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Sent via email to: Danika.carlson@usda.gov and on Bear Country Project Webpage
A compact disc with referenced materials sent via USPS to Fort Jones Salmon/Scott Ranger District office

RE: Bear Country Environmental Assessment

Dear Supervisor Smith and ID Team Leader Danika Carlson,

Please accept these comments on behalf of the Klamath Forest Alliance, the Environmental Protection Information Center (EPIC), the Northcoast Environmental Center, Safe Alternatives for our Forest Environment (S.A.F.E.) and

the California Wilderness Coalition (CalWild). Our organizations represent over 50,000 members and supporters, who care deeply about protecting the wild places and rivers of California, particularly the Wild and Scenic North and South Fork Salmon River on the Klamath National Forest. Its watersheds remain to be the homeland of the Karuk and Shasta peoples.

Introduction

The Salmon River watershed is one of the most intact and remote locations in the Klamath-Siskiyou Mountains and one of the most spectacular Wild and Scenic Rivers in the country. It also contains some of the most important anadromous fisheries habitat on the West Coast, the only remaining spring chinook runs and the last completely wild salmon and steelhead runs in the Klamath River watershed.

Known for its incredibly beautiful and exceptionally rugged river canyon, the watershed contains some of the least impacted wilderness landscapes in the region. Many of the streams flowing into the clear, blue pools of the Salmon River drain the high country of the Marble Mountains Wilderness, the Trinity Alps Wilderness and the Russian Wilderness, along with numerous roadless areas. These watersheds represent some of the most remote, inaccessible wildlife habitat in the Klamath-Siskiyou Mountains and some of the most diverse conifer forests in world.

Famous with rafters, kayakers, botanists, wilderness enthusiasts, backpackers, and many other citizens throughout the country, the Salmon River is a national treasure with value similar to a national park or monument. The dramatic canyon scenery, deep, clear pools, and diverse mixed conifer forests of the Salmon River are truly a world-class natural resource. The Salmon River should be managed to sustain those natural values, fisheries and wildlife habitats. The Bear Country Timber Sale is not consistent with the maintenance of the watersheds important biological values.

Although portions of the project are commendable and appear focused on community fire safety, ingress/egress concerns and non-commercial thinning in the vast plantations above Forks of Salmon, other portions of the project propose commercial logging in some of the last fire resilient, late successional forests in the river canyon. A vast majority of the proposed logging units would degrade forest habitats, reduce fire resilience and community fire safety, impact scenic values in the Wild and Scenic Salmon River corridor, degrade Inventoried Roadless Area habitat, log old forest in the Eddy Gulch LSR and negatively affect habitat for the imperiled and near extinct Northern spotted owl, the Pacific fisher and a wide variety of other wildlife species.

As outlined in the Environmental Assessment (EA) for this project, 4,195 acres are proposed for commercial logging, 3,704 acres of which are natural, mostly unlogged stands. By and large, these stands would not benefit from the commercial logging

and forest habitat removal and degradation proposed in the Bear Country Project EA. The project proposes 15 miles of temporary road reconstruction, an estimated 5 miles of new road construction, the creation of 19 new log landings, 2,271 acres of mastication on 24.4 miles of remote ridgeline, 5.2 miles of commercial hazard tree logging within 300' of specific existing roads, and the use of excavators to reopen previously built dozerlines used to suppress wildfire events. Of this total, 2330 acres of commercial logging and 3.8 miles of roadside "hazard" logging are located inside the Eddy Gulch LSR.

Other land use allocations proposed for treatment in the Bear Country Project include Inventoried Roadless Area, Late Successional Reserve, Riparian Reserve, Wild and Scenic River, General Forest, Special Habitat, and Partial Retention Areas with visual retention objectives.

These late successional forests exist within a mosaic of early seral and "non-forest" habitat produced by both historic and contemporary fire, soil conditions, complex topographic features, steep environmental gradients, slope position and exposure. Located within a jumble of oak woodland, mixed hardwood forests, chaparral, and rock outcrops, these late successional conifer forests are the most fire resistant portions of the area and provide climate refugia in the otherwise hot, dry river canyon. Species such as the Northern spotted owl and Pacific fisher are dependent on these habitats for nesting, roosting and denning. Deer, elk, black bear and other species use these habitats for thermal regulation and cover. Del Norte salamanders live in the mossy talus slopes, and ringtail cats come out of the rock outcrops and forage in the forest each evening, while pileated woodpeckers drum in the sun bleached snags and live in the protection of forest canopy.

Tying old forest logging to community wildfire safety is counterproductive, irresponsible, disingenuous and outright dangerous. We can only support those portions of the project that actually promote community fire safety, maintain important wildlife habitat, and support fire resilient forest conditions. Our communities and the incredible natural values of the Salmon River watershed deserve far better from public land managers, who are threatening both biological and community values with the proposed Bear Country Timber Sale.

The project should be refocused on community fire safety, ingress and egress routes, plantation thinning, and prescribed fire near the communities of the Salmon River. At the same time, commercial logging units in the Wild and Scenic Salmon River corridor and in Late Successional Reserve forest should be dropped.

Purpose and Need

According to the Purpose and Need in the EA at page 13:

"The Salmon/Scott River Ranger District of the Klamath National Forest proposes the Bear Country Project to:

- *Enhance opportunities for community protection and firefighters and public safety*

  - *Reduce wildfire threats to communities*
  - *Reduce risk on ingress and egress travel routes*
  - *Establish strategic control features for long-term fire management*

- *Protect, promote, and enhance a diversity of seral stages and habitat types throughout the area*
  - *Reduce risk of high-severity wildfire to high-value northern spotted owl habitat*
  - *Reduce risk of high-severity disturbance to maintain and improve the condition of existing late-successional habitat*
  - *Promote forest health and resilience*
  - *Restore beneficial fire effects to fire-adapted ecosystems*
- *Complement and enhance previously planned treatments within adjacent project areas to provide for continuity and effectiveness of landscape scale strategic fuel breaks"*

The level of timber harvest proposed in the Bear Country EA is inconsistent with the Purpose and Need for this project and in many cases would have a detrimental impact on the attainment of the Purpose and Need statement.

Attainment of the Purpose and Need would require refocusing this project on activities that truly "enhance opportunities for community fire protection and firefighter and public safety…protect, promote and enhance a diversity of seral stages and habitat types throughout the area" and "compliment previously planned treatments within adjacent project areas to provide continuity and effectiveness of landscape scale strategic fuel breaks."[1] The currently proposed alternative does not adequately achieve attainment of the Purpose and Need.

For the reasons outlined in these comments, the agency has not met its obligation to craft proposed project activities in a manner consistent with the Purpose and Need. Numerous proposed project elements are inconsistent with the Purpose and Need in regard to the reduction of fire risks, the maintenance of Northern spotted owl habitat, the enhancement of late successional habitat, and the promotion of forest health and resilience.

The Bear Country EA instead proposes activities that would downgrade or eliminate Northern spotted owl habitat, increase fire risks to remote communities

[1] USDA. Bear Country Environmental Assessment, 2021 P. 13

on the Salmon River, degrade late successional habitats and reduce both forest health and resilience. These impacts would be particularly pronounced in old forest units including those in the Eddy Gulch LSR and the Wild and Scenic Salmon River corridor.

Please refer to our project recommendations for information on project activities that are more consistent with the Purpose and Need. The remaining portions of our comment will outline those activities and outcomes that are inconsistent with the Purpose and Need and should be either canceled in the upcoming Decision Memo, withdrawn in a future Environmental Impact Statement (EIS), or more adequately analyzed in a full EIS analysis.

Range of Alternatives and Response to Public Scoping Comments

The Bear Country Project EA does not provide an adequate range of alternatives as required by the National Environmental Policy Act (NEPA). Because multiple substantive comments were received by the agency and the identification of relevant issues, a more comprehensive range of alternatives should have been considered. Some of these relevant issues identified in Scoping Comments include significant concern over Northern spotted owl impacts, the degradation of late successional habitat, impacts to Inventoried Roadless Areas, the certain increase in fire risks associated with canopy reduction and large tree removal, damage to both the North Fork and South Fork Wild and Scenic Salmon River and many others. These concerns were not adequately addressed in the EA.

Providing a range of alternatives allows the public and Forest Service line officers to contrast and compare the alternatives and their outcomes to best meet the Purpose and Need of a given project. NEPA encourages public transparency, the inclusion of public concerns in land management projects, scientific rigor and creativity in both the design and implementation of federal land management projects. The process of considering a range of alternatives is intended to educate and inform the decision making process and create a more rigorous, comprehensive NEPA analysis and to inform better decisions. Unfortunately, this was not done in the Bear Country Project EA.

In our scoping comments we identified the following alternatives to best meet the Purpose and Need for the Bear Country Project.

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

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

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

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

5) Retain and not degrade suitable Strix habitat.

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

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

8) Commit to implementing and maintaining fuel treatments long-term. Identify the minimum road system needed and include decommissioning.

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

The proposed action alternative is not reflective of public input. The EA does not incorporate or consider substantive and relevant public comments that identify multiple significant issues. Further analysis with a range of reasonable alternatives is necessary and should be completed in an Environmental Impact Statement.

Significant Impacts to the Black Inventoried Roadless Area

The Black Inventoried Roadless Area (IRA) encompasses about 6,565 acres of the Bear Country Project area. Although a released roadless area, the region still contains uniquely intact biological values and undisturbed wildlife habitats. It is also identified as an Inventoried Roadless Area under the 2001 Roadless Area Conservation Rule. Affirmed in the courts on multiple occasions, the 2001 Roadless Area Conservation Rule prohibits both new road construction and commercial logging. For this reason alone, the approximately 250 acres of logging proposed in the Bear Country Project EA should be canceled. 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 that must be protected under the 2001 Roadless Area Conservation Rule.

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 ...". Yet, the EA fails almost entirely to address concerns surrounding the management of the Black IRA and the protections of the Roadless Area Conservation Rule.

Additionally, the units depicted on the EA map and located within the IRA, by and large, do not appear to be adjacent to high value NSO areas or RA 32 habitats. Instead, the boundaries seem to line up with the mature forests that are currently proving NSO suitable habitat and project activities including commercial harvest would degrade rather than protect NSO Critical Habitat.

The Black IRA contains unique biological values that the Bear Country Project EA fails to adequately consider. The impact of proposed commercial logging activities on roadless area values was not mentioned in the EA. Inconsistent with the 2001 Roadless Area Conservation Rule, the agency has made no attempt to protect the natural and biological values so important in the Black IRA. All commercial logging units and road reconstruction inside the IRA should be canceled.

Wild and Scenic Salmon River

The Wild and Scenic Salmon River is one of the most spectacular rivers on the continent. The deep clear pools, rushing rapids, and rugged canyon scenery attracts visitors from far and wide for rafting, kayaking, swimming, scenic driving, camping and otherwise recreating in the Wild and Scenic River corridor. The beauty of the Wild and Scenic Salmon River, the surrounding river canyon and the many spectacular tributary streams define the region for both residents and visitors to the area.

Outstandingly Remarkable Values –

The EA addresses the Salmon River's (including the main stem, South Fork, and North Fork) status as a National Wild and Scenic River, in a sole paragraph that states the rivers "single Outstandingly Remarkable Value for the Wild and Scenic River is anadromous fishery."[2] This description is inadequate in terms of assessing project impacts. It does not include the most recent population data and trends and it ignores the Salmon River's unique anadromous fishery values. The Salmon River's outstandingly remarkable fishery values include:

Spring Chinook Salmon – The South Fork Salmon River is one of only three streams in the Klamath-Trinity system that currently support spawning assemblages of the Upper Klamath-Trinity (UKTR) spring chinook salmon (the other two are the main Salmon downstream of its South Fork and the upper Trinity River).[3] The only substantial wild populations of spring chinook still persisting in the Klamath

[2] EA pg. 81.
[3] California Endangered Species Act Status Review for Upper Klamath and Trinity Rivers Spring Chinook Salmon, California Department of Fish and Wildlife, December 2020, Pgs. 31, 34. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=191912&inline

system are found in the Salmon River.[4] The California Fish and Game Commission recently determined that the UKTR spring chinook salmon has declined to the point that protective listing under the California Endangered Species Act as a threatened species is warranted. NOAA Fisheries has also found that there is "substantial scientific information" indicating that federal listing of the UKTR spring chinook as threatened or endangered is warranted.[5] Recent spring chinook surveys of the Salmon River suggest a downward trend for this species.

Coho Salmon – The Salmon River, its North and South Forks, and a few of the river's tributaries are also designated critical habitat for the threatened coho salmon.[6] The coho population that spawns in the Salmon River is considered at high risk of extinction.[7] Coho runs in the Salmon River historically averaged 2,000 adults per year. This number declined to only two salmon in 1985 and a high of 75 salmon in 1987. Coho spawn in the river and its North and South Forks, as well as several tributaries. The Salmon River and its forks have been identified as providing medium intrinsic potential to provide suitable habitat for the recovery of the threatened coho salmon.[8]

Other Anadromous Fish – The Klamath River and its tributaries (including the Salmon River) support the highest diversity of anadromous fishes of any river in California, including coho salmon, chum salmon, multiple runs of chinook salmon, coastal cutthroat trout, multiple runs of steelhead, eulachon, green and white sturgeon, Pacific lamprey and river lamprey.[9] The Salmon River supports winter and summer steelhead. Both runs of steelhead in the Klamath system have suffered declines and appear to be at some risk of extinction. The Salmon River population of winter steelhead appears relatively stable while summer steelhead have declined precipitously over the last 30-40 years. The Salmon River also supports a run of fall

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[4] Appendix 5, Fish and Fishery Resources of the Klamath River Basin, Katherine Carter & Steve Kirk, North Coast Regional Water Quality Control Board, Oregon Dept. of Environmental Quality, July 2008, Pg.15.
NCRWQB_2010_0272_Fish-and-Fisheries-Resources-of-the-Klamath-River-Basin.pdf

[5] 90-Day Finding on a Petition to List Chinook Salmon in the Upper Klamath-Trinity Rivers Basin as Threatened or Endangered Under the Endangered Species Act, Fed. Reg. Vol. 83 No. 39 Feb. 27, 2018, NOAA Fisheries. https://www.federalregister.gov/documents/2018/02/27/2018-03906/endangered-and-threatened-wildlife-90-day-finding-on-a-petition-to-list-chinook-salmon-in-the-upper

[6] Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon, Fed. Reg. Vol 64 No. 86, May 5, 1999, NOAA Fisheries. https://www.govinfo.gov/content/pkg/FR-1999-05-05/pdf/99-11187.pdf

[7] Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionary Significant Unit of Coho Salmon, Table 206, pg. 2-35, NOAA Fisheries 2014. https://www.fisheries.noaa.gov/resource/document/final-recovery-plan-southern-oregon-northern-california-coast-evolutionarily

[8] Ibid, NOAA Fisheries, 2014, Fig. 35-1, pg. 35-3.

[9] Expert Report of Professor Peter B. Moyle, PH.D., Pg. 6, https://www.karuk.us/images/docs/press/mining_pdfs/Peter-Moyle-Expert-Report-on-Suction-Dredging-on-Klamath.pdf.

chinook salmon that ranges between 800 and 6,000 fish annually and represents about 2-3% of the overall fall run in the Klamath system. The river also supports two additional anadromous fish species – Pacific lamprey and green sturgeon.[10]

The National Wild and Scenic Rivers Act requires federal agencies to manage designated rivers to protect and enhance the values for which the river was designated.[11] California's state designated rivers, including the Salmon, were added to the federal system when the Interior Secretary approved a petition by the Governor of California in 1981. The recognized outstanding value of the Salmon and other state protected rivers were anadromous fisheries.

There has been no federal assessment of other potential but likely outstanding values of the Salmon River. The 1983 Nationwide Rivers Inventory identified likely outstanding scenery, recreation, wildlife, and historic values for the Salmon River (including its forks). Potential project impacts on these values should be assessed in the EA and the project adjusted to avoid impacts or measures taken to fully mitigate the impacts. Additional values of the Salmon River that achieve "outstandingly remarkable" status include:

Whitewater Recreation – California's Salmon River "is hands-down, a world-class paddling destination."[12] The river helps shape the nature of class IV-V paddling, as we know it today. The Salmon's classic big drops have been keeping paddlers egos in check and providing a beautiful and wild place to test waters. The river and its forks offer a wide variety of class III-V runs with fun sections for paddlers of all skill levels in a completely unique and beautiful environment. Otter Bar Lodge Kayak School on the main Salmon has introduced and trained hundreds of kayakers to challenge the river's whitewater.

