." LRMP at 4-23

"Management activities shall be compatible with the recovery of Endangered,

Threatened (E&T) plants and animals." LRMP at 4-36

"Collect information on Sensitive Species to assess population distribution and habitat associations…Inventory a portion of the suitable habitat each year. Assess conditions at occupied sites. Based on the assessment, use appropriate management techniques to maintain or enhance habitat suitability." LRMP at 4-38

The KNF must "seek to conserve E&T species and shall utilize its authorities in furtherance of the Endangered Species Act." FSM 2670.11

Please detail impacts from the proposed treatments on all Endangered, Threatened and Sensitive plant and animal species.

Northern Spotted Owl

Logging with subsequent habitat degradation and removal, not fire, is a real and controllable threat to NSO. Logging, especially within areas that are serving as nesting/roosting habitat for the owl (Strix), does not stop or slow large forest fires burning under extreme fire weather but may, in fact, intensify fires. There are at least two consistently reproductive NSO pairs in the project area, another occupied nest site and multiple Activity Centers. We appreciate that the scoping notice aims to protect, maintain and improve late seral forest habitat, however we are extremely concerned that the project would harm the Strix and its habitat. Northern Spotted owls do not have time for short-term impacts or habitat degradation.

According to Davis et al., 2015[2], between 1993-2012 over 5 million acres of NSO habitat has been lost— nearly 4 million acres lost due to logging and over 1 million acres lost to wildfire. Throughout the range of the NSO annual rates of decline are accelerating. Between 2011 and 2015 annual rates of decline have increased from 2.8% to 3.8%. Realized NSO population change is also significant, with an increase from 32% to 55% in California; an increase from 31% to 64% in Oregon, and an increase from 55% to 77% in Washington (Duggar et al. 2016)[3]. Scientists have found that the majority of suitable habitat in the northern third of the Northern spotted owl's historic range in Washington and northern Oregon, and in the Oregon Coast Range, is *currently unoccupied* (Dugger et al. 2016). New research predicts that the

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2 Davis, Raymond J.; Hollen, Bruce; Hobson, Jeremy; Gower, Julia E.; Keenum, David. 2016. Northwest Forest Plan—the first 20 years (1994–2013): status and trends of northern spotted owl habitats. Gen. Tech. Rep. PNW-GTR-929. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 54 p.

3 Duggar, K.M., et al. 2016. The Effects of Habitat, Climate, and Barred Owls on Long-Term Demography of Northern Spotted Owls. Condor 118:57-116.

NSO could go extinct in portions of its range within a few short decades (Yackulic et al. 2019)[4].

As early as 2013, researchers demonstrated that NSO populations in the Klamath-Siskiyou Mountains were playing a vital role in maintaining population viability across the entire range of the species. In fact, the Klamath-Siskiyou Mountains in both Oregon and California, and the adjacent North Coast of California, were documented to maintain the strongest "source populations" of NSO remaining on the West Coast (Schumaker et al 2014)[5]. However, in the California Coast Range, *NSO no longer occupy* the Redwood National and Del Norte State Parks as the last two known nesting pairs were recorded in 2008. The source populations of the Klamath Provinces represent the "principal zones of productivity" for the NSO and are vital to the species' recovery by encouraging dispersal into otherwise unoccupied habitat, augmenting at-risk populations (Schumaker et. al. 2014) and providing for the entire range of the owl.

Although actual population data is not available for the Klamath Provinces, modeled population simulations indicate that up to 2,680 NSO may be present. In 2016, the United States Fish and Wildlife Service (USFWS) estimated that 1,642 NSO currently reside in the California portion of the Klamath Province (USFWS, 2016)[6]. Unfortunately, despite historic resilience, recent demographic research is now showing significant declines throughout the Klamath-Siskiyou Mountains.

Recent scientific findings also identify concerns for the recruitment, genetic diversity, vigor, occupancy, reproduction rates and the long-term population stability of NSO throughout its range, including the Klamath-Siskiyou Mountains. Despite its current status as a Threatened species, habitat loss continues and annual rates of decline are increasing and even accelerating. With the stakes higher than ever before and the threat of extinction literally closing in on whole populations of the Northern spotted owl, the Klamath National Forest and other federal land managers continue to downgrade, degrade and remove suitable NSO habitat. The USFWS has allowed literally hundreds of take permits in our region, allowing land managers to implement timber sales and other public land projects that are expected to harass, harm,

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[4] Yackulic, C.B., et al. 2019. The Past and Future Role of Competition and Habitat in the Range-Wide Occupancy Dynamics of Northern Spotted Owls.