Scenery – "Driving along the picturesque Salmon River Road is an unforgettable experience; the snow-covered peaks, abundant wildflowers, butterflies, warm weather, and lush vegetation make this a particularly romantic place. In the springtime, it is on the must-see list of places to bring your significant other. If you haven't already visited the Salmon River, you must."[13]

Native American Culture – Native Americans have lived in the Salmon River watershed for several thousand years. The Karuk, Shasta, and Konomihu Tribes all inhabited the area. The Salmon River remains culturally significant to the Shasta and Karuk people, some of whom continue to reside on the river. The river's salmon fishery is a major source of food for the Karuk and other tribes. The Karuk consider

[10] Salmon River Restoration Council Fisheries Program, https://srrc.org/programs/fisheries.php
[11] 16 USC Sec. 1281(a).
[12] The New School Guide to Northern California Whitewater, Dan Menten, New School Publications 2016, pg. 85. http://www.newschoolpublications.com/home.html
[13] Ibid, pg. 85.

the area at the confluence of the Klamath and Salmon Rivers to be the "Center of the World." The tribe's World Renewal ceremonies are conducted at this site, which is called Katamin.[14] The Klamath Riverscape (which includes the Salmon and its forks) is eligible for inclusion in the National Register of Historic Places due to its outstanding Native American cultural values for multiple tribes.[15]

Classifications and River Corridor Boundaries –

The organization and maps of the 1995 Klamath Forest Plan makes it difficult to discern whether the many different proposed project activities comply or conflict with forest plan management direction. The 1995 Klamath Forest Plan Preferred Alternative map displays some management allocations, including Riparian Reserves, Late Successional Reserves, and Special Habitat Management Areas, over the Salmon's Scenic and Recreational River corridors boundaries. Management in these areas must be compatible with Recreational and Scenic River management, as well as subservient to the mandate to protect and enhance the river's outstandingly remarkable anadromous fish value.

Project activities proposed within the Recreational and Scenic River corridor boundaries appear to include skyline commercial thinning, manual thinning, ground-based commercial thinning, temporary new road and existing roadbed construction, helicopter commercial thinning, ridgetop mastication/chipping, and underburning. Although all of these activities are allowed under Recreational and Scenic River classification management guidelines, the activities are not allowed if they harm and fail to enhance the river's outstanding fishery value.

Other constraints include visual quality objectives tied to Recreational and Scenic classifications. The visual quality objective (VQO) for Recreational Rivers is partial retention. The Scenic River VQO is Retention. Portions of these river classifications are shown on the Klamath Forest Plan allocation map but the overlapping Late Successional Reserves, Riparian Reserves, and Special Habitat Management allocations hide the river corridor in many places. A revised EA should show the full Recreational and Scenic River corridors overlayed by the proposed project activities so that the public can better ascertain what is being proposed within and adjacent to the designated corridor.

The EA does not list a Scenic River as a Forest Plan Management Area.[16] But a short segment of the SF Salmon between St. Claire Creek and the Cecilville Bridge

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[14] Salmon River Restoration Council, https://srrc.org/~srrcorg/watershed/humanhistory.php.
[15] First Salmon: The Klamath Cultural Riverscape and the Klamath River Hydroelectric Project, Thomas F. King for the Klamath River intertribal Fish and Water Commission, March 2004, Pg. 56. https://sipnuuk.karuk.us/digital-heritage/first-salmon-klamath-cultural-riverscape-and-klamath-river-hydroelectric-project
[16] Table 4 – Proposed treatment type by Forest Plan Management Area, EA pg. 17.

within the project boundary was recommended for Scenic classification in the 1995 Forest Plan.[17] The EA should be revised to show this important information and an analysis provided to ensure that proposed Project activities comply with Scenic corridor management.

Not only do the scale, resolution, and coloring of the project maps make it difficult to determine where treatments are proposed in relation to the designated river corridor, we are concerned that the corridors delineated in the 1995 Klamath Forest Plan are inadequate and fail to comply with the National Wild and Scenic Rivers Act. The Act requires the establishment of a river corridor that averages 320 acres per mile.[18] The river corridors delineated in the plan total 202.3 miles, which should encompass 60,736 acres. But the Plan shows that the WSR corridors for the Klamath, Scott, Salmon, and Wooley Creeks would total only 49,901 acres.[19]

In the context of the project, the good news is that the Plan provides a robust corridor for the Salmon averaging 708 acres per mile, as long as ground-disturbing activities are avoided in the corridor. The bad news is that the corridors for the Klamath, Scott, and Wooley Creek segments fail to meet the average 320 acres/mile required by the NWSRA and these rivers may have already received unacceptable impacts from past and current projects and future projects, because the *overall WSR corridors* on the Klamath fail to comply with the NWSRA.

Existing Conditions and the Protect and Enhance Mandate –

All of the North Fork and most of the South Fork in the project area are classified as Recreational Rivers. A short segment of the South Fork from St. Claire Creek to the Cecilville Bridge is classified as a Scenic River. Although many of the project activities would be allowed under Recreational and Scenic classifications, the mandate to protect and enhance the river's outstandingly remarkable anadromous fish values remains paramount. Activities permitted under Recreational or Scenic classifications would be prohibited if they harm the river's outstandingly remarkable anadromous fishery. Indeed, the standard under the NWSRA is to "protect and enhance" outstanding values. The "and" between "protect and enhance" mandates that project activities enhance values as well as protect them. The EA has largely failed to make the case that any of the project activities would enhance the river's anadromous fish values.

The watershed of the Salmon WSR is in remarkably poor shape considering that the Forest Service has been required since 1981 to protect and enhance the outstandingly remarkable anadromous fishery of the Salmon WSR. We recognize

[17] Klamath National Forest Land and Resource Management Plan, Table 4-24, pg. 4-149.
[18] 16 USC Sec. 1274(b-c).
[19] 1995 Klamath National Forest Land and Resource Management Plan FEIS Appendix J, Table J-1, pg. J-1.

that there are factors that contribute to salmonid decline such as climate change out of the agency's control. But all three WSR segments of the Salmon, SF Salmon, and NF Salmon have temperature and large woody debris indicators that are non-functioning, and these are factors that the agency can address with the proper management.

Overall, the main Salmon and SF Salmon have 14 indicators and the NF Salmon has 13 indicators that are either not functioning or functioning at risk.[20] Given the existing poor shape of the watershed and the absolute mandate under federal law to protect and enhance the rivers' anadromous fisheries, extreme caution should be used in determining project treatments.

WATERSHED HEALTH INDICATORS FOR THE SALMON, NF SALMON, AND SF SALMON WSRS

	Not Functioning		Functioning At Risk		Properly Functioning

INDICATOR	SF SALMON	NF SALMON	SALMON
TEMPERATURE			
TURBIDITY			
CHEMICAL CONTAMINANTS/NUTRIENTS			
PHYSCIAL BARRIERS			
SUBSTRATE			
LARGE WOODY DEBRIS			
POOL FREQUENCY/QUALITY			
OFF-CHANNEL HABITAT			
REFUGIA			
WIDTH/DEPTH RATION			
STREAMBANK CONDITIONS			
FLOODPLAIN CONTINUITY			
PEAK/BASE FLOWS			
DRAINAGE NETWORK			
ROAD DENSITY/LOCATION			
DISTURBANCE HISTORY/REGIME			
RIPARIAN RESERVES			

Aquatics Resources Report Appendix E, Bear County Project, Klamath National Forest, May 2021, Pgs. E-118, 129, 140.

[20] Aquatics Resources Report Appendix E, Bear County Project, Klamath National Forest, May 2021, Pgs. E-118, 129, 140.

According to Bear Country Project analysis, proposed project activities would apparently be sufficiently mitigated to maintain the environment of the rivers and streams impacted by the project, but it would not restore (or enhance) the Salmon WSR's outstandingly remarkable anadromous fishery.[21] The EA states outright that "Watershed restoration is not the primary purpose and need for the Bear Country Project."[22] Given the mandate of the NWSRA to protect and enhance the Salmon WSRs' outstandingly remarkable anadromous fishery, it should be.

We recommend that "Protect and Enhance Anadromous Fisheries" be added as an official project purpose, with appropriate "Existing Condition" and "Desired Condition" narratives, and a comprehensive program to restore and improve habitat and anadromous fish populations.

Legacy Sediment Sites –

Treatment of largely road-associated legacy sediment sites is proposed throughout the project area and is required to meet the conditions of the North Coast Regional Water Quality Control Board 2015 waiver. We suspect the legacy sediment site treatments result in the overall assessment that the project would maintain the environment, although there is little narrative in the EA that can explain this connection. We understand prioritizing treatment of legacy sediment sites on the ingress/egress roads identified in Table 1, but we're concerned that the extra effort and funding needed to treat all legacy sediment sites (and thereby provide more protection and enhancement of the Salmon WSR's outstandingly remarkable anadromous fishery) may not materialize. The project decision should include a commitment to treat all legacy sediment sites per the 2015 waiver.

Summary of WSR Recommendations

1. Improve the scale, resolution, and coloring of the project maps so that the public can readily ascertain project impacts and comment accordingly.

2. Provide a detailed description of the outstandingly remarkable anadromous fishery values that could be impacted, including the key species found in the Salmon River watershed and their status.

3. Identify additional outstandingly remarkable values (including scenery, whitewater recreation, and Native American cultural values) for the Salmon, NF Salmon, and SF Salmon WSRs and include in the EA/EIS an analysis of how these values may be impacted and proposed mitigation measures.

[21] Ibid, Appendix D, Table of Pathway and Indicators for 5th Field Watershed, Pgs. D-16 to D-18.
[22] EA pg. 174.

4. Show the existing Recreational and Scenic corridor boundaries in the context of the proposed management actions (remove overlapping management allocations for the purposes of the WSR impacts analysis).

5. The EA should be revised to acknowledge the short segment of the SF Salmon WSR that was recommended for Scenic classification in the 1995 Forest Plan and an analysis provided to ensure that proposed project activities comply with Scenic corridor management.

6. The project decision should include a commitment to treat all legacy sediment sites per the 2015 waiver.

7. The project should forgoe logging and road construction in Riparian Reserves.

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."* Given these very clear objectives, the agency must be working 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.

To comply with LSR standards, the agency must specifically retain not only the largest trees, but also dense canopy, standing snags, coarse downed wood and old forests over 80 years of age. Removing large trees with late successional characteristics and opening forest canopies is contrary to the management directives for LSR forest, the Northwest Forest Plan and the Klamath National Forest Land Resource Management Plan. The activities proposed in the Bear Country Project actively degrade the NSO habitat specifically meant for protection and enhancement.

Recent research has shown that in many cases active management strategies cannot restore the extensive deficiency of large, old trees from past management activity, while passive restoration may be far less expensive and effective at restoring large tree structure over large areas (Baker 2021).

We are extremely concerned the project continues to target the last remaining large fire resilient trees for removal within LSR and the Bear Country area as "forest health", as did the Jess and Petersburg Pines projects. See Jess and Petersburg Pines Late Seral Tree Mark Photographs attached to these comments. These prescriptions are contrary to Purpose and Need for this project and are inconsistent with LSR values and/or management mandates.

We urge project planners to consider a diameter limit as was done on previous LSR projects on the Klamath National Forest including the Eddy Gulch LSR, the Johnny O'Neil LSR and the Thom Seider LSR projects (USDA 2009a P. 31, USDA 2012 P. 7, USDA 2009). These projects contained limitations on cutting trees over 20" diameter to maintain "important structural components of Late Successional Reserves, such as large diameter trees (trees greater than 20 inches in diameter), hardwoods, snags and downed wood" (USDA 2009 P. 193). Our organization supports implementing a 20" diameter limit across the planning area to protect, maintain and most effectively develop late successional characteristics. 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.

Although the focus of this project should be the treatment of lands adjacent to communities and in relatively young, highly flammable plantation stands, the Forest Service has instead proposed significant commercial logging and northern spotted owl habitat removal throughout the Eddy Gulch LSR. The Bear Country Project targets 2,365 acres of logging in natural stands and only 610 acres of plantations with commercial thinning. We find this dichotomy troubling and oppose the logging of natural or late successional stands in the Eddy LSR and throughout the project area.

The removal of large, old trees and canopy cover associated with commercial logging prescriptions would degrade and remove, rather than restore, late successional forest conditions. Because late successional characteristics, including large snags, downed wood and living trees are extremely slow to recover, these stands cannot replace the habitat removed for many decades or centuries. Instead of mitigating habitat conditions created by industrial logging and fire suppression, the distribution of treatment areas in the Bear Country Project clearly targets older, relatively unaltered stands with commercial logging treatments.

The Bear Country Project targets old forests at nearly 4 times the rate of plantation stands, effectively prioritizing older forests and natural stands for logging treatments and demonstrating that the agency is inappropriately emphasizing timber production in LSR forest habitats.

The EA states that the entire late-successional habitat within the project area is experiencing increased fuel loading and fuel continuity. Yet this is a very broad generalization and does not reflect the actual fire effects in contemporary wildfires in the Salmon River watershed or actual stand conditions in the planning area. For example, fire effects were largely low to moderate in recent wildfires burning within the watershed. This includes the 2013 Butler Fire, the 2021 Red Salmon Fire and numerous others. General patterns of fire severity often range between 4% and 15% high severity fire effects during contemporary fire in the Klamath-Siskiyou Mountains and large areas are often subject to low intensity understory fire. The

assumption built into agency analysis that closed canopy forests are particularly susceptible to high severity fire effects is totally inconsistent with the actual effects of mixed severity fire on this landscape. Regional scientific research has shown that in many cases open forest, burns at higher intensity than more closed, late successional forest habitats (Odion 2004, Weatherspoon 1995).

Likewise, to assume that fuel loading is the driver of fire severity on this landscape is patently untrue. Instead it is clearly weather and topography that drive fire severity in this region. Nearly every large high severity fire run in the recent years throughout the Klamath-Siskiyou Mountain is associated with extreme fire weather including high winds, extreme temperatures, and low relative humidity levels. Fuel loading is a relatively minor component and the effect of increased fuel loading is far more pronounced in previous logged habitats than in old forests that are often buffered by the presence of large, old trees, closed canopy conditions that suppress understory growth and sustain a relatively stable environment even in the face of fire suppression and climate change. Many of the stands targeted for logging in the Eddy Gulch LSR contain large, old trees, closed canopy condition, high canopies and exceptional fire resistance. These old, fire resistant stands would only be impacted and made less resilient through the removal of overstory canopy, the loss of large trees, increased direct sunlight, the rise in wind speed, and the changes in microclimate condition associated with commercial logging projects.

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."*

In our Scoping comments we asked that these supposed conditions be more clearly articulated. Where are these conditions occurring? In what specific units or areas? What is the actual effect of tree mortality related to competition, stand conditions, bark beetle outbreaks and natural disturbance processes? The EA failed to answer these questions. Our on-the-ground unit monitoring for the Bear Country Timber Sale revealed very few, if any, large patches of disturbance or competition induced mortality in the project area. We also found no indication that natural mortality agents were creating mortality on anywhere near the scale identified in the Bear Country EA. Although the agency makes these claims, they are not evident on the landscape and no analysis was provided to support these otherwise unsubstantiated claims of increased mortality and subsequent loss of late successional forest habitat functionality.

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 2019)." Yet, no prescribed fire is proposed in the Bear Country Project in LSR forest.

In the Draft EA, the Purpose and Need also quotes Lesmeister (2019) stating that *"(w)ithin 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."* (USDA 2021 P. 13). The agency is ignoring the totality of Lesmeister 2019 and is misleading the public with faulty analysis. A closer reading of Lesmeister 2019 states that active management can degrade habitat suitability and may not decrease fire severity (see Appendix 2). More specifically, many of the findings in Lesmeister 2019 directly contradict the interpretation utilized by the Klamath National Forest in this project. In this specific instance, the Klamath National Forest is manipulating science, misrepresenting applicable research and misleading the public in regard to important fire science conducted in our region.