[5] Schumaker, N.H., A. Brookes., J.R. Dunk., B. Woodbridge, J.A. Heinreichs, J.J. Lawler, C.Carroll, D. LaPlante. 2014. Mapping Sources, Sinks, and Connectivity Using a Simulation Model of Northern Spotted Owls. Landscape Ecology. 29: 579-592.

[6] USFWS, 2016. Biological Opinion February 19, 2016. Westside Fire Recovery Project, Klamath National Forest, California.

displace or kill the owls by severely degrading habitat conditions. Although the NSO Recovery Plan allows active management, this provision is highly controversial and the actual outcome of commercial logging operations often downgrades or removes NSO habitat, while increasing both fuel loading and future fire severity (Lesmeister et al. 2019)[7].

Modeling simulations included in the 2012 Final Critical Habitat Analysis estimate that 2,680 Northern spotted owls may be present in the Klamath-Siskiyou region, assuming each female is part of a pair. Recently, KFA conducted a detailed analysis of all timber sales and land management projects approved on public land in the Klamath-Siskiyou region from 2013 to 2018, including the Klamath, Six Rivers, Mendocino, Shasta-Trinity and Rogue River-Siskiyou National Forests, as well as the Medford District BLM. From 2013 to 2018, federal land managers in the Klamath-Siskiyou Mountains received 211 Northern spotted owl take permits, potentially ***removing 8% of this source population in just five years***. This does not include the most current projects or the loss of habitat on private lands. Our findings demonstrate that the level of take and habitat loss and degradation associated with federal land projects in the Klamath-Siskiyou region is significant and has not been adequately analyzed on the regional or provincial scale.

Despite recommendations to maintain high quality habitat in the 2012 Northern Spotted Owl Recovery Plan, in recent demographic meta-analysis (Dugger et al 2016), and in numerous recent research papers (Yackulic 2019., Forsman et al. 2011[8]., Franklin et al. 2000[9]., Duggar et al. 2005[10], 2011[11], 2016., Olson et al. 2004[12], Lesmeister 2019, Weisel 2015), widespread use of take permits and habitat loss is still occurring in some of the owl's most

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[7] Lesmeister, D. B., S. G. Sovern, R. J. Davis, D. M. Bell, M. J. Gregory, and J. C. Vogeler. 2019. Mixed-severity wildfire and habitat of an old-forest obligate. Ecosphere 10(4):e02696. 10.1002/ecs2.2696

[8] Forsman, E.D., R.G. Anthony, K.M. Duggar., E.M. Glenn., A.B. Franklin., G.C.White., C.J. Schwartz., K.P. Burnham., et al. 2011. Population Demography of Northern Spotted Owls. Studies in Avian Biology 40.

[9] Franklin, A.B., D.R. Anderson, R.J. Gutierrez and K.P. Burnham. 2000. Climate, Habitat Quality and Fitness in Northern Spotted Owl Populations in Northwestern California. Ecological Monographs 70:539-590.

[10] Duggar, K.M., F. Wagner., R.G. Anthony., and G.S. Olson. 2005. The Relationship Between Habitat Characteristics and Demo-graphic Performance of Northern Spotted Owls in Southern Oregon. The Condor 107: 863-878.

[11] Duggar, K.M., R.G. Anthony., L.S. Andrews. 2011. Transient Dynamics of Invasive Competition: Barred Owls, Spotted Owls and the Demons of Competition Present. Ecological Applications 21: 2459-2468.

[12] Olson, G.S., E.M. Glenn., R.G. Anthony, E.D. Forsman, J.A. Reid., P.J. Loschl., and W.J. Ripple. 2004. Modeling Demographic Performance of Northern Spotted Owls Relative to Forest Habitat in Oregon. Journal of Wildlife Management 68: 1039-1053.

important habitats. In fact, research conducted in 2014 demonstrates that active management and commercial logging intended to reduce fire risks within NSO habitat is misguided and will create additional impacts by reducing at least 3.4 to 6.0 times more dense, late successional forest than it may have prevented from burning at high severity fire during a 40-year period (Odion et al. 2014)[13].

This up-to-date region-wide information on habitat loss and take for NSO has not been fully considered by the USFWS or the USFS. Project specific analysis by federal land managers considers the cumulative impacts from barely adjacent projects. It does not consider the cumulative effects on a broader, more regional scale. Considering the level of habitat loss and take currently occurring on federal lands, the cumulative effects have become quite severe, yet have not been adequately analyzed in project level analysis or ESA consultation. The NSO Recovery Plan states:

> **Conserving Occupied and High Value Spotted Owl Habitat**
> Conservation of important spotted owl habitat depends on the application of a two-tiered approach to forestland management decisions as follows:
>
> **1.** Conserve spotted owl sites and high-value spotted owl habitat where possible in addition to Federal conservation blocks to provide additional demographic support to the spotted owl population (see Recovery Action 10).
>
> a. This recommendation includes currently occupied as well as historically occupied sites.
>
> b. Work with land managers and spotted owl field scientists to develop prescriptions and approaches to implement this recommendation. At a minimum, this prescription *should retain sufficient NRF habitat within the provincial core-use area and within the provincial home range to support breeding, feeding and sheltering.*
>
> **2.** *Maintain and restore the older and more structurally complex multilayered conifer forests on all lands* (see Recovery Action 32 under Listing factor E). NSO Recovery Plan III-42

The Klamath Provinces are critical to maintaining NSO populations

[13] Odion, Dennis C., Hanson, Chad T., DellaSala, Dominick A., Baker, William L., and Bond, Monica L. 2014. Effects of Fire and Commercial Thinning on Future Habitat of the Spotted Owl. The Open Ecology Journal, 2014 7, 37-51.

throughout the entire range of the species, yet the combined effects of wildfire, barred owl invasion, and extensive habitat removal from public land logging and timber sales continue at a steady pace. This, in addition to industrial private land logging, increased fire activity, trespass marijuana cultivation, anticoagulant rodenticide use and climate change are concurrent threats to the viability of the NSO, as well as other many other mature forest dependent plants and animals. Yet, the Strix and its habitat in the Klamath Province continues to be harmed and may too become a habitat sink. The stressors are multiplying. All science and observation points to an extreme need to act quickly for recovery. At this point each reproductive pair may serve as stronghold for its species and is of primary importance.

> *Because spotted owls on established territories are likely to be more successful if they remain in those locations* (Franklin et al. 2000), *managing to retain spotted owls at existing sites should be the most effective approach to bolstering the demographic contribution of a habitat conservation network and the highest priority for land managers.* Retention of long-term occupancy and reproduction at established spotted owl sites will require a coordinated and cooperative effort to craft management approaches tailored to regional, provincial or local conditions. NSO Recovery Plan III-3

The occupied nest sites and home ranges should be the highest priority for protection. While the scoping notice recognizes these three northern spotted owl activity nest cores with high value habitat identified in the Bear Country Project area, we would argue that all of the Activity Centers, nest cores and home ranges, and all of the suitable habitat in the project area serves as high value habitat. The definition of High-Value Habitat: Habitat that is important for maintaining spotted owls on landscapes. Includes areas meeting definition of high-quality habitat, but also areas with current and historic use by spotted owls that may not meet the definition of high-quality habitat. Here the Bear Country project area is absolutely offering demographic support to northern spotted owl based on occupancy and quality.

Working towards recovery for the Strix would not remove or degrade currently suitable habitat throughout the project area, particularly to provide for dispersing juveniles. Recovery would mean retaining the largest oldest trees on the landscape, especially those with mistletoe, and canopy closure for the NSO and all of the mature forest canopy dependant plants and animals.

While the scoping notice references Recovery Action 32 of the NSO Recovery Plan, we would ask that the KNF and USFWS review the Recovery Criterion and Recovery Actions 2 & 3. Provided here:

> Recovery Criterion 1 - **Stable Population Trend**: The overall population trend of spotted owls throughout the range is stable or increasing over 10 years, as measured by a statistically-reliable monitoring effort.
>
> Recovery Criterion 2 – **Adequate Population Distribution**: Spotted owl sub-populations within each province (i.e., recovery unit) (excluding the Willamette Valley Province) achieve viability, as measured by the HexSim population model or some other appropriate quantitative measure.
>
> Recovery Criterion 3 – **Continued Maintenance and Recruitment of Spotted Owl Habitat:** The future range-wide trend in spotted owl nesting, roosting, foraging habitat is stable or increasing throughout the range, from the date of Revised Recovery Plan approval, as measured by effectiveness monitoring efforts or other reliable habitat-monitoring programs.
>
> Recovery Action 2: Continue annual monitoring of the population trend of spotted owls to determine if the population is decreasing, stationary or increasing. Monitoring in demographic study areas is currently the primary method to assess the status of populations of spotted owls. Other statistically valid monitoring methods (i.e., analytically robust and representative of the entire province and range) may be possible and could potentially fulfill this recovery action.
>
> Recovery Action 3: Conduct occupancy inventory or predictive modeling needed to determine if Recovery Criteria 1 and 2 have been met. It is expected this inventory will begin when it appears the spotted owl is close to meeting Recovery Criterion 1. Modeling techniques have improved recently, so predictive modeling may be part of the methodology for estimating spotted owl occupancy across the range.

We point out that the: 1.) population trends have only shown steep declines 2.) meta-analysis is past due 3.) "up-listing" petition is past due and remains unaddressed, 4.) 5-year Status Review is also multiple years overdue and 5.) additional threats are increasing and compounding harm. In addition, given that —likely to be the only source populations in the entire range are continually harmed with habitat removal and degradation with 8% of the Klamath Province Strix that have been allowed for "take" because of logging on national forests, and that reproductive pairs are incredibly rare—is all the more reason to have a delicate and light hand in the Bear Country project. Here there is a real need and reason to seriously minimize and prioritize the greatest and most strategic *needed* treatments that can be maintained over the long-term and to forgo meddling in currently suitable, valuable and critical habitat.

NSO Recovery Plan and Barred Owls

The Final Recovery Plan for the Northern Spotted Owl has partially addressed the barred owl issue by adopting Recovery Action 32 which urges the FS and BLM to maintain substantially all of the older and more structurally complex multi-‑layered conifer forests on Federal lands outside of MOCAs... based on the idea that "protecting these forests will not further exacerbate competitive interactions between spotted owls and barred owls as would occur if the amount of shared resources were decreased. In considering this recommendation the agencies must prepare NEPA analysis, which considers the full potential of suitable habitat quantity and quality and its mediating influence on the interactions between spotted owls and barred owls. Maintaining a subset of suitable habitat as recommended by the recovery plan is one option, but the agencies must consider the full benefits of protecting all suitable habitat, not just a subset. It would be wise to do so at a range-‑wide level, but until that is done, the agencies should not adversely modify suitable habitat in order to reduce competitive interactions between the two.

Management Indicator Species (MIS)

The forthcoming NEPA document should analyze and disclose the potential impacts of the project on Management Indicator Species (MIS) as defined by the LRMP. At a minimum it should address MIS "individual species" such as the NSO, pileated woodpecker, black bear, American Marten, Fisher and Black-tailed deer as well as the River/Stream/Creek Assemblage, the Snag Assemblage and the Down Woody Material Assemblage.

The role of management indicator species in National Forest planning is described in the 1982 implementing regulations for the National Forest Management Act (NFMA) of 1976:

> "In order to estimate the effects of each [Forest Plan] alternative on fish and wildlife populations, certain vertebrate and/or invertebrate species present in the area shall be identified and selected as management indicator species and the reasons for their selection will be stated. These species shall be selected because their population changes are believed to indicate the effects of management activities. In the selection of management indicator species, the following categories shall be represented where appropriate: Endangered and Threatened plant and animal species identified on State and Federal lists for the planning area; species with special habitat needs that may be influenced significantly by planned management programs; species commonly hunted, fished or trapped; non-game species of special interest; and additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected

> major biological communities or on water quality [36 CFR 219.19 (a)(1)]."

The agency must provide information describing population numbers, locations, and trends for key wildlife species, and monitoring data to determine that the proposed action would maintain numbers and distribution of these species sufficient to ensure long-term viability. The forthcoming NEPA document should disclose information and analysis regarding MIS population on a majority of MIS species trends in these watersheds.

The findings of the analysis and Wildlife BA/BE must provide the decision maker and the public with enough information to conclusively know that the project will have no significant effect on threatened, sensitive, and management indicator wildlife species. 40 C.F.R. § 1508.27.

Climate and Biodiversity Crisis and the Importance of Large Trees

> The Klamath Physiographic Province is recognized as a globally significant bioregion. This region supports a large number of endemic, rare, and sensitive flora and fauna, has the largest strongholds of low elevation temperate forest in the nation, as well a high concentration of wild and scenic rivers. The Klamath Basin is also well known for its past legendary salmon and steelhead runs. Ecological Restoration Implementation Plan Region 5-USFS (ERIP)
>
> The ability of the Region's forestlands to sequester and store carbon has become a matter of national and international significance. Human additions of greenhouse gases to the atmosphere are altering the climate, and federal land management agencies like the Forest Service are expected to play a major role in U.S. adaptation and mitigation responses to global warming. Mitigation responses revolve around the maintenance and enhancement of carbon sequestration processes on forestlands. ERIP pg. 2
>
> Ensure the retention and sustainability of forests, forest resources, and forest carbon over the long term, even as climates change. ERIP pg. 3

As we face the climate crisis and the sixth great mass extinction, we urge the Klamath National Forest to work towards species recovery, habitat connectivity and maintaining climate refuge. The Salmon River watershed provides provisional micro and mesorefugia areas for the distribution of mesophilic, restricted-range species including Plethodontid and Dicamptodon salamanders, millipedes and endemism zones for vascular plants. Mesorefugia likely contain concentrations of restricted-range species due to

their persistently wet conditions and long-term stability (Olsen 2012)[14]. This provisional network of priority climate change microrefugia outside the existing reserve system should be targeted for immediate protection and restoration.