Here is the full quote with the portions of the quote removed in the EA highlighted in bold:

"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."* (USDA 2021)

According to the Lesmeister 2019 paper, protecting large blocks of northern spotted owl habitat can enhance fire resistance and benefit biodiversity, while the EA claims these very same stands must be logged due to supposed issues with forest density, canopy cover, fire risk and biodiversity loss. These claims are directly contradicted by the very research used to justify the Purpose and Need for this project. Below are quotes directly from Lesmeister 2019 (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." (Lesmeister 2019).

The Bear Country EA also assumes that the proposed logging activities would enhance northern spotted owl habitat conditions and reduce fire risks. Again Lesmeister 2019 disagrees:

"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 older forest in late-successional reserves*** *(i.e., northern spotted owl nesting/roosting habitat)* ***with no active management can serve as a buffer to the effects of climate change and associated increase in wildfire occurrence. 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."*** (Lesmeister 2019).

Lesmeister also identifies prescribed fire (and by extension managed wildfire) as the most effective way to mitigate wildfire intensity, but no prescribed fire is proposed in LSR forest habitats in the Bear Country Project EA.

"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). (Lesmeister 2019).

The Late Successional Reserve system was set up by the Northwest Forest Plan decades ago because old-growth and mature forests need to remain standing in order to support hundreds of species including the northern spotted owl. These forest stands have long been recognized as critical to species survival. Our organizations agree with DellaSala et al 2015, in their assessment of the importance of the reserve system:

We believe that federal agencies should instead build on the NWFP to ensure continuing success in the Pacific Northwest. We urge federal land managers to (1)

protect all remaining late-successional/old-growth forests; (2) identify climate refugia for at-risk species; (3) maintain or increase stream buffers and landscape connectivity; (4) decommission and repair failing roads to improve water quality; (5) reduce fire risk in fire-prone tree plantations; and (6) prevent logging after fires in areas of high conservation value. In many respects, the NWFP is instructive for managers considering similar large-scale conservation efforts.

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.

Klamath National Forest LSR Assessment

The project proposes old forest logging, downgrading and eliminating suitable northern spotted owl habitat and new road construction, none of which is consistent with the needs, attributes or guidelines identified for LSR forest. The guidance and information provided in the applicable Watershed Analyses, the Klamath National Forest LSR Assessment and the Northwest Forest Plan demonstrate that these activities would have detrimental impacts.

According to the LSR Assessment "generally, road construction for silviculture, salvage and other activities is not recommended" (USDA 1999 P. 2-31). Yet, the EA proposes 5 miles of new road construction and 15 miles of road reconstruction. It is well documented that even temporary road construction has significant impacts that are very similar to permanent road construction.

The LSR Assessment specifically identifies important considerations for the Eddy Gulch LSR. These include recommendations to protect late successional habitat stating, "*The protection and management of existing late and mid-seral vegetation will be important if more late successional habitat is desired."* (USDA 1999 P. 2-44). Unfortunately, the Bear Country Project proposes commercial logging in significant old-growth and late successional forest currently providing nesting, roosting and foraging (NRF) habitat for the Northern spotted owl. The treatments proposed in the Bear Country EA would degrade habitat values in the old-growth and late successional forests by removing large trees, reducing canopy cover, limiting future snag and downed wood recruitment by capturing mortality, and simplifying currently complex habitat structures. They will also downgrade and eliminate NSO habitat including the removal of 235 acres of nesting and roosting habitat and 701 acres of foraging.

The level of habitat removal and degradation proposed in the Bear Country Project and the number of natural, late successional stands targeted for commercial logging is in direct conflict with LSR management. All NSO habitat removal and old forest logging must be canceled in the upcoming Decision Memo or more fully analyzed in an EIS analysis.

Lower South Fork Watershed Analysis

The Lower South Fork Watershed Analysis was published to provide guidance for activities in the lower South Fork Salmon River watershed. The Watershed Analysis identifies seven owl sites within the Eddy Gulch LSR (USDA 1997 P. 1-3). We are greatly concerned by the impact of project activities that would remove and degrade habitat conditions.

The Northwest Forest Plan provides for the protection of old-growth fragments were little habitat remains, creating a minimum standard of 15% old-growth in a given watershed (USDA 1997 P. 5-9). Currently, the Lower South Fork watershed contains 19% old-growth (USDA 1997 P. 5-10) and any reduction in that habitat would begin creating concerns for compliance with the Standards and Guidelines for the Northwest Forest Plan. The Watershed Analysis continues by stating that, *"old growth accounts for 19% of the Federal lands in the watershed. With the current trends in large scale disturbance it is important to protect the remaining old growth stands and promote the development of old-growth characteristics in other conifer stands."* (USDA 1997 P. 5-11). Unfortunately, the Bear Country Project fails to protect old-growth stands and would instead degrade habitat, leading to declines in already limited old-growth forest. Treated stands would be deficient in standing snags, downed wood, future snag and wood recruitment, canopy coverage, large trees and interlocking canopy structures. Forest managers are also targeting mistletoe trees for removal, eliminating important nesting and roosting habitat for the NSO and other species such as the Pacific fisher.

These impacts are particularly important in the South Fork Salmon River watershed because the area *"contains a large proportion of sites not capable of growing dense stands of large trees"(*USDA 1997 P. 3-10). Numerous stands targeted for logging in the Bear Country Project currently consist of large, old trees, dense canopy and complex forest growing from relatively uncommon and productive growing conditions.

According to the South Fork WA, the potential for dense, old forest conditions to develop is limited in this watershed and the Bear Country Project as proposed would degrade numerous of these increasingly rare stands by removing canopy, large, old trees and habitat complexity.

The South Fork WA identifies fragmentation as a significant problem in the watershed creating impacts to dispersal habitat and predation (USDA 1997 P. 5-13). Commercial logging in stands over 80 years of age, that includes canopy reduction, large tree removal, habitat downgrading and removal should be canceled to meet the recommendations of the South Fork Watershed Analysis and to retain habitat connectivity in these watersheds.

Active Management and Increased Fire Risk

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.

This issue has been illustrated vividly during the 2021 fire season, when heavily treated areas burned over at relatively high rates of spread. In some cases, previously treated units also appear to have increased fire severity. These effects have been identified in numerous regional fires including the massive Bootleg, Dixie and Caldor Fire's which burned straight through numerous fuel management projects and past numerous fuel breaks. The same appears true for the River Complex, where the fire burned through the previously treated Petersburg Pine Timber Sale. Similar, evidence shows that abundant treated units burned through in the Antelope Fire in the eastern half of the Klamath National Forest. In none of these circumstances, did the treated areas significantly contribute to fire containment, facilitate safe access for fireline development, reduce the rate of spread, or provide anchor points for suppression crews. Instead, they burned thru just like untreated areas and burn severity is likely to be dictated largely by fire weather conditions, rather than fuel loading or canopy density. If anything it appears that initial analysis is showing increased rates of spread in many treated areas on the Bootleg Fire and Dixie Fires. The Bootleg Fire and Dixie Fire areas have been subjected to particularly extensive fuel treatments and still sustained high rates of spread, were some of the season's largest "mega-fires" and in the case of the Dixie Fire, whole towns such as Greenville and others burned to the ground despite having extensive fuel management projects, fuel breaks and thinning units surrounding the community.

This is particularly important to our analysis of the Bear Country Project which claims an ability to stop, slow or moderate wildfire effects under extreme weather conditions and focuses largely on fuel management, canopy reduction and the development of ineffective fuel breaks. This summer, during extreme weather conditions, shaded fuel breaks, extremely wide dozerlines and large treated areas repeatedly failed to hold, as spot fires pushed ahead of containment features. The creation of fuel breaks and fuel management zones is unhelpful in severe weather conditions and the open conditions may actually produce fine fuels that are more likely to ignite in significant ember showers and have less ability to catch and extinguish airborne embers or fire brands due to a loss of canopy.

Unfortunately, logging units proposed in the Eddy Gulch LSR are not strategically located and are instead designed to capture timber volume. Numerous of the old forest units we have monitored in the Eddy Gulch LSR and in particular on

Matthews Creek contain large trees, minimal understory, high canopy layers and significant natural fire resistance. These stands and their resilience to fire would be degraded through the proposed logging treatments.

Commercial harvest in the planning area would increase fuel loading, fire hazards and reduce fire resilience.

In the Salmon River watershed commercial logging including clearcut logging, post-fire logging and plantation development has had a significant influence on fuel loading and fire risks within the planning area. Although fire suppression itself has increased fire risks by suppressing fire cycles, logging is often an underappreciated contributor to uncharacteristic fire effects in contemporary wildfires. Fire can be reintroduced or will burn despite suppression efforts in the Salmon River watershed, but the impact of commercial logging cannot be easily recovered. For all practical purposes the loss of resilience associated with commercial logging impacts, large tree removal and plantation development are irreversible in the immediate future and would continue impacting fire regimes and fire behavior on the landscape scale. However, this impact can be discontinued by making more responsible decisions on federal land, deferring commercial logging in natural forest stands and in particular in natural mid-seral and late seral forests.

Logging and plantation management have increased fire risks throughout the Pacific Northwest. Commercial thinning and the associated canopy loss triggers an aggressive understory response dramatically increasing understory fuel loads, and developing highly flammable, young vegetation, while removing large fire resistant trees. Increased solar radiation and exposure to drying winds raises ambient air temperatures, reduces relative humidity and reduces fuel moisture content making treated stands more flammable during the summer months and more likely to sustain high levels of fire induced mortality during wildfire events.

The combination of historic even-aged, clearcut logging along with more recent commercial thinning operations has decreased fire resilience and "forest health" on the landscape scale. Further canopy reduction and the large tree removal proposed in the Bear Country Project would not increase resilience. Those lands impacted by previous logging operations, such as the Jess, Eddy Gulch LSR and Glassups Timber Sale, should be the highest priorities for restoration and fuel reduction on the landscape. However the Salmon/Scott Ranger District has not followed through with fuels reduction treatments or multi-party monitoring. Additional commercial logging would not achieve these goals within the planning area.

It is also likely that the biggest increase in fire risks within the planning area is associated with post-fire logging and plantation development following the 1987 fires. These densely packed, unnaturally regenerated plantations extend across vast areas above Forks of Salmon and could significantly contribute to the potential for

widespread high severity fire. Plantations are the most significant fire risk in the Bear Country Project Area. Yet, of the 4,195 acres proposed for commercial logging, only 491 acres are proposed in the vast plantation network in the project area.

Although the agency claims "benefits" from commercial logging to fuel loading, fire resilience, and fire risks, these claims are based on faulty analysis, overly optimistic assumptions, misapplied fire regimes and a lack of monitoring data identifying the long-term results from commercial thinning operations. Lacking long term monitoring data and refusing to see the clearly negative consequences of previous commercial thinning operations, the agency plows ahead, impacting forest health and dramatically reducing fire resilience with each additional timber sale. As more land within the landscape is commercially "treated" the problem continues to grow.

Recent research supports these conclusions. Prichard (2021) found that even the combination of thinning and prescribed fire "may increase the risk of fire by increasing sunlight exposure to the forest floor, drying surface fuels, promoting understory growth and increasing windspeeds".

Additional research in the Sierra Nevada also found that forests previously logged under a fuel reduction approach largely burned at high severity during the 2013 Rim Fire (Povak 2020). Likewise in an analysis of the 2014 Carlton Fire in eastern Washington Prichard (2020) found that units thinned and pile burned had the highest fire severity of any category. A study of the 2002 Rodeo-Chediski Fire in Arizona also found 22% more live tree carbon and 40% more total above ground carbon from wildfire alone than forests that had been thinned and burned utilizing prescribed fire (Yocum Kent et al. 2015).

Shrub Response:

The drastic canopy reductions generally proposed in the project would increase understory and ladder fuel loading by regenerating dense shrubby understory vegetation and young conifers in the years following "treatment." The phenomenon is known as "shrub response" or "understory response" and is associated with canopy thinning, especially in mixed conifer systems with significant shrub and hardwood associates, like those in northwestern California (Franklin/Johnson 2009).

Interior forests in the Salmon River watershed are a dry mixed conifer ecosystem with a high potential for shrub response. In both arid and relatively mesic forest conditions in the planning area canopy reduction would inevitably induce a significant shrub response. In fact, in their paper titled "Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications" Jerry Franklin and Norm Johnson state that, *"potential shrub responses to reduction in stand density must be considered. Some dry mixed-conifer plant associations have the potential to develop dense shrubby understories when light and moisture are*

made available by tree thinning; this is particularly the case in dry forests that exhibit more even-aged and dense structures." Many forests targeted for "treatment" in the Bear Country Project support more even-aged and dense structures. Others support healthy late successional forest conditions that would not benefit from commercial thinning operations.

The arid site conditions and abundant chaparral and hardwood communities would also contribute to shrub response, which is vigorous after commercial logging operations. The authors continue, " *the potential for developing undesirable levels of understory fuels need to be assessed on a stand-by-stand basis and prescriptions adjusted so as to reduce the risk of undesirable understory responses. Indeed, in some cases it may be desirable to maintain essentially full overstory cover, treating only ladder fuels, and leaving all dominant and co-dominant canopy trees in place rather than risk enhancing ground fuels."* (Franklin/Johnson 2009). These recommendations should apply to the planning area but were not adequately considered in the EA.

The process is rather simple, increased sunlight and growing space triggers understory shrub and conifer regeneration. Likewise, soil disturbance associated with yarding activity often pierces through the soil surface triggering germination of woody species that in turn, create dense ladder and understory fuel as they mature.

Shrub response tends to significantly increase fuels in the understory beginning roughly 5-10 years after commercial entry. The development of dense understory fuel continues until canopy conditions have recovered and can again suppress understory growth. The result is an increase in fuels and fire risk following logging treatments. According to BLM fire/fuel analysis in similar forests located in SW Oregon (see Appendix 7) heavy canopy reduction can dramatically increase fire risks for 20 years or more DOI. 2018a & DOI. 2018b). We find this prediction to be conservative.

In the planning area, the relatively arid climate means canopy reduction would take at least 20 years to recover, yet may also further deteriorate following logging treatments, known as accelerated overstory mortality. We have documented these conditions in very similar mixed conifer forests in the Applegate Valley of SW Oregon. Stand shock, desiccation, bark beetle infestations and wind throw have been documented to further reduce the overstory canopy in the years following "treatment." The lack of canopy has generated an understory response with extreme levels of fuel loading and fuel laddering. In these sites, fuel loading would increase until canopy conditions fill in and reduce the growth of understory vegetation. In the Applegate Foothills this may take decades and the effects would be similar on the South Fork Salmon River where similar levels of annual precipitation support very comparable mixed conifer forests.

Citizen monitoring has documented an aggressive understory response over a broad geographic area and in nearly every timber sale in the Applegate Valley and on the Klamath National Forest, over the last 25 years. Yet, land management agencies have essentially refused to adequately analyze "understory response", its influence on understory fuel loading and therefore fire severity in NEPA analysis throughout the region. Similar to many other projects, analysis in the Bear Country Project EA fails to adequately consider the impact of understory shrub response and increased fire risks associated with commercial logging, large tree removal and heavy canopy reduction,

An article written by James Agee (1996) comments that *"The effect of herb and shrub fuels on fireline intensity is not simply predicted. First of all, more herb and shrub fuels usually imply more open conditions, which are associated with lower relative humidity and higher wind speeds. Dead fuels may be drier and the rate of spread may be higher because of the altered microclimate from more closed canopy forest with less understory. Secondly shrub fuels vary significantly in heat content. Waxy or oily shrubs like snowbrush (Ceanothus velutinus) or bearclover (Chamoehotia foliolosa) burn quite hot; others have lower heat contents."*

More recent research has also acknowledged that commercial thinning can cause "higher surface fuel loads" which "can contribute to high intensity surface fires and elevated levels of associated mortality" This same research found that thinning "can lead to increased surface wind speed and fuel heating, which allows for increased rates of fire spread in thinned forest" (Prichard 2021).

In southwestern Oregon and Northwestern California, less canopy general means dryer microclimates, increased exposure to winds and increased shrubby understory fuels. This is especially true on the South Fork Salmon River in a significant rain shadow cast by the Trinity Alps. Many of the shrubby species that regenerate after heavy canopy reduction (below 50%) are extremely flammable and laden with waxes and volatile oils. These species are often highly flammable and would include young incense cedar, Douglas fir, live oak, manzanita and buckbrush to name a few. This means that if typical or characteristic species regenerate in the understory following commercial treatments, the flammability of the conifer saplings, shrub communities and activity slash would significantly increase fire risks.

The following scientific studies have shown a correlation between thinning and understory shrub development:

Wilson et al. 2007, "Density Management and biodiversity in young Douglas-fir forests. Challenges of managing across scales."

Summary: This study found an increase in shrub density at 16 and 30 years following treatment.

Campbell 2008, "Carbon Dynamics of a ponderosa pine plantation following thinning treatment in the northern Sierra Nevada."

Summary: This study found an increase in shrub cover following thinning treatments. Shrub cover increased from 9% to 32% 3 years after treatment and maintained 22% shrub cover, 16 years after treatment.

Agee 1996, "The influence of Forest Structure on Fire Behavior."

Summary: Altered microclimates and increased growing space can encourage the development of flammable understory fuel loads, increase wind speeds, dry soils and fuels, while increasing temperatures, all of which can increase fire severity and fire behavior during wildfire events.

Weatherspoon and Skinner 1995, "An Assessment of factors associated with damage to tree crowns from the 1987 wildfires in Northern California."

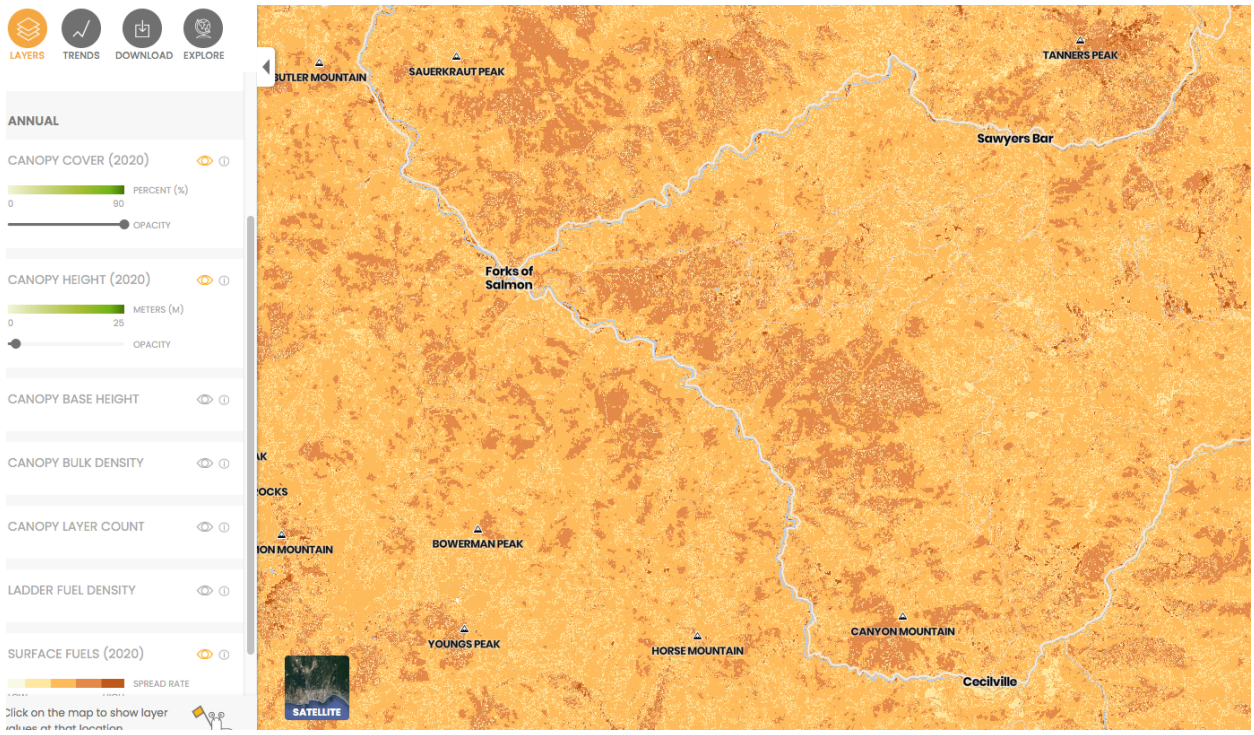
Summary: This study found higher levels of fire severity on open sites when compared to closed, canopy forest.

Odion et al. 2004, "Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains."

Summary: This paper established a connection between time since fire and fire intensity. The paper found that high levels of canopy cover can suppress understory fuel loading and reduce fire severity.

The Bear Country EA does not adequately analyze the issue of "understory response" and its association with canopy reduction to 50% or lower. On-the-ground monitoring within the planning area and throughout the Klamath-Siskiyou region demonstrates that understory response can dramatically affect fuel dynamics. The Forest Service must thoroughly analyze the impact of canopy reduction and large tree removal on fire severity and fuel loading in a full EIS analysis. Analysis should include estimations of fire risks 10, 20 and 50 years following treatment.

According to the Forest Observatory, website at forestobservatory.com, the most intense areas of surface fuels lie primarily outside of project treatment areas. The proposed project would add to the fire risk of these thick surface fuels. A close up of the project area is pasted below.



Stand drying:

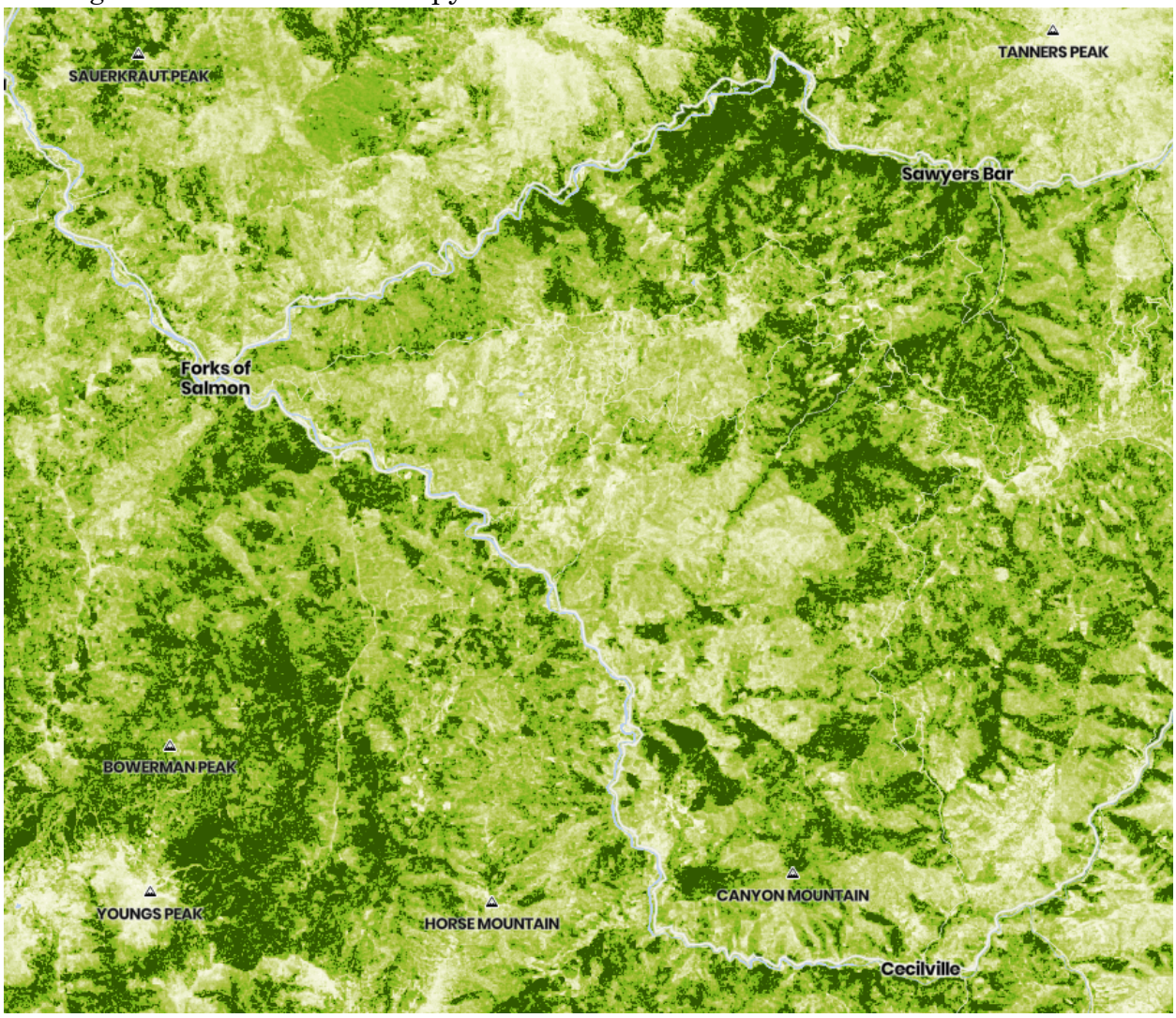
Agency land managers on the Medford District BLM admit on page 3-35 of the Nedsbar Forest Management Project EA that, *"A drier microclimate generally contributes to more severe fire behavior"* (DOI. 2016). This concept also holds true in the dry mixed conifer forests on the Salmon River, which are very similar in composition and structure. Already located in the rain shadow of the Trinity Alps, significant non-forest plant communities including chaparral, white oak woodland, live oak woodland and gray pine habitat are too arid and unproductive to support closed forest. In large portions of the South Fork Salmon River watershed these "non-forest" plant communities dominate the river canyon. In the South Fork watershed and numerous of its tributary streams dry Douglas fir and mixed conifer forest is found largely in canyon bottoms, north facing slopes and in stringers adjacent to less productive shrub or hardwood plant communities. In these marginal sites and in watersheds like the South Fork where soil conditions and annual rainfall amounts do not reliably support conifer forest habitat, stand drying associated with canopy reduction can have dramatic effects on fire behavior, understory fuel loading and tree health.

The extent of overstory canopy cover is directly proportional to the level and seasonality of stand drying. More open sites are exposed to drying winds, high levels of solar radiation, and high ambient air temperatures. These factors combine to dry forest fuels faster, extending fire season and making fuels more receptive to spotting during fire events. The combined affect is to dry forest stands, reducing fuel moisture during fire season, increasing the rate of spread when fires burn,

increasing the potential for spotting into receptive fuels, and contributing to fire intensity.

Citizen monitoring efforts have documented the increased fire risks associated with overstory canopy reductions, throughout southwestern Oregon and northwestern California. Again, the Nedsbar Forest Management Project EA admits on page 3-35 *"Management of forest stands can result in altered micro climates (Agee 1996). Increasing spacing between the canopies of trees can contribute to increased wind speeds, increased temperatures, drying of topsoil and vegetation, and increased shrub and forb growth (Agee 1996). A more open stand allows more wind and solar radiation resulting in a drier microclimate compared to a closed stand. A drier microclimate generally contributes to more severe fire behavior." (*DOI. 2016). The BLM and Forest Service often claim that project design features would mitigate this concern, but project design would not reduce stand drying if canopies are reduced to 50% canopy cover or below.

As seen from the Forest Observatory the agency is targeting the forest areas with the largest trees and most canopy cover.



It is important to note that by comparing the map above showing canopy cover with the previous map showing surface fuel loading, you will notice that the locations with the highest levels of canopy contain the least surface fuel loading, while those locations with more open habitats directly correlate with the locations demonstrating high levels of surface fuel loading. This cause and effect relationship was not adequately or realistically analyzed in the EA and does not constitute a rigorous scientific analysis, as required in the NEPA process.

The issue of stand drying, its association with increased fire behavior and its association with canopy reduction was not adequately considered in the Bear Country Project EA. No forested stand should be thinned to below 50% canopy cover.

Extended Fire Seasons:

Active fire season can be extended through the impact of logging treatments, canopy loss and the affect of stand drying on forest fuels. Fine fuels like dry grass and even worse non-native annual grasses like cheatgrass or medusahead are often spread through logging operations. These annual species dry out quite quickly in the spring and build up dense, highly flammable layers of thatch. On more open sites, understory fuels like pine thatch, oak leaves, and forest duff become flammable far earlier in the spring.

The physical alteration of forest canopies and forest structure regularly leads to an extended fire season by the drying of forest stands and forest fuels. This coupled with the dramatic effects of climate change are driving longer fire seasons and creating conditions conducive to burning far earlier each summer. Although climate and weather are the most significant drivers, the increased exposure associated with more open forest canopies dries stands and fuels earlier in the season, making them flammable weeks before they would be otherwise. The increased solar exposure also serves to increase evaporation during summer rain events, limiting the positive effects of rain and overnight RH recovery during the summer fire season. The effect is directly proportional to the level of canopy reduction, with lower levels of canopy creating the most drastic effect.

Early in the fire season, non-forest plant communities and forest with minimal canopy have dried out sufficiently to carry fire, yet closed conifer stands can act as fire breaks due to higher fuel moisture contents. The reason is largely due to shading from forest canopy and the microclimate conditions that canopy cover creates. When canopy cover is reduced to below 50% in the Klamath Mountains, the potential for ignition and spread is higher much earlier in the fire season. This provides more time for either human or natural ignitions to start wildfires.

The issue of extending fire seasons and drying forest stands through canopy reduction was not considered in the Bear Country Project EA.

Commercial harvest in the planning area would increase susceptibility to high levels of bark beetle mortality

Although the agency claims that proposed thinning treatments would reduce mortality from bark beetles, little empirical evidence or monitoring data supports that conclusion. Monitoring data from recent BLM thinning projects in dry mixed conifer forests in the Applegate Valley have demonstrated that bark beetle mortality is not reduced by commercial thinning and may actually be made more pronounced due to the desiccation and more open stand conditions.

Bark beetle outbreaks are often tied to droughts or unseasonably warm winters. Severe outbreaks often follow two years after a severe drought or weather event and

weather conditions often have more to do with the timing and intensity of bark beetle outbreaks than stand structure or tree density.

Often tree resilience is tied to slight genetic variations within a stand or population of trees. Those trees containing favorable genetic traits would be more likely to survive a large outbreak. Yet, the agency has provided absolutely no evidence to demonstrate an ability to predict or identify trees with genetic resistance. Thus bark beetle resilience is highly unlikely to benefit from thinning treatments (Six. et al. 2018).

For information on bark beetle resilience, please review the following link (Ruediger et al. 2017):

https://www.dropbox.com/s/h188fxpbm2xxow3/Beetles%2C%20Timber%20%26%20the%20BLM%20%282017%29.pdf?dl=0

The analysis in the EA claims that "forest health" would be improved and bark beetle mortality reduced by thinning operations, yet scientific evidence and citizen monitoring shows otherwise. The EA cannot claim that thinning would increase resilience to bark beetle infestations while thinning units on BLM lands using similar prescriptions and in similar forest types have proven to be highly susceptible to beetle infestations.

Relatively recent aerial surveys of beetle mortality in Southern Oregon during a flat headed fir borer outbreak in the spring of 2016 show that the most acute beetle infestations in the area are located within stands that were commercially thinned in the last twenty years by the BLM. Both the plant communities and the prescriptions utilized in those thinning operations were very similar to those proposed by the KNF in the Bear Country Project and rather than reducing bark beetle susceptibility, mortality was clearly increased in previously logged units.

Aerial survey data, from Southern Oregon shows that the extent and severity of beetle activity in commercially thinned stands is far more pronounced than in adjacent unlogged forests. There are hotspots for beetle mortality located in the lower Thompson Creek drainage, Ferris Gulch, Star Gulch and Deming Gulch in the Sterling Creek Watershed. These locations have one thing in common, a history of commercial logging intended to "increase vigor and resilience" and fairly low elevation droughty conditions, similar to conditions found in low elevations in the Salmon River watershed.