> Habitat loss and climate change are the two greatest threats to biodiversity. The Pacific Northwest region represents some of the highest carbon density forests in the world, which can store carbon in trees for 800 years or more. GHG reduction must happen quickly to avoid surpassing a 2 °C increase in temperature since preindustrial times. Alterations in forest management can contribute to increasing the land sink and decreasing emissions by keeping carbon in high biomass forests, extending harvest cycles, reforestation, and afforestation. Forests are carbon-ready and do not require new technologies or infrastructure for immediate mitigation of climate change. Here, we demonstrate this approach in a high biomass region, and found that reforestation, afforestation, lengthened harvest cycles on private lands, and restricting harvest on public lands increased net ecosystem carbon balance by 56% by 2100, with the latter two actions contributing the most. Storing more carbon in ecosystems will help mitigate climate effects, although land managers often prioritize generating revenue from commercial sales over carbon storage. Law et al 2018[15]

> Thus, large, old trees do not act simply as senescent carbon reservoirs but actively fix large amounts of carbon compared to smaller trees; at the extreme, a single big tree can add the same amount of carbon to the forest within a year as is contained in an entire mid-sized tree. Stephenson et al. 2013[16]

The Klamath ranks 14th in the top carbon dense national forests! The biggest oldest trees and native natural stands in the Salmon River watershed provide a vital biological and ecological role. These stands supply invaluable ecosystem services such as; sequestering the greatest amount of carbon that help to regulate the Earths temperature, providing hydrologic functions that

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[14] Olson, David, DellaSala, Dominick A., Noss, Reed F., Strittholt, James R., Kass, Jamie, Koopman, Marni E. and Allnutt, Thomas F. *Climate Change Refugia for Biodiversity in the Klamath-Siskiyou Ecoregion.* Natural Areas Journal, 32(1):65-74. 2012.

[15] Law, B.E et al. 2018. Land use strategies to mitigate climate change in carbon dense temperate forests. PNAS http://www.pnas.org/cgi/doi/10.1073/pnas.1720064115

[16] Stephenson, NL, A. J. Das, R. Condit, S. E. Russo, P. J. Baker, N. G. Beckman, D. A. Coomes, E. R. Lines, W. K. Morris, N. Rüger, E. Álvarez, C. Blundo, S. Bunyavejchewin, G. Chuyong, S. J. Davies, Á. Duque, C. N. Ewango, O. Flores, J. F. Franklin, H. R. Grau, Z. Hao, M. E. Harmon, S. P. Hubbell, D. Kenfack, Y. Lin *et al.* Rate of tree carbon accumulation increases continuously with tree size. *Nature* (2014) Received 05 August 2013 Accepted 27 November 2013 Published online 15 January 2014: Link accessed 9-6-19 http://www.nature.com/nature/journal/vaop/ncurrent/full/nature12914.html

create and regulate clean water, imparting resilience to wildfire and safeguarding species in helping plants and animals adapt and survive the climate and biodiversity crisis. Intact forest ecosystems provide the natural capital, including clean air and water, upon which all life and all human economies ultimately depend.

We appreciate that the scoping notice aims to maintain and improve late successional habitat in LSRs and three nest cores deemed high value habitat, however it does not go far enough to protect older trees and forest stands throughout the project area. Please see the Importance of Large Trees and Large Trees with Mistletoe and Large Trees, Forests And Carbon Sequestration sections of KFA's 2014 Crawford Project Scoping comments (provided). As highlighted throughout our comments, large trees, contiguous forest stands with dense canopies are assisting both humans and wildlife in the serious crisis we all face together. We urge project planners to recognize the importance of these elements and maintain them across the Bear Country project area.

Timber Sales on the Salmon River Watershed

Much of the information related to concerns with; large tree and canopy retention, logging and fire risk, wildlife, Wild and Scenic Rivers, aquatics, water quality, fisheries, Late Successional Reserves, Riparian Reserves, Klamath Siskiyou bioregion, climate crisis and spread of invasive species has been outlined repeatedly in our science-based Salmon River specific project comments. Rather than continue with this repetition, which is pertinent to the Bear Country Project we are attaching and incorporating by reference: Eddy Gulch Scoping 2008, Eddy Gulch DEIS 2009, Eddy Gulch Objection 2010, Petersburg Pines Scoping 2010, Petersburg Pines Objection 2011, Jess pre-scoping 2012, Jess Scoping 2013, Jess DEIS 2014, Jess collaborative Partner letter 2014, Jess Petition 2014, Jess Objections 2016, Jess Objection Photos 2016, Salmon Salvage Scoping 2013, Salmon Salvage Project EA 2014. The Salmon/Scott Ranger district possesses all of these comments and referenced material.