Much of the most extreme beetle mortality is found in previously thinned units from the Lower Thompson Timber Sale of 1997, the Ferris Lane Timber Sale of 1996, the Buncom Timber Sale of 1996, the 2013 Sterling Sweeper Timber Sale, East Star and other BLM timber sales. Obviously in these and many other areas the supposed "benefits" of commercial logging treatments did not materialize and stands thinned

for increased resilience are now the least resilient forests in the Applegate Valley. Our report on bark beetles contains GIS map layers depicting significant overlap between treatment areas and intense bark beetle outbreaks.

In 2015 the BLM also approved a Categorical Exclusion for the Squishy Bug Timber Sale, a salvage sale targeting beetle killed Douglas fir. Every single unit in the Squishy Bug Timber Sale was located in forests previously thinned (commercially) stands. The unit prescriptions were intended to increase resilience to natural disturbance, such as bark beetles and wildfires, but had the opposite affect. For more information on the Squishy Bug Project: https://www.dropbox.com/s/ibzbhiczmgyhnnl/Squishy%20Bug%20Timber%20Sale%20Report.pdf?dl=0

Analysis in nearly every EA claims that bark beetle infestations would be mitigated through silvicultural techniques. The assumption is that thinning would increase individual tree resilience and vigor, making them more capable of thwarting a full-scale bark beetle outbreak. This assumption is simply unsupported by the data or by actual project outcomes in the Klamath-Siskiyou Mountains.

Logging prescriptions in the Bear Country Project would undermine forest resilience by removing large dominant trees and excessive levels of canopy. While doing so, forest managers have no way of knowing which trees are genetically resistant or genetically predisposed to drought stress and bark beetle mortality. In that respect we are shooting in the dark and the Forest Service has provided no evidence to demonstrate that resistant trees are being maintained, strengthening the gene pool and building more resistant populations.

Further, the Salmon/Scott Ranger District has used the claim of logging for "forest health" and resilience on timber sales, such as the Jess Project, and there is no evidence of obtaining either claim. The district has not followed through with multi-party monitoring and it will still take years to test this hypothesis.

Logging also has numerous physical affects that may reduce resilience to bark beetle infestation. Immediately, the newly opened stands are subject to shock, desiccation, windthrow, and increased exposure. Many trees are damaged during yarding operations and succumb to a variety of mortality agents including bark beetles. Overtime the shock, stress and drying affects can make stands more susceptible to drought stress and high levels of beetle mortality as well. This drying affect can extend for long periods of time if canopy conditions do not recover. As noted above this is known as accelerated overstory mortality. It can be gradual or dramatic, immediate or delayed as it was in 2016 when flat headed fir borers ate through whole stands thinned 20 years earlier in the Applegate Valley. These stands were specifically treated to increase resilience to insect infestation and reduce drought stress. Obviously, these objectives were not met and the opposite

occurred. These same results are likely in the dry mixed conifer forests of the Salmon River.

The impact of logging on mortality, disease, insects, fire risk and forest resilience is complex, variable, and episodic. It is based on climactic conditions, drought cycles, stand conditions, tree health and the growth of bark beetle populations. In some situations, like in the Applegate and perhaps the Salmon River, logging can increase the risk of large scale insect infestations through damage to the residual trees, stand desiccation, impacts to stand structure and altered microclimate conditions.

The KNF does not provide a thorough and realistic analysis of commercial thinning and its effect on bark beetle outbreaks in the Bear Country Project EA.

Bark Beetle and NEPA Analysis

NEPA does not permit the KNF to conclude that logging is always a benefit to forest health (as is routinely done in KNF NEPA analysis), especially when regionally specific evidence proves otherwise. NEPA does not permit unsubstantiated predictions that all untreated stands are unhealthy and would sustain high levels of mortality unless logged. This assumption simply cannot be validated with appropriate science nor can it be substantiated by monitoring and comparing untreated and treated stands throughout the region. Unsubstantiated assumptions do not meet NEPA standards.

Please include a detailed analysis that includes site-specific information and a discussion of bark beetle mortality in the watershed. If the KNF is to claim increased resilience, data to support that claim must be included in a full EIS.

A scientific review of beetle infestations, compounding issues and controls.

The following analysis is being provided to inform KNF management in the area by incorporating sound science.

Logging does not control insect outbreaks (Cronin et al 1999), they are predicated on climactic patterns and available host species. In the paper "Area-wide Efficacy of a Localized Forest Pest Management Practice", the authors write, *"Even more striking is the paucity of studies that have examined the consequences of pest movement patterns. In fact, we know of no studies that have experimentally evaluated the effects of management strategies on the dispersal of insect pests in forest systems."*

Through a comprehensive literature review the effectiveness of timber harvest in suppressing beetle outbreaks was shown to be negligible and even counter productive by removing genetically resilient trees, impacting habitat and

biodiversity values, removing biological legacies and disrupting the ability of forests to adapt to climate change. Preventative thinning actions that remove commercial sized trees can increase overall tree mortality in treated stands when compared to untreated areas (Six et al. 2014).

At the same time, removal of young trees in dry forests also have been shown to survive insect outbreaks and therefore logging them can reduce resilience to drought and beetle outbreaks in a changing climate (Baker and Williams 2015). In general, tree mortality mostly has been concentrated in forests subject to unprecedented droughts, climate-related increases in overwintering beetles (Harvey et al. 2014), and in forests subject to temperature stress (Stanke et al. 2021). Logging can exacerbate these drivers of forest change (Paine et al. 1998, Black et al. 2013).

Despite little to no direct evidence that such a strategy works, KNF timber planners tend to address beetle infestations with logging. The agency relies on the assumption that commercial logging prescriptions would increase individual tree vigor, allowing the residual trees to ward of bark beetle infestation. Yet, some scientists have suggested caution in using thinning to control bark beetles as geographic and climactic variables may alter the effect (Hindmarch and Reid 2001). Hindmarch and Reid (2001) found that thinned stands exhibited a higher attraction rate of mates by males of *Ips pini*, while females had longer egg galleries, more eggs per gallery and higher egg densities. Warmer temperatures in thinned stands also contributed to a higher reproduction rate and larger outbreaks. The number of males and females setting on logs was also higher in thinned stands.

There is even less evidence that we can control insects once an outbreak starts. Citing several sources Hughes and Drever (2001) assert that the weight of opinion seems to be that most control efforts to date have had little effect on the final size of outbreaks, although they may have slowed beetle progress and prolonged outbreaks in some cases. This is the case in the Applegate Valley where beetles have been shown to sustain large, episodic, drought induced population increase following commercial “forest health” thinning operations . Natural climatic patterns including heavy winter rain and cold temperatures brought beetle mortality back to background levels, not management activities. The result was far more beneficial and predictable than the result of widespread commercial logging to supposedly reduce or repeal beetle infestations. To date, the KNF has provided no science or local monitoring data to back up the claims that commercial thinning leads to increased bark beetle resilience.

Other research has found bark beetles do not preferentially infest trees with declining growth (Santoro *et al.,* 2001). Sanchez-Martinez and Wagner (2002) studied bark beetles in ponderosa pine forests of northern Arizona to see if differences in species assemblages and relative abundance were apparent for

managed and unmanaged stands. They found no evidence to support the hypothesis that trees growing in dense stands are more intensely colonized by bark beetles.

There is also evidence to suggest that thinning can exacerbate pest problems. Outbreaks of pine engravers have shown to be initiated by stand management activities such as thinning (Goyer *et al.,* 1998). The process of thinning can create mechanical damage to the remaining trees and injure roots, providing entry points for pathogens and ultimately reducing the trees' resistance to other organisms (Paine and Baker, 1993). Hagle and Schmitz (1993) suggest that thinning can be effective in maintaining adequate growing space and resources to disrupt the spread of bark beetles; but note that there is accumulating evidence to suggest that physical injury, soil compaction and temporary stress due to changed environmental conditions caused by thinning may increase susceptibility of trees to bark beetles and pathogens.

A relevant report by the Xerces Society includes a summary of relevant studies on the importance of insects to forest function and the methods used to control forest "pest" insects, and a compilation of summaries of over 150 scientific papers and Forest Service documents. The report may be downloaded in .pdf format from http://www.xerces.org/Forest_Pest_Myths/Logging_to_Control_Insects.htm

See Black, S.H. 2005. *Logging to Control Insects: The Science and Myths Behind Managing Forest Insect "Pests."* A Synthesis of Independently Reviewed Research. The Xerces Society for Invertebrate Conservation, Portland, OR.

We would recommend that KNF timber planners examine, incorporate and respond to the relevant peer-reviewed citations regarding insects and disease contained in the Xerces Report, we highlight four papers for consideration.

Schowater, T.D. 1990. *Consequences of insects. In Symposium Proceedings. Forests – Wild and Managed: Differences and Consequences*. January 19-20, 1990, pp. 91-106. University of British Columbia, Vancouver, BC.

Summary: Forest insects and pathogens do not threaten forest resources unless changes in forest conditions facilitate population growth. Healthy trees in diverse forests are protected from potential pests by defensive compounds that kill or deter plant-feeding pests, and by the abundance of non-hosts that increase the distance between hosts and chemically hide host trees. Contrary to numerous assertions, old-growth forests are highly productive and remarkably resistant to potential pests.

Aber, J., N. Christensen, I. Fernandez, J. Franklin, L. Hidinger, M. Hunter, J. MacMahan, D. Mladenoff, J. Pastor, D. Perry, R. Slangen, and H. van Miegroet. 2000. *Applying ecological principles to management of U.S. national forests*. Issues in Ecology No. 6. Ecological Society of America, Washington, D.C.

Summary: The authors identify major ecological considerations that should be incorporated into sound forest management policy and their potential impacts on current practice. There is no evidence to support the view that natural forests or reserves are more vulnerable to disturbances such as wildfire, windthrow, and pests than are intensively managed forests. Indeed, there is evidence natural systems may be more resistant in many cases. The spread of native and exotic pests and pathogens in many forest systems can be linked to the simplification and fragmentation of the forest. From an ecological standpoint, the strategy with the greatest probability of long-term success in protecting forests against pests and pathogens is one that encourages the maintenance of a diverse set of controls, such as occurs in nature.

Franklin, J.F., D.A. Perry, T.D. Schowalter, M.E. Harmon, A. McKee, and T.A. Spies. 1989. *Importance of ecological diversity in maintaining long-term site productivity. In Maintaining the Long-Term Productivity of Pacific Northwest Forest Ecosystems,* ed. By D.A. Perry, pp 82-97. Timber Press, Portland Or.

Summary: Disease and insect problems may be worse in managed stands than in natural stands. The authors suggest that old-growth forests have greater diversity of insect predators, which may in turn limit pest insect populations. They also suggest that damage by herbivorous insects could increase as the area of old-growth forests diminishes.

Schowater, T.D. 1995. *Canopy arthropod communities in relation to forest age and alternative harvest practices in western Oregon*. Forest Ecology and Management 78: 115-25.

Summary: The author compared arthropod community structure in replicate Douglas-fir and western hemlock canopies in intact old-growth stands; natural, mature stands; and regenerating plantations in western Oregon. Species diversity and abundance for several taxa, especially predators and detritivores, were significantly lower in plantations than older forests. Old-growth stands had less variability (tighter clustered) arthropod diversity and abundance than partially harvested stands. The data suggest that Douglas-fir canopies may largely recover old-growth structure by 150 years. The author concludes that the recent conversion of large portions of old-growth and mature forests to young plantations (in Oregon's Willamette National Forest) likely has reduced regional populations of many predator and detritivore species. Reduced predator diversity increases the probability that herbivores would escape regulation by predators, which could lead to a greater likelihood of pest outbreaks.

The EA does not meet the NEPA "hard look" standard and provides little evidence to support the claim of logging to control beetles.

EA Misrepresents High Severity Fire Effects and Fails to Consider Their Biodiversity Values

On project field trips, in the scoping notice and in the EA, the KNF vilifies high severity, stand replacing or largely stand replacing fire. Federal forest managers view high severity fire in the most negative light and an outcome to be avoided at all costs. Some view it as a catastrophic loss of biological values and a problematic biological process. This simplistic perspective does not to consider the significant biological values and biological legacies of complex, early seral habitat, the biodiversity these systems often represent and the mixed severity fire regime that is prevalent throughout the Klamath-Siskiyou Mountains.

High severity fire is an important and healthy part of these forest landscapes and an inevitable occurrence in our region. It also supports unique biodiversity and species assemblages found only in complex, early seral habitat (Della Sala and Hanson 2015). Any active fire regime in the Klamath-Siskiyou Mountains will include some level of high severity and by and large, these effects are related to weather, wind and terrain, rather than fuel loading or stand structure.

It is falsely assumed in the EA that untreated stands would be impacted by future high severity fire events. This statement is pure conjecture and does not reflect the reality of mixed severity fire on this landscape or the actual effectiveness of fuel treatments in moderating fire severity or influencing fire spread. It is also falsely assumed that fuel treatments can influence burn severity or rate of spread on any appreciable level during moderate and extreme weather events. In the Klamath-Siskiyou Mountains the agency simply does not have evidence to back up these claims and often the mosaic of fire on the landscape tells a different picture. For political purposes and to justify current timber programs, the Klamath National Forest is both exaggerating the physical extent or likelihood of large-scale high severity fire and at the same time misleading the public in regard to fuel treatment effectiveness. The entire fuel narrative is misleading because terrain, weather and wind much more effectively correlate to burn severity levels.

In any given wildfire and certainly in the average wildfire in the Klamath-Siskiyou Mountains, the majority of acres in nearly any fire perimeter contain mostly low to moderate severity fire. High severity fire is general between 1% and 10% of the total acres burned. Publicly available soil burn severity maps demonstrate that even the extreme, wind driven fires, like the Slater Fire, burned at only 3% high severity.

Recent scientific evidence also shows that patch sizes are not necessarily increasing and have not reached uncharacteristic levels in the West, or in the Klamath-Siskiyou Mountains. Please review the most recent peer reviewed science exploring this issue at scale (Della Sala. 2019).

Below are excerpts from Della Sala 2019:

"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 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."

Importantly, a majority of high severity fire patches in the Klamath-Siskiyou Mountains are associated with extreme weather or wind events or terrain driven runs, rather than fuel loading or stand structure. Given the influence of wind, weather and terrain on fire behavior, high severity fire is a natural response to extreme conditions and terrain alignment. In many cases these effects simply cannot be avoided. Only natural barriers or very recent fire footprints can check terrain, wind or weather driven runs. Ultimately fuel loading is inconsequential; especially since the vast majority of the "fuel" in any given forest is not consumed in a wildfire or appreciably contribute to fire intensity.

Most fires, even the largest and most severe ones, consume only the needles, leaves, twigs, duff, outer bark surface, and ground foliage, which is a small portion of the overall combustible materials in a forest (Mitchell 2015). Highest combustion factors measured post-fire are in small trees due to their relative fire susceptibility, (Mitchell 2015). This demonstrates that the larger diameter fuels targeted in commercial thinning operations are not contributing to fire intensity and are not the "fuels" that should be targeted if fuel reduction is the goal.

Ironically one of the few things that can stop or slow a high severity fire is a recent fire footprint including high severity burn patches. Fire managers on the Klamath River regularly steer difficult, backcountry wildfires into previous fire footprints to slow the fires spread or aid in containment. In many ways, recent fire footprints are the most effective containment feature in our region due to their ability to create a barrier to fire spread and spot fire ignition. For between 1-10 years following a fire, a fire footprint is generally impermeable to fire spread or at least discourages rapid fire spread.

Examples include the use of the 2013 Butler Fire during suppression of the 2021 Red Salmon Complex, the 2020 Red Salmon Fire footprint for suppression of the 2021 River Complex, the Stanza Fire for suppression of the 2014 Happy Camp Fire and many others. Even the wind-driven anomaly known as the 2020 Slater Fire was

effectively contained on its western margin by the 2018 Natchez and 2017 Eclipse Fires. In fact, these fire footprints, including high severity fire patches were the only effective containment features during the wind-drive run of September 8-9, 2020 and require no crews to reinforce or hold these lines.

Finally, it must be noted that it is not often high severity fire itself that burns communities in the West. It is ember storms blowing across communities or even low severity fires that creep into burnable urban or domestic fuels that cause the most extensive damage. We often see images of burned homes surrounded by green trees and unburned vegetation. Home ignition is a product of localized conditions, not high severity fire events.

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 and regional biological values. Likewise, reducing high severity fire in remote locations does nothing to increase the safety or security of adjacent communities.

Instead of focusing unrealistically on stamping out high severity fire, the Bear Country Project should focus on: assisting local communities with defensible space around their homes and communities; maintaining safe ingress/egress routes and strategic, prioritized treatments that extend from homes and communities outward that would be maintained over the long-term. The project should also focus on thinning plantation stands that have the potential to increase fire severity on the landscape scale (Zald 2018).

EA Failed to Consider Significant Impacts to Habitat Connectivity in the Planning Area

Connectivity is a significant and relevant issue that went almost entirely unanalyzed in the EA. Habitat connectivity is of particular importance due to the geographic location of the planning area. Located largely in watersheds draining Blue Ridge, the planning area separates the North and South Fork Salmon River watersheds. These watersheds contain important wildlife habitats and also connect major wildland cores in the Trinity Alps Wilderness, Russian Wilderness and Marble Mountains Wilderness. Dividing the two main forks of the Salmon River, Blue Ridge and the surrounding watersheds are particularly important from both a localized and a regional connectivity perspective. This importance was not unanalyzed in the EA and presents a failure under NEPA to adequately analyze the direct and cumulative impacts of project activities.

We are very concerned by the impact of the Bear Country Project on 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 northern spotted owl. These species are all reliant on forest connectivity to sustain populations, encourage dispersal and maintain genetic diversity.

Northern spotted owl:

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. In our Scoping comments we requested a full NEPA analysis of connectivity and the Bear Country Project's effect on large-scale landscape permeability, connectivity, and species dispersal. The Draft EA failed to adequately consider the specific value of this important habitat linkage and its contribution to local and region habitat connectivity. Given the location of LSR forest in the project area, project activities should have more completely analyzed for impacts to connectivity within both the LSR network and the larger landscape. This analysis did not adequately occur in the Bear Country Project EA.

Due to continued degradation to habitat and range-wide barred owl encroachment, connectivity for the spotted owl is a particular concern in LSR forest and in all suitable habitat. Our organizations are particularly concerned by the natural or native forest logging in older forest stands proposed in this project area resulting in a "*may effect and is likely to adversely affect*" determination for the owl and its Critical Habitat. Habitat such as the north facing slopes and canyon bottoms on Matthews Creek, Butcher Creek, Argus Creek, and on the North Fork Salmon River between Forks of Salmon and Little North Fork are vital northern spotted owl habitats targeted for commercial logging that would harm northern spotted owl habitat.

Currently nearly all stands in the Matthews, Butcher, and Argus Watersheds supporting Nesting, Roosting and Foraging Habitat would be impacted by commercial logging and habitat downgrades in the Bear Country Project (see Appendix 8). This logging and the subsequent habitat downgrades it creates would significantly impact connectivity and dispersal for late successional species in the planning area and in the Salmon River watershed. More specifically, the project would effect the connectivity corridors specifically identified by the Klamath National Forest in the Lower South Fork Watershed Analysis, see below in Figure 3-11.

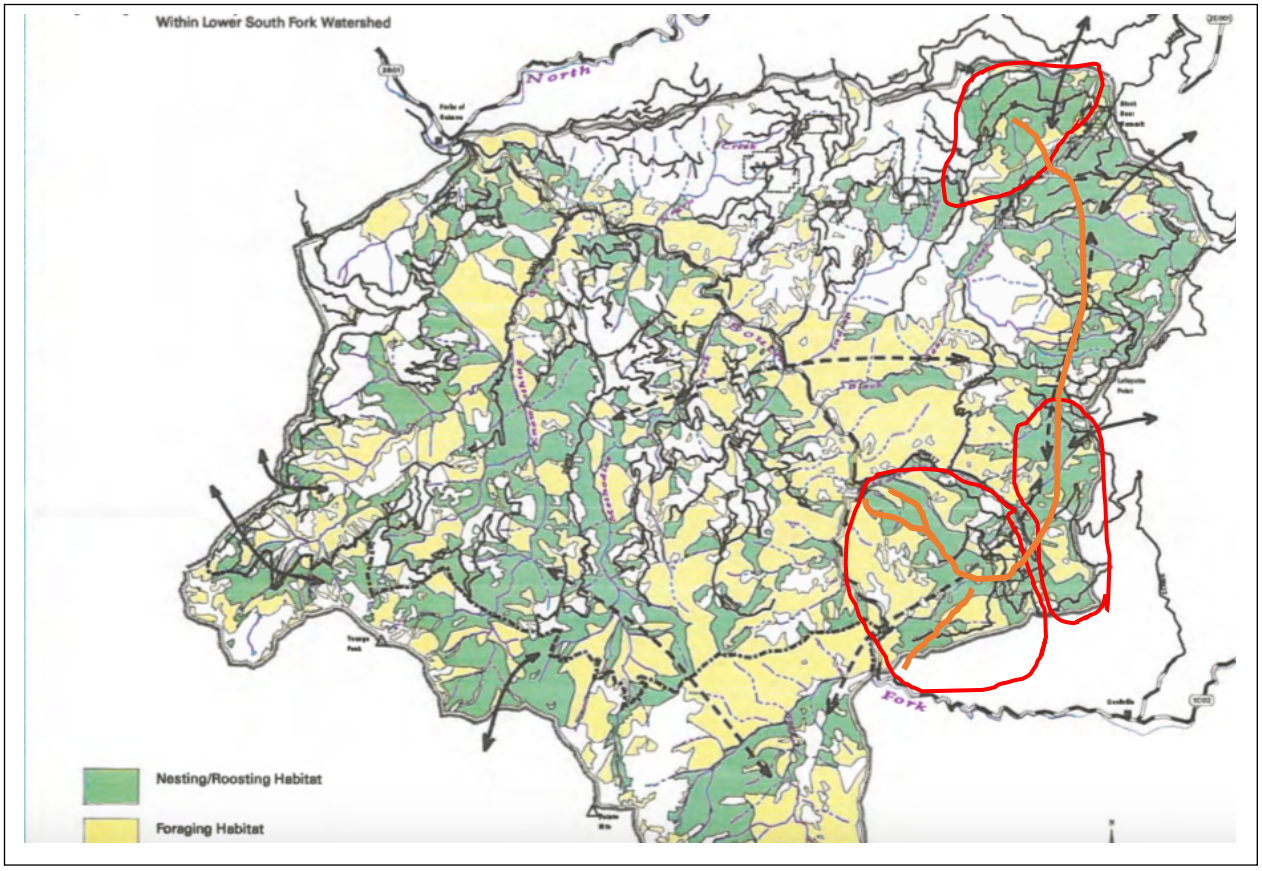
The map below (Figure 3-11) shows nesting/roosting habitat in green, foraging habitat in yellow and dispersal or connectivity corridors between watersheds with black arrows. We have circled in red areas where extensive old forest logging and/or habitat downgrades would take place in the Bear Country Project disrupting connectivity values in the area and dispersal potential for species requiring late successional habitats. Commercial logging would impact connectivity corridors identified by the Klamath National Forest in the Argus Creek/Blue Ridge Lookout

area. Additionally the corridors providing dispersal west from Argus Creek and Black Bear Creek to Lafayette Point and over to Matthews Creek would be impacted.

We are also concerned by the projects impact on the bottleneck of late successional habitat connectivity in the South Fork Salmon River watershed (shown on Figure 3-11 in orange). The impact would be severe in Matthews Creek and Butcher Creek due to habitat downgrades and removals to the vast majority of nesting/roosting habitats remaining in the South Fork watershed. In all these units late successional habitat conditions would be significantly impacted. Analysis of Figure 3-11 in the Lower South Fork WA demonstrates that a significant corridor of habitat extends down through Bear Country Project commercial logging units on Matthews and Butcher Creek. Close inspection of the maps also reveals that this is the only corridor of habitat tying together the large cluster of nesting/roosting habitat on Blue Ridge and dropping into the South Fork Salmon River canyon. This bottleneck in late successional habitat is the only reasonable corridor across the South Fork Salmon River connecting Blue Ridge to habitat in the Trinity Alps Wilderness Area and the surrounding watersheds.

The impacts to this corridor went entirely unanalyzed in the EA. Yet, based on project prescriptions, NSO habitat loss downgrades and the loss of late successional habitat conditions that often take hundreds of years to recreate would occur in the Bear Country Project. Implementation would also badly damage this bottleneck in connectivity between watersheds and between wildlands. This would make dispersal throughout the watershed more difficult. The impact of the commercial logging proposed would also compound the joint impacts of climate change and barred owl encroachment. Given the impact of climate and barred owls on NSO populations and habitat viability, NSO may require more mobile populations to persist, survive and reproduce, finding habitats not occupied by the barred owl and within effective climate and fire refugia.

Figure 3-11 Suitable NSO Habitat



The Lower South Fork Watershed Analysis also identified late-mature and old growth habitats throughout the watershed. This map (shown below) and identified as Figure 3-10 shows the spatial distribution of late successional forest habitats and the circles in red show where logging units in the Bear Country Project would degrade these habitats by reducing habitat complexity, canopy cover, snag habitat, downed wood habitat, snag and downed wood recruitment, interlocking canopy conditions, and multi-layered canopy structure. Similar impacts would also take place on the North Fork Salmon River where large portions of the nesting, roosting and foraging habitat in the North Fork canyon is proposed for logging treatments that would degrade and downgrade NSO habitat suitability.

This connectivity is important for species survival and persistence, for dispersal and to allow the northern spotted owl to move across the landscape in response to climate change, wildfires, and barred owls. In short, protecting the connectivity habitat in the region is important for not only species persistence, but also for long-term recovery of the NSO. Unfortunately, the cumulative impact to northern spotted owl suitable habitat Critical Habitat, connectivity and persistence from the

proposed Bear Country Project is both extremely troubling and was inadequately analyzed in the EA.

Pacific fisher

Habitat suitability and connectivity for the NSO also translates into habitat for a wide variety of other species requiring late successional forest habitats. Nesting, roosting, and foraging habitat for the NSO is often viewed as a proxy for the denning habitat required by the Pacific fisher. Currently, Pacific fisher surveys have also not been conduct for this project and the impact of late successional logging on this species was not adequately analyzed. Population numbers in the area are unknown, use patterns and denning areas within the planning area have not been identified and the cumulative impacts have not been adequately addressed.

Similar to the NSO, the impact of commercial logging prescriptions on fisher habitat, denning areas and habitat connectivity in the Bear Country Project would be severe. Large tree removal, canopy reduction, the loss of late successional characteristics, the removal of mistletoe trees and the simplification of habitat through commercial logging would have lasting negative impacts that went largely unanalyzed, unmitigated and unaddressed in the Bear Country Project EA.

During field monitoring for this project, Klamath Forest Alliance documented a Pacific fisher just below Matthews Creek in the South Fork Salmon River watershed. Recently the KNF has also documented fisher in this area (Wildlife Biological Evaluation P. 30) and it is possible that at a minimum this populations uses numerous old forest logging units proposed in the area including units 53, 56, 80, 81, 139, 141, 50, 120, 111, 112, 113, 132, 122, 121, 122, 123, 124 125, 126, & 138. It is also likely that additional fisher home ranges overlap in the project area and the existing old forests targeted for logging provide important connectivity habitat connecting distinct populations in the Salmon River as well as connecting the Trinity Alps to the Marble Mountains Wilderness.

A source population, the Pacific fisher habitat in the Salmon River watershed is ideally located to provide habitat linkage between the Trinity, Salmon, Klamath and Scott River populations (Spencer 2019). The connectivity provided in the planning area and the importance of Pacific fisher habitat in the area was not adequately explored in the EA.

Marten

The planning area also contains habitat for the marten and was mentioned a total of once in the EA. Despite the total lack of analysis for this species, significant habitat exists within the planning area at higher elevations. The Bear Country Planning Area connects the North and South Fork Salmon River Watershed to the

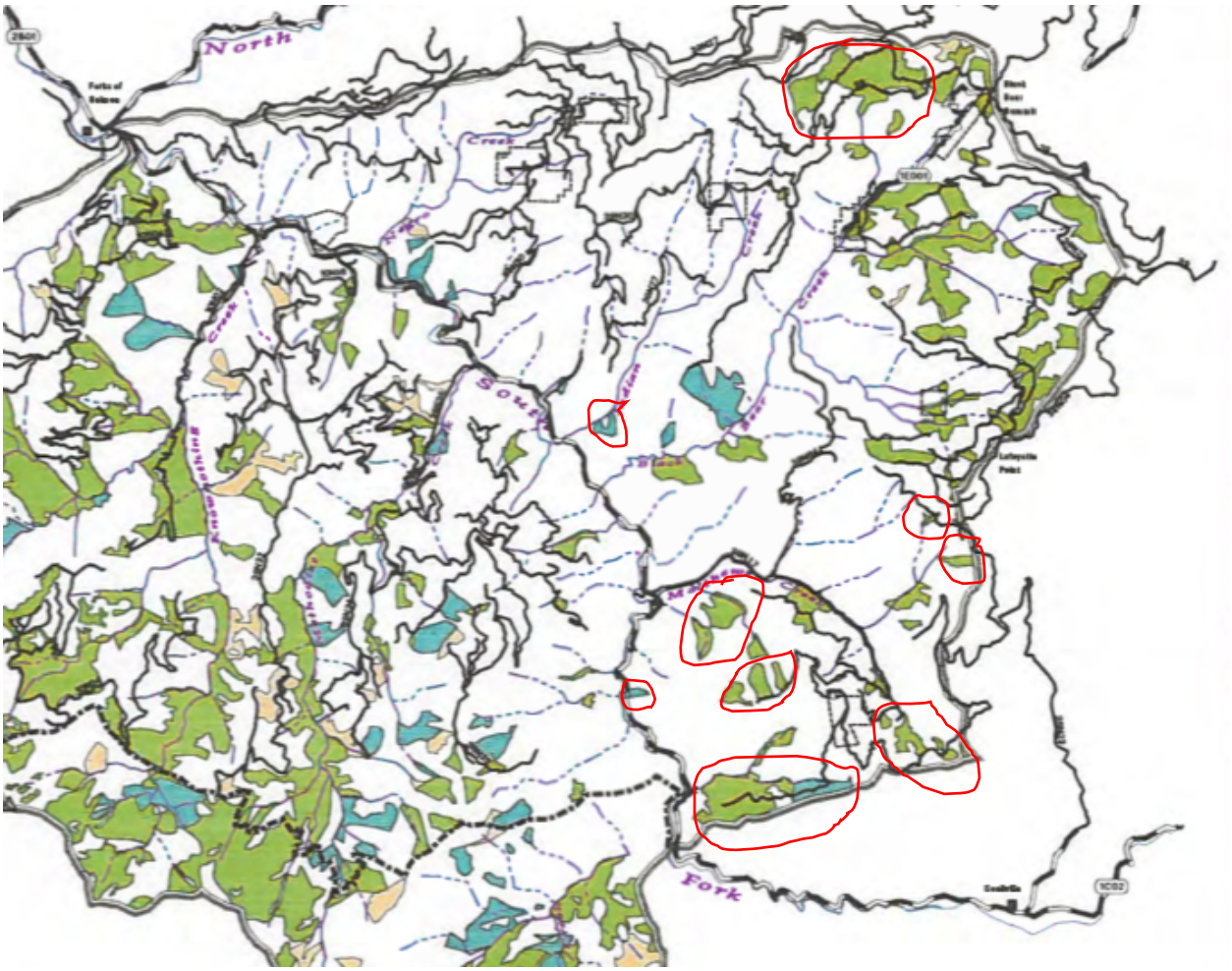
Russian Wilderness Area and throughout the larger Marble Mountains and Trinity Alps Wilderness Areas.

Recent research demonstrates that the Salmon River area and the surrounding high country is highly important in providing connectivity habitat for marten populations (Spencer 2019). The removal of large, old trees, the reduction of late successional stand characteristics, the loss of forest floor habitat complexity, the loss of canopy and the reduction in both snag and downed wood habitat associated with commercial logging would significantly degrade habitat conditions for the marten and was not adequately addressed in the EA.