Cumulative Effects

Future, present and the past management actions must be disclosed and analyzed in a comprehensive cumulative effects analysis. We believe that the significant cumulative impacts from past road construction and federal logging have degraded the hydrological, soil, terrestrial habitat and connectivity values in these watersheds. The forthcoming analysis must adequately consider and disclose how the proposed action will fully comply with all applicable requirements.

The Klamath National Forest should familiarize itself with the 9th Circuit's opinion in Klamath-Siskiyou Wildlands Center v. BLM. 387 F.3d 989 (9th Cir. 2004). In that case the Court held that:

"A calculation of the total number of acres to be harvested in the watershed is a necessary component of a cumulative effects analysis, but it is not a sufficient description of the actual environmental effects that can be expected from logging those acres."

The Court went on to conclude that the agency's NEPA document:

"…cannot simply offer conclusions. Rather, it must identify and discuss the impacts that will be caused by each successive timber sale, including how the combination of those various impacts is expected to affect the environment, so as to provide a reasonably thorough assessment of the project's cumulative impacts."

The forthcoming NEPA document should give serious and careful consideration of the cumulative effects of the proposed actions (and alternatives) on soils, hydrologic function, fisheries, habitat and wildlife in the context of past, present, and reasonably foreseeable future actions in and surrounding the project area.

Riparian Reserves, Fisheries and Water Quality

Some of the most productive, sensitive, and diverse sites are within Riparian Reserves. Riparian areas provide important habitat for fish and other aquatic life forms, as well as a variety of wildlife species, including the willow flycatcher, fisher and bald-eagle. Riparian areas have high wildlife values because of the close proximity of water and structural diversity of the vegetation. These are Key watersheds, critical to the survival of wild salmon that are 303(d) listed under the Clean Water Act. We remind project planners that the Salmon River watershed retains the only viable population of Spring Chinook salmon, as well as, retaining the last completely wild salmon and steelhead runs in the Klamath watershed.

We are concerned with the cumulative effects of past, current and future projects as well as the amount of treatment proposed, including commercial logging, activities within Riparian Reserves, road use, road construction and reconstruction of Level 1 and non-system roads, landing construction and reconstruction throughout this vast landscape. The forthcoming NEPA must demonstrate compliance with the Clean Water Act, TMDL plans, the Aquatic Conservation Strategy and the Endangered Species Act. The expanse of the

project and the amount of extraordinary circumstances deserves the completion of a full environmental impact statement. Please be site specific in describing the impacts that the proposed treatments would have, as these creeks and tributaries are providing cold water refuge for threatened Coho salmon, Chinook salmon and many other aquatic species.

We are concerned with the amount of Legacy Sediment Sites and the ability of the Klamath National Forest (KNF) to follow through with its responsibilities to comply with the water quality waiver. In the forthcoming NEPA document please describe in detail KNFs ability to follow through with legacy sediment site treatments for all of the timber sales in the past decade, primarily within the Salmon River watersheds.

Roads

Thinning and post disturbance logging require an expansive and expensive to maintain road system. Roads are associated with water quality degradation, aquatic species declines (e.g., salmon), spread of invasive plantss, human-caused fire ignitions, and loss of wildlife habitat. We cannot overstate our extreme concern regarding the long-term impacts to soil health and hydrology from the use of non-system roads, Level 1 roads and the proposed "temporary" road and landing construction in the project area. We encourage planners to develop and implement an action alternative that does not require new road or landing construction and/or reconstruction.

Please ensure that the impacts of proposed road construction on road density, habitat fragmentation, edge habitat and wildlife harassment are well documented, or better yet, avoided in your project. Project-level planning should review the opportunities available to improve or maintain aquatic habitat.

Below you will find excerpts from a peer-reviewed article by Trombulack and Frissell (2000)[17] which, details some of the negative impacts of road construction and use on Terrestrial and Aquatic ecosystems. The forthcoming NEPA document should address and avoid the harmful impacts detailed in this study. The abstract for the article reads as follows:

> Roads are a widespread and increasing feature of most landscapes. We reviewed the scientific literature on the ecological effects of roads and found support for the general conclusion that they are associated with negative

[17] Trombulack, Stephen C and Frissell, Christopher A. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities. Conservation Biology, Volume 14, No. 1, February 2000.