Wolverine

The wolverine is also suspected to utilize the Salmon River watershed and surrounding habitats. The larger Trinity Alps, Marble Mountains and Russian Wilderness complex provides potential, but unconfirmed habitat for the wolverine. There have been ten documented historic detections on the Klamath National Forest, but no recent detections (USDA 2019a P. 29). The Bear Country Planning Area is located directly within a major connectivity corridor linking together these important habitats. Opening forest canopies would certainly remove habitat structure needed for cover, denning, or resting. The cumulative impact of proposed project activities on the wolverine are potential significant and have not been adequately analyzed.

Figure 3-10 Late-mature and old-growth stands map. Green is late-mature and old-growth 40% conifer, blue green is live oak conifer mixture late mature-old growth.



EA Failed to Consider Significant Impacts to 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." (KNF LRMP at 4-23).

"Management activities shall be compatible with the recovery of Endangered, Threatened (E&T) plants and animals." (KNF 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." (KNF 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

Analysis of sensitive species is inadequate in the Bear Country EA and consists of essentially one paragraph, failing to meet the NEPA "hard look" standards and LRMP standards and guidelines.

Significant Impacts to the Northern Spotted Owl

Northern spotted owl (NSO) habitat destruction and removal associated with public land logging is a real and controllable threat to the NSO. More than any other impact it is entirely avoidable and could be discontinued for the benefit of the NSO and its recovery. However, Klamath National Forest managers have continued to eliminate or downgrade NSO habitat and Critical Habitat through timber sale activities, contributing to the sharp declines in regional NSO populations in recent years.

These sharp declines require new strategies, but the KNF is offering more of the old, unsuccessful model of habitat degradation through so-called "forest health" or "fuel reduction" logging. The agency is claiming as it has for decades that its' logging would develop more resilient landscapes in the future, while permanently removing 900 acres of habitat, mostly Critical Habitat and degrading over 5,000 acres for decades. Simply put, the NSO would sustain immediate and lasting certain harm while the long-term benefits assumed by forest managers is theoretical at best.

Despite the grim outlook, the Klamath National Forest has proposed the Bear Country Timber Sale, which would harm some of the only occupied nest sites on the Klamath National Forest and beyond.

Figure 2 of the Draft EA on page 10 shows Nesting Roosting habitat loss between 1993 and 2012. This figure would be dramatically different given the amount of "take" and habitat loss from national forest timber sales and recent wildfires. Reiterating the importance of Critical Habitat and the need to maintain currently suitable habitat.

The Klamath LRMP requires that land management decisions be compatible with the recovery of Threatened or Endangered species. The Klamath National Forest is clearly out of step in working towards the recovery of the NSO. We urge KNF planners to forgo commercial logging in Units 80, 81, 141, 139, 125, 138, 56, 124, 123, 359, 71, 73, and to include a 26"dbh limit and 60% canopy throughout a majority of the project treatment areas. This would retain current suitable habitat,

encourage better habitat and would help to minimize the need for continued maintenance and all the other negative attributes of opening forest canopies.

Conservation of Occupied and High Value Spotted Owl Habitat

According the Draft EA, three NSO Activity Centers located within the planning area were determined to have current or recent occupancy and reproduction (USDA 2021 P. 9). According to the 2019 Klamath National Forest Monitoring Report these three Activity Centers are also some of the only occupied NSO sites on the Klamath National Forest to support reproduction in recent years (USDA 2020). Yet, just like the previously withdrawn Crawford Timber Sale, the Klamath National Forest has proposed late successional forest logging either within nest cores, home ranges and adjacent suitable habitat. Many stands proposed for logging would degrade habitat for these last reproductive pairs, impacting their viability on this landscape and the principal zone of productivity for the NSO, perhaps the last stronghold in the region.

It is likely that given the location of these activity centers, many of the stands proposed for logging are being actively utilized by these pairs as nesting, roosting, foraging or dispersal. These occupied, invaluable NSO habitats should be deferred from treatment to support NSO recovery.

The occupied nest sites and home ranges in the planning area should be the highest priority for protection as the Recovery Plan states. While the Draft EA recognizes three northern spotted owl activity nest cores with high value habitat all of the Activity Centers, nest cores and home ranges, and the suitable habitat in the project area serves as high value habitat. Removing, downgrading or degrading habitat in the project area and activity centers, especially those with recent reproduction, should be dropped from the project.

By definition, high value habitat is important for maintaining spotted owls on the landscape. This includes areas meeting the 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. It is also clearly a significant population given the rarity of regular occupancy and reproduction throughout the species range and in its last strongholds in the Klamath Provinces.

Working towards recovery for the NSO requires maintaining suitable habitat. This is particularly important for dispersing juveniles that must find currently unoccupied habitat. Recovery would mean retaining the largest oldest trees on the landscape, especially those with mistletoe. It would also mean retaining adequate canopy cover and all mature, complex and natural forest habitats. The project targets large trees across the landscape and especially in Riparian Reserves (a 26'

dbh limit is only offered in N/R habitat) and further threatens to bring overall forest canopy down to 30% and 40% throughout the project area.

Habitat loss and population declines remain steep and reproductive pairs have become extremely rare. These declines and the troubling trends in both occupancy and reproduction demonstrate a need in the Bear Country Planning Area and throughout the Klamath National Forest and Klamath Provinces to protect and maintain existing NSO habitat, including Dispersal, Nesting, Roosting and Foraging habitat. It also demonstrates that recently reproductive pairs should be buffered from impacts to their home range from commercial timber sale activity and further disturbance.

To avert extinction and recover the species, existing habitat must be retained. Habitat that is currently unsuitable should be restored through either a passive or active restoration strategy, especially in LSR, Riparian Reserve and Critical Habitat areas. This approach will more strategically and effectively maintain existing habitat and sustain the species in the long term.

NSO Recovery Plan and Barred Owls

Although likely the most significant threat to the recovery and persistence of the NSO, barred owl surveys were not conducted for the Bear Country Project. Yet, barred owls have been documented in the Matthews Creek area where important old forest and NSO NRF habitat is proposed for commercial logging (USDA 2021a P. 26). This would only increase competition between barred owls and NSO, giving the upper hand to the barred owl whom can more effectively compete in degraded habitat.

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 to maintain older and more structurally complex multi-layered conifer forests on Federal lands outside of MOCAs. The Final Recovery Plan correctly assumes 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"*.

Adequately implementing Recovery Action 32 requires detailed NEPA analysis that considers the full potential of suitable habitat, in terms of both quantity and quality. The agency must also consider how the availability of suitable habitat and its location on the landscape contributes to negative barred owl interactions and impacts to NSO populations. Maintaining a small subset of the highest quality habitat is one option, yet the agency must also consider the benefit of protecting all suitable habitat as a means of reducing barred owl competition. Clearly when less habitat exists for the two species, competition and negative interactions will increase. The Bear Country Project would reduce the amount of available habitat for numerous historic and occupied activity centers within the planning area.

The EA provides insufficient analysis of barred owl competition and the impact of reducing the overall habitat baseline on the competition and negative interactions between the barred owl and NSO.

Recovery Action 32

Recovery Action 32 was identified in the NSO Recovery Plan to protect and maintain the highest quality NSO habitat. In these habitats management is unnecessary and potentially counter-productive for species recovery, fecundity, and persistence.

The Draft EA states,

"Recovery Action 32 (RA-32) stands contain high-quality northern spotted owl habitat characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, large snags, and fallen trees. A project specific analysis was conducted to delineate stands that currently meet the RA-32 criteria. Fuels conditions are evaluated in stands adjacent to the RA-32 stands to determine the level of existing risk." (EA P. 9).

Our first concern is that not all Recovery Action 32 stands were identified in the planning process and were instead targeted for commercial logging treatments that would degrade NSO habitat conditions. Multiple proposed units and treatments areas contain late successional habitat conditions including a dominance by large diameter trees, high levels of canopy cover, and decadence components such as broken topped trees, large diameter branches, snags, mistletoe, and coarse downed wood.

The highest concentration of nesting and roosting habitat occurs in Smith Ridge, Argus Creek and Matthews Creek areas. Logging these units would degrade vital NSO habitat. Many of these units are either adjacent to or embedded with Recover Action 32 stands including, 80, 81, 141, 139, 125, 138, 56, 124, 123, 359, 71, 73 and others which, should be identified as part of the Recovery Action 32 stand and deferred from treatment.

To make matters worse numerous of these units are located in the Eddy Gulch Late Successional Reserve and within Critical Habitat. In these locations habitat values for the NSO should be paramount. The degradation of habitat with abundant habitat elements does not support LSR values, comply with management direction or the Recovery Plan. Additionally due to the long periods of time required to restore elements such as large trees, snags, downed wood, multi-layered canopy, and structural complexity these stands would take decades to recover, violating LSR guidelines and contrary to the Recovery Plan

Many units proposed for logging contain all the elements of Recovery Action 32 habitat and should have been included in stands deferred from treatment to protect NSO habitat values and the recovery of the species as outlined in the Northern Spotted Owl Recovery Plan.

Management Indicator Species (MIS)

The Draft EA did not adequately analyze the impact of project activities on Management Indicator Species (MIS). The applicable MIS on the Klamath National Forest include NSO, pileated woodpeckers, black bear, American marten, Pacific fisher and black tailed deer.

The impact of project activities on MIS was not adequately analyzed in the EA or in the separate Bear Country Management Indicator Species Project Level Assessment Part II of II Effects of Project on MIS Habitats and does not constitute substantive, site-specific NEPA analysis.

Cumulative Effects

Given the massive scale of the Bear Country Project sufficient analysis was not given in the EA to cumulative effects. Not only is the scale of the project significant, but many of the habitats proposed for commercial logging treatments contain important scenic and biological values. The intensity of treatments proposed would degrade these important values and would create lasting cumulative impacts.

Under NEPA protocol, future, present and past management actions must be disclosed and analyzed in a comprehensive cumulative effects analysis. This analysis was not adequately undertaken in the Bear Country Project EA. The effects from past road construction and federal land logging have degraded many of the watersheds in question, contributing to the cumulative effects of any project proposed in the Salmon River watershed, both now and into the future. The true effect of previous commercial logging and road construction on federal lands was not adequately analyzed in the EA.

An objective view of the Bear Country Project demonstrates that the commercial logging proposed would only compound the already extreme cumulative impacts associated with previous management activities. Yet, the EA failed to see the reality that additional commercial logging and road construction would only increase the cumulative impacts on a watershed scale. The cumulative impacts of commercial logging, road construction, landing construction, road reconstruction and fireline reconstruction proposed in the Bear Country Project would increase soil impacts, surface erosion rates, sedimentation, wildlife impacts, hydrological impacts, forest fragmentation, noxious weed spread, and other lasting environmental impacts.

The Draft EA fell short at considering the cumulative impacts. Routinely the agency ignores a thorough look at cumulative effects and instead assumes without merit, that commercial logging operations would sustain minimal short term impacts, but would provide lasting benefits to habitat values, fire resilience, NSO, forest health, etc. This perspective is not supported by applicable science.

The Recent Revisions to CEQ's NEPA Regulations Do Not Eliminate the Forest Service's Obligation to Analyze Cumulative Impacts

The recently revised NEPA regulations still require that the Forest Service consider the cumulative impacts of proposed projects. The 2020 revisions to the 1978 CEQ regulations eliminated the distinction between cumulative effects and other effects. However, this revision was not meant to rid the requirement to consider cumulative effects, but only to "focus agency time and resources on considering whether the proposed action causes an effect rather than on categorizing the type of effect." 85 Fed Reg. at 43343. The regulations still require that all "reasonably foreseeable" environmental effects be analyzed in an EA. 40 C.F.R. § 1501.5(c)(2). 40 C.F.R. §1508.1(g).

Further, regardless of what the revised regulations require, the Forest Service should still analyze cumulative effects for two reasons. First, the revised NEPA regulations are both under review by President Biden, *see* Executive Order 13990: Protection Public Health and the Environment and Restoring Science to Tackle the Climate Crisis[23]; *see* Fact Sheet: List of Agency Actions for Review[24], and are the subject of several legal challenges, *see e.g., Wild Virginia v. Council on Envtl. Quality,* No. 3:20-cv-00045 (W.D. Va.); *Alaska Community Action on Toxics v. Council on Envtl. Quality*, No. 3:20-cv-05199 (N.D. Cal.). And second, if the Forest Service does not look at cumulative impacts, it has not taken a "hard look" at the environmental effects of the project. *See Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.,* 387 F.3d 989, 1001 (9th Cir. 2004) (holding EAs "do not reflect a hard look" where they fail to consider cumulative impacts). The "hard look" requirement is imposed by NEPA's statutory language, independent of the CEQ regulations. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

Riparian Reserves, Fisheries and Water Quality

Riparian Reserves in the Salmon River watershed are some of the most productive, sensitive and diverse sites in the area. They provide important habitat for aquatic species including listed fish species and terrestrial species such as the willow

[23] *Available at* https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/.
[24] *Available at* https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/fact-sheet-list-of-agency-actions-for-review/.

flycatcher, Pacific fisher, Humboldt marten, black bear, elk, ring-tailed cats and other species. Riparian Areas tend to support complex structural conditions and the close proximity of water is highly important for wildlife. Riparian Reserves were set up under the NW Forest Plan not only to protect riparian species and their habitat, but also to provide connectivity for terrestrial wildlife. These are both vital functions of Riparian Reserves and both aquatic habitat conditions and connectivity for terrestrial wildlife must be enhanced by agency actions. The 900 acres of Riparian Reserve logging in the Bear Country Project does not achieve these important goals and would degrade aquatic and terrestrial habitat conditions in the planning area.

It is falsely assumed in the EA that untreated stands would be impacted by future high severity fire events. Yet, this statement is pure conjecture and does not reflect the reality of mixed severity fire on this landscape. In any given wildfire and certainly in the average wildfire in the Klamath-Siskiyou Mountains, the majority of acres in nearly any fire perimeter contains low to moderate severity fire. High severity fire is general between 1% and 10% high severity. Publicly available soil burn severity maps demonstrate that even the extreme, wind drive Slater Fire, burned at only 3% high severity.

Furthermore, in Riparian Reserves often act as fire refugia and generally burn at lower severity than the surrounding landscapes (Taylor 1998 & Downing et al., 2021). The density of riparian forests is a natural adaptation to the sites aquatic nature and to both readily available water conditions and slope position. Being located in canyon bottoms, these areas are also the most likely to benefit from heavy smoke inversions when active fires are burning (Estes 2017). These characteristics tend to moderate fire severity in riparian reserves, especially those in heavily incised canyons where topographic features shelter the riparian area from heavy solar exposure and excessive winds. These conditions also tend to elevate humidity levels along stream corridors and benefit from persistent smoke inversions.

According to the 2019 KNF Monitoring Report recent fires on the KNF have burned less severely in riparian areas and are not acting as "wicks" or "chimneys" that increase burn severity. On the contrary, *"The data show that a relatively small portion of the fire areas burned at a high soil severity, ranging between one and seven percent with an average of three percent. Low or very low severity burn accounts for 72 percent of the fire areas. The percentage of perennial stream length with high severity burns ranges between 0.2 and three percent with an average of one percent, which is less than half of the percentages for the larger fire area. Because perennial streams burn at a lower severity than the adjacent uplands there is no evidence that riparian reserves on the Klamath National Forest act as a wick for high-intensity fire. Unlike perennial streams, the percent of high severity burn in intermittent streams is nearly the same as for the entire fire area. Intermittent streams burn at a higher severity than perennial streams, but not higher than upland areas as would be expected if wicking was occurring. The data and analysis*

can be found in the Klamath National Forest Five-year Report to the Water Board (USDA 2020b)." (USDA 2020).

In most locations, rather than being "overly dense" and therefore a "fire hazard," they are naturally more dense, more productive, more cool and moist, contain more water resources and grow in largely closed canopy forest conditions with dense vegetation and multiple canopy layers. Logging to reduce density, eliminate or reduce canopy layering and open forest canopy in Riparian Reserves is often misguided and works against the natural tendency of this environment and undermines its function as natural fire refugia.