> effects on biotic integrity in both terrestrial and aquatic ecosystems. Roads of all kinds have seven general effects: mortality from road construction, mortality from collision with vehicles, modification of animal behavior, alteration of the physical environment, alternative of the chemical environment, spread of exotics, and increased use of areas by humans. Road construction kills sessile and slow-moving organisms, injures organisms adjacent to a road, and alters physical conditions beneath a road. Vehicle collisions affect the demography of many species, both vertebrates and invertebrates; mitigation measures to reduce roadkill have been only partly successful. Roads alter animal behavior by causing changes in home ranges, movement, reproductive success, escape response, and physiological state. Roads change soil density, temperature, soil water content, light levels, dust, surface waters, patterns of runoff, and sedimentation, as well as adding heavy metals (especially lead), salts, organic molecules, ozone, and nutrients to roadside environments. Roads promote the dispersal of exotic species by altering habitats, stressing native species, and providing movement corridors. Roads also promote increased hunting, fishing, passive harassment of animals, and landscape modifications. Not all species and ecosystems are equally affected by roads, but overall the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian systems. More experimental research is needed to complement post-hoc correlative studies. Our review underscores the importance to conservation of avoiding construction of new roads in roadless or sparsely roaded areas and of removal or restoration of existing roads to benefit both terrestrial and aquatic biota.

Roads are considered to be one of the most ecologically damaging elements in our forests. Please be explicit when describing haul routes, including mileage, crossings and overall condition. The forthcoming NEPA document must analyze and disclose the past, current and future cumulative effects of roads proposed for use and "temporary" roads proposed for construction. It is not sufficient to say that there would be no impact because roads will be decommissioned, but the forthcoming NEPA document must take a hard look and disclose the effects of opening, constructing, utilizing and decommissioning.

Travel Management Rule

It is important to note that the KNFs Travel Management Planning process states that needed road decommissioning will be addressed during site specific planning. Sub-part (a) of the travel rule (identify minimum sustainable transportation system) via site-specific projects. The Bear Country project is just such a site-specific opportunity. The Forest Service cannot simultaneously refuse to implement Sub-part (a) of the travel rule at both the Forest and the watershed scale.

Snags and Coarse Woody Debris

"Retain snags with the largest DBH as they tend to last longer and make the best wildlife habitat."-KNF LRMP 4--39

Snags play an integral role in the ecology of old-growth forests. Indeed, the Northwest Forest Plan (NFP) expressly states: Tree mortality is an important and natural process within a forest ecosystem. Diseased and damaged trees and logs are key structural components of late-successional and old-growth forests. Salvage of dead trees affects the development of future stands and habitat quality for a number of organisms. Snag removal may result in long-term influences on forest stands because large snags are not produced in natural stands until trees become large and begin to die from natural mortality. Cavity nesting birds and mammals such as woodpeckers, nuthatches, chickadees, squirrels, red tree voles and American martens use snags extensively. Removal of snags following disturbance may reduce the carrying capacity of these species for many years.

NFP S&G at B-8; see also id at B-9 ("[T]rees injured by disturbance may develop cavities, deformed crowns, and limbs which are habitat components for a variety of wildlife species.").

The importance of snags, logs, and other CWD is also recognized in FEMAT (1993) scientific analysis. For example:

> Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves . . . The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention of snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris. (FEMAT 1993, p. IV-37)

> "Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. Accordingly, following stand-replacing disturbances, management should focus on retaining snags that are likely to persist until late successional conditions have developed and the new stand is again producing large snags." (FEMAT 1993, p. III-37)

In general the contribution of very large logs (e.g., 20 inches in diameter, or larger) to fire severity and intensity is almost negligible, as they are the fuels least available for combustion. When these large logs do burn, it is because the smaller fuels needed to ignite them and sustain combustion are present. Logs also burn mainly by smoldering combustion, which is not considered in

the calculation of fire intensity. This is the reason why relatively high fuel loads comprised primarily of large-diameter woody material can be present without eliciting high intensity fire effects.

At C-40 the NFP informs the Forest Service:

> A renewable supply of large down logs is critical for maintaining populations of fungi, anthropods, bryophytes and various other organisms that use this habitat structure. Provision of coarse woody debris is also a key standard and guideline for American marten, fisher, two amphibians, and two species of vascular plants…Coarse woody debris that is already on the ground needs to be retained and protected from disturbance to the greatest extent possible during logging and other land management activities that might destroy the integrity of the substrate. Scattered green trees will provide a future supply of down woody material as the stand regenerates and are important in providing for the distribution of this substrate through out the managed landscape.

Please be descriptive on current CWD/Snag status in units. CWD/Snags are an essential component of healthy forests and contribute to soil vitality and productivity, in addition to providing quality habitat for predator and prey species. The LRMP instructs the Forest to protect CWD to the fullest extent possible. Tractor-based yarding under the proposed action could affect CWD/Snag levels. Please also disclose the effects that activities will have on CWD/Snags. If snag levels are low, marking guidelines must reflect the need for considering future snag recruitment. We are concerned about harvesting snags along ridge tops and roads and how that may lead to habitat fragmentation. Please analyze this when preparing the forthcoming NEPA document.

Coarse woody debris is a necessary component of forest ecosystems. This wood provides habitat for a broad array of vertebrates, invertebrates, fungi, mosses, vascular plants, and micro-organisms. Arthropods, salamanders, reptiles, and small mammals live in or under logs; woodpeckers forage on them; and vascular plants and fungi grow on rotting logs. Provision for retention of snags and logs normally should be made, at least until the new stand begins to contribute coarse woody debris. Many natural disturbances do not result in complete mortality of stands. The surviving trees are important elements of the new stand. They provide structural diversity and provide a potential source of additional large snags during the development of new stands. Furthermore, trees injured by disturbance may develop cavities, deformed crowns, and limbs, which are habitat components for a variety of wildlife species. Disturbance is an important natural process in late successional reserves, because it allows for a greater range of tree sizes and types than could be achieved through intensive logging.

Coarse woody debris is essential for many species of vascular plants, fungi, liverworts, mosses, lichens, arthropods, salamanders, reptiles and small mammals. Adequate numbers of large snags and green trees are especially critical for bats because these trees are used for maternity roosts, temporary night roosts, day roosts, and hibernacula. Large snags and green trees should be well distributed because bats compete with primary excavators and other species that use cavities. Day and night roosts are often located at different sites, and migrating bats may roost under bark in small groups. Thermal stability within a roost site is important for bats, and large snags and green trees provide that stability. Individual bat colonies may use several roosts during a season as temperature and weather conditions change. Roosting bats may also use large, down logs with loose bark. All large trees should be retained in late successional reserves and suitable Strix habitat regardless of whether they are diseased or not because they play important roles while standing, decaying and lying on the forest floor.

Invasive Plant Species

Please provide an accurate description of the current location and species of invasive plants occurring in the project area. Please describe the potential for the proposed treatments to spread invasive species and what mitigations will be put in place to avoid this serious issue.

Wet Weather Logging

We are greatly concerned that the Klamath National Forest allows timber sales to be implemented during wet weather conditions, as we have seen on the multiple KNF timber sales including Salmon Salvage project. Please do not allow any wet weather logging to take place in order to protect these 303(d) listed watersheds that retain the only viable population of Spring Chinook salmon, as well as the last completely wild salmon and steelhead runs in the in the Klamath watershed.

Best Management Practices and Project Design Features

As well meaning as BMPs and PDFs are, they are never 100% effective or implemented. We are concerned with the amount of treatment proposed, level of activity of heavy equipment and the cumulative affects from the past, present and future projects that cover nearly the entire landscape between the North and South Forks and beyond.

Alternatives

To best meet the purpose and need of the project please consider an alternative or alternatives that would:

Include the recovery of Northern spotted owl and old growth dependent species in the purpose of the project.

Forgo logging of natural late seral forest stands in suitable nesting/roosting habitat throughout the project area.

Declare all suitable NSO habitat in the project as high value, so as to provide for dispersing juveniles.

Retain all large trees with late successional characteristics and mistletoe brooms.

Retain and not degrade suitable Strix habitat.

Concentrate thinning the smallest size classes and implement a thin from below in mid-seral even aged stands.

Prioritize treatments in the WUI, plantations and major ingress/egress roads and only the most needed strategic ridgelines.

Commit to implementing and maintaining fuel treatments long-term.

Identify the minimum road system needed and include decommissioning.

Not include new temporary roads or intensive re-construction on non-system and Level 1 roads.

Conclusion

The Salmon River watersheds are loved and cherished by thousands of people. The expanse of the proposed treatments in the Bear Country project and the amount of extraordinary circumstances necessitates a need for an environmental impact statement. The current intact forest stands are safeguarding multiple species, buffering against high severity fire and the climate and biodiversity crisis. They are contributing invaluable ecosystem services for the greater good. We appreciate the movement towards maintaining and restoring late seral forest habitats and the overall goals of the project; community and fire fighter safety, enhancement of diversity and continuity of landscape scale strategic fuel breaks.

Recognizing that the US Forest Service has limited capacity and resources and the serious challenges of managing over a million acres, we urge the Klamath National Forest to work with the Western Klamath Restoration Partnership in planning, implementation and future maintenance. The partnership is building its workforce capacity and has a long-term vested interest in the care of the Salmon River. Working together provides benefits to our watersheds and communities.

The best available science is clear. Prioritizing the most needed and strategic treatments that can realistically be maintained into the future offers the best chance of effectiveness. Thank you for your consideration, please send a hard copy of the forthcoming NEPA document to the EPIC Arcata office.

For Salmon River forests and wildlife,

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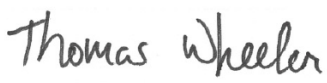

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