The streams in the Bear Country Project Area are key watersheds, critical for the survival of wild salmon and are also listed as water quality limited under the Clean Water Act. We remind project planners that the Salmon River watershed is one of the most important tributaries of the Klamath River and the Salmon River maintains both the only viable spring chinook salmon population in the watershed and the last completely wild salmon and steelhead runs. The Salmon River and its fisheries benefit from cold-water tributaries and from mature or late successional forests in the river corridor. Numerous tributary streams proposed for Riparian Reserve logging would be degraded by project activities, reducing functionality of the Riparian Reserve network and impacting aquatic or watershed values.

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, reconstruction of Level 1 and non-system roads and landing construction. We are also concerned that the cumulative watershed impact of the Bear Country Project does not comply with the Clean Water Act, TMDL plans, the Aquatic Conservation Strategy and the Endangered Species Act.

Finally, we are concerned with the amount of untreated Legacy Sediment Sites on the KNF and the ability of the KNF to follow through with its responsibilities to comply with the water quality waivers from the California State Water Control Board. The agency identified legacy sediment sites for treatment, yet does not disclose the historic failure to follow through with the treatment of legacy sediment sites during timber sale implementation. Water quality waivers have been provided in the past contingent on the treatment of these sites, yet in many circumstances the logging and road construction took place and the mitigation of legacy sediment site never occurred, creating a significant backlog for legacy site treatment. Given the backlog of Legacy Sediment Sites left untreated in the Westside Project alone, no more water quality permits should be offered to the KNF until previous obligations are met and all previously approved Legacy Sediment Site remediation has been fully implemented.

The scale of the project, the intensity of impacts and the agencies previous failure to follow through with water quality waiver requirements should require the completion of a full Environmental Impact Statement (EIS) and a full analysis of compliance with previous water quality waivers. A realistic, site-specific analysis of watershed, fishery, and water quality impacts was not undertaken in the Draft EA and is not sufficient to support a Decision Memo.

Road Construction and Reconstruction

The commercial logging proposed in the project requires a large, environmentally damaging road network to facilitate commercial timber extraction. The vast majority of the road network in the Salmon River watershed was built to provide access for logging and provides very little additional public purpose. Road density in the planning area is already creating significant cumulative impacts and should be dramatically reduced to protect watershed values and reduce habitat fragmentation.

Roads are associated with water quality degradation, aquatic species declines, impacts to fisheries, spread of invasive plants, human- caused fire ignitions, and the both the fragmentation 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 Bear Country Project. We encouraged planners in our scoping comments to develop and implement an action alternative that does not require new road or landing construction and/or reconstruction. Those requests fell on deaf ears and no action alternative was considered that would not proposed new road construction, either temporary or otherwise.

The Draft EA does not adequately consider the ecological effects associated with timber haul routes, new temporary road construction, road reconstruction and landing construction. It is not sufficient to say that there would be no significant impact because roads would be decommissioned. This is not a credible or realistic analysis of project effects and does not meet the "hard look" NEPA standards.

Implications of the Travel Management Rule and MVUM

It is important to note that the KNFs Travel Management Planning process states that needed road decommissioning would be addressed during site specific planning and that Sub-part (a) of the travel rule (identify minimum sustainable transportation system) would be implemented via site-specific projects, yet the Bear Country Project does not include the necessary road decommissioning. The Forest Service cannot simultaneously refuse to implement Sub-part (a) of the travel rule at both the Forest and the watershed scale.

The Draft EA fails to consider a minimum road network analysis, while at the same time producing maps and considering the utilization of non-system roads, decommissioned roads, and previously built "temporary" roads in project design. Numerous roads that are not part of the official road network and have not been approved for motorized use in the Motor Vehicle Use Map (MVUM) are being proposed for reconstruction in this project. Additionally five miles of new "temporary" road construction is being proposed.

Roads not approved in the MVUM should not be utilized in Bear Country Project. For all administrative purposes, these are not roads and they are not approved for use. Only roads currently approved for use in the MVUM should be considered in the Bear Country Project. Any previous road template within the planning area that is not included in the MVUM authorizations should be eliminated from consideration or any use of this road system for project activities should be considered new road construction.

Similarly, utilizing previous road templates that have not been approved for use in the MVUM as skid trails is not benign and is not consistent with authorizations in the MVUM that assumed these routes would passively re-vegetate, restore hydrological function, and mitigate previous soil damage. This restoration cannot take place if additional yarding or timber hauling activities take place and therefore is not consistent with previous analysis or authorizations in the MVUM.

Climate and Biodiversity Emergency

The Draft EA speaks to the changing climate nearly a dozen times, however it does not at all address the project's impacts on the climate and biodiversity emergency in any way. This includes greenhouse gases (GHGs), including GHGs and direct and indirect, short- and long-term impacts on the environment and the science demonstrating the importance of large trees, carbon release during logging, and the connection between logging and increased release of GHGs. Please see the climate and biodiversity section of our scoping comments to review the critical importance of mature and old-growth forests in the region, including the Bear Country area.

The Biden Administration recently issued an "Executive Order (EO) on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis" which stated: "the policy of [the] Administration [is] to listen to the science; to improve public health and protect our environment [...] to reduce greenhouse gas emissions; [and] to bolster resilience to the impacts of climate change." The EA is silent on addressing the key points of the EO.

The Forest Service must quantify impacts of the project relating to the climate emergency. In the forthcoming NEPA document please do not say that "direct and indirect impacts to national and global greenhouse gas (GHG) emissions and climate change as a whole are negligible" or that "the proposed action's contribution

to cumulative effects on global greenhouse gasses and climate change would also be negligible."

This region is renowned for its biodiversity including some of the most diverse temperate conifer forests in the world. The Bear Country Project EA did not consider the unique biodiversity, stand conditions or plant assemblages found within the planning area and its global significance in terms of biodiversity.

The area is also renowned as a carbon sink of international significance and supports vast tracts of natural, diversified mixed conifer forest, including many locations in the Salmon River watershed and the Bear Country Planning Area. These intact carbon rich forests should be protected as effective climate mitigation, but many of these stands are proposed for heavy commercial logging. Again, according to the Forest Service Region 5:

"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". Ecological Restoration Implementation Plan pg. 2

Numerous studies have shown that commercial logging has adverse effects on carbon sequestration and carbon stores. By removing large, commercially viable trees and removing extensive forest canopy carbon cycles would be heavily disrupted and excessive carbon pollution would be released in the process of turn native forest into two by fours.

Scientists also agree that *"large, old trees do not act simply as sensescent 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). Yet, the Bear Country Project EA fails to identify a reasonable diameter limit of 20" DBH and proposes logging old, fire resistant, carbon dense trees, dramatically reducing canopy cover and releasing large amounts of carbon. Although in many situations the largest trees in a stand may not be removed in the logging operations, the majority of actively stored carbon would be.

Using simulation modeling, researchers showed that for every unit of carbon expended to reduce wildfire combustion (e.g., thinning), the cost to the atmosphere from removal was ~3 units of carbon (Campbell et al. 2012). Likewise, in a synthesis of emissions estimated from natural disturbances vs. logging, Harris et al. (2016) concluded that carbon loss from logging of western forests released ~4-5 times more emissions than wildfire and insects combined. Yet despite these concerns,

protections for large trees (dead or alive) were recently removed in eastern Oregon and Washington even though large trees contain the majority of above ground carbon stored in the forest (Mildrexler et al. 2020). Likewise, Law (2018) found that the largest producer of carbon pollution in the state of Oregon was not transportation, but rather commercial logging and the wood products industry.

Some researchers have begun warning of a dangerous feedback system (or "landscape trap" Lindenmeyer et al. 2011) where logging contributes to global emissions that in turn result in rising temperatures that overtime threaten to convert ecosystems due to climate induced fire events. The Bear Country Project is just such a project in that it would release abundant carbon stores, fanning the flames of climate change, and encouraging more extreme fire weather, while claiming to reduce fire risks. Yet instead of reducing risks, the project would increase the underlying emissions by removing large trees and significant canopy cover in treated stands. These activities would contribute significantly to the root cause of wildfire increases, while claiming to address the symptoms. The approach will not work in the short or long-term and would leave us worse off than before treatment.

When compared to other National Forests the Klamath National Forest is 14th in carbon density and the old forest stands both in the Salmon River watershed and specifically in the planning area provide a vital biological role by storing vast quantities of atmospheric carbon and buffering against climate change and its worst effects.

Other researchers have identified the value of the Klamath-Siskiyou Mountains as climate refugia (Olson et al. 2012). Here unique microclimate and soil conditions are expected to maintain cool, moist habitats into the future, buffering many species from the most pronounced impact of climate change. These areas of climate refugia also contribute to connectivity, allowing species migration, dispersal and persistence. Unfortunately, many of these habitats are proposed for logging in the Bear Country Project.

The Salmon River watershed also provides micro and mesorefugia areas for the distribution of mesophilic, restricted-range species such as Del Norte salamanders, Pacific giant salamanders and numerous other species of millipedes, mollusks and cool, moist forest associated species (Olson. 2012). These areas are necessary for the maintenance of cool, moist habitat and for the persistence of mesophilic species in a changing climate. These refugia habitats include proposed units on the north facing slopes of Matthews Creek, Butcher Creek and others on the North Fork Salmon River.

Logging these units and other north facing slopes containing persistent, old forest as proposed in the Bear Country Project EA would significantly impact and degrade the climate refugia values and the potential for connectivity between cool, moist

habitats. These units should be deferred from treatment and instead maintained as valuable climate refugia and important pockets of more resilient habitat. The integrity of these particular habitats as climate refugia, moisture sinks, carbon sinks and climate resilient forest habitat would be undermined by project activities that remove large trees over 20" in diameter, reduce canopy cover, and reduce the abundance and/or recruitment of snags and coarse downed wood. Coarse downed wood in particular is important for soil health and mycorrhizal associates, it also stores large volumes of water on site The water storage and mycorrhizal associates facilitated by coarse downed wood in turn buffer against drought and climate change by maintaining nutrient processing and maintaining water storage through extended dry periods (Amaranthus. 1989).

The Bear Country Project identifies prescription parameters that would not adequately protect large, old trees, complex forest structure, canopy cover, snags, downed wood, long-term snag and downed wood recruitment, and other elements of complex forest habitat. Instead these habitat elements would be reduced in commercial logging units and in particular in natural stands subjected to commercial logging activities. 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 and contiguous forest stands with dense canopies are assisting both humans and wildlife, buffering against changes in climate by maintaining stand complexity, shade, cool, moist habitats and old forest canopy. We urge project planners to recognize the importance of these elements and maintain them across the Bear Country.

The Truth About Forest Products

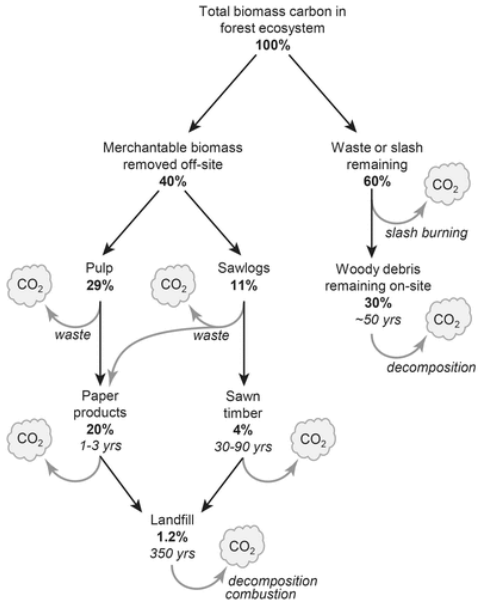
Please do not use the timber industry rhetoric that logging can increase carbon sequestration by transferring carbon from forest biomass to wood product carbon pools. Across the board, logging results in a loss of C storage. When we use active forest management, we run the risk of "creating new problems before we solve the old ones."[25]

The large amount of emissions caused by cutting, logging, hauling and milling must be factored. Much of the carbon-storing biomass from trees is contained within the tops and branches, which are often burned or left to deteriorate. Then, a significant portion of the tree is lost during milling. Then the carbon emissions of hauling lumber to outlets and then manufacturing is another addition in the total emissions. Then include the actual lifespan of

[25] Beschta et al. Wildfire and Salvage Logging. Recommendations for Ecologically Sound Post-Fire Salvage Management and Other Post-Fire Treatments On Federal Lands in the West 1995.

the product that is made from the wood that often ends up in a landfill. The myth —concerning wood products storing carbon in the long-term— that is perpetuated by the agency and timber industry needs to stop and take into account the reality of the carbon lost and emissions cast into the atmosphere to make wood products.

Transferring C from forest biomass to wood product carbon pools is inefficient and leads to an overall loss of C storage. C is lost when forests are harvested compared to old growth forests, "even when storage in wood products and landfill are included." Additionally, C stocks are younger and have less longevity in logged forests compared to old growth forests."



"Transfer of biomass carbon during harvesting and processing of wood products. Numbers in bold represent the proportion of the total biomass carbon in the forest that remains in each component. Numbers in italics are the average lifetime of the carbon pool (see data sources in Appendix E: Table E1)." (Keith et al 2014)

Harvesting trees for wood products results in net emissions and is not an energy-neutral process (USGCRP, 2018). Logging as a way to shift C storage to wood products is erroneous and misguided. This plan does not address a special circumstance, and using the transfer of C storage from biomass to wood products is erroneous.

Snags and Coarse Woody Debris

According the KNF LRMP the agency should *"Retain snags with the largest DBH as they tend to last longer and make the best wildlife habitat."(KNF LRMP 4—39).* Unfortunately, the Bear Country Project does not incorporate this management recommendation. According to the Bear Country Management Indicator Species Project Level Assessment, the KNF expects to remove snag habitat on 1,534 acres.

(USDA 2021a). This would have a significant impact on wildlife habitat and long-term forest function in these acres.

Based on previous treatments and work safety standards, the Bear Country Project would undoubtedly remove most large snags in commercial logging units. This means that over 4,106 acres wildlife habitat would be degraded. Nearly all snags would be felled, and long-term snag recruitment would be diminished in these areas in violation of LRMP guidance.

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

CWD/Snags are an essential component of healthy forests and contribute to soil vitality, waterholding capacity, soil productivity and fungal associations, in addition to providing quality habitat for predator and prey species. An extremely wide variety of species including the NSO, numerous Management Indicator Species and others heavily utilize snag habitat. Species such as the Del Norte salamander are also heavily dependent on coarse down wood and the habitat it provides.

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 and also require relatively abundant, well-distributed standing snags. 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 NSO habitat regardless of whether they are diseased or not because they play important roles while standing, decaying and lying on the forest floor.

The LRMP instructs the Forest to protect CWD to the fullest extent possible. Yet, commercial logging units would be subjected to significant snag reductions to provide for yarding opportunities and workforce safety. Although the EA claims that snags would not be targeted for removal in project prescriptions, they would none-the-less be removed in large quantities. This happens in every commercial timber sale on public lands.

Tractor-based yarding under the proposed action will also dramatically affect coarse woody debris habitat, in terms of both quantity and quality. Coarse woody debris would be disrupted through tractor yarding by moving existing habitat structures, degrading or breaking apart existing coarse wood structures, and removing both trees and snags that represent coarse wood recruitment.

We are also concerned that treatments identified as "Establish Strategic Control Features for Long Term Management" in the Draft EA would also significantly degrade snag and coarse wood availability and recruitment. These activities propose the creation and maintenance of fuel breaks/firelines along virtually every major ridgeline in the planning area. The Bear Country Project proposes preparing these ridgelines as firelines, which is likely to significantly reduce snag habitat and also long term coarse woody debris and snag recruitment.

Snags would be specifically targeted for removal in these areas and will be implemented across the planning area. This is troubling given the extremely low rate at which fuel treatments actually interact with fire events. (Shoennagel 2017). Essentially every ridgeline in the area would be degraded through snag removal, commercial logging and equipment use that would damage soils and productivity, while very few of these treatments are likely to be utilized for fire containment, while still effective and adequately maintained for fire containment.

We are also concerned that these Strategic Fuel Treatments would lead to habitat fragmentation. The concept of compartmentalizing watersheds with fuel treatments and commercial logging operations is by its very nature a source of habitat fragmentation, especially for late successional species. This strategy is inappropriate in the planning area and in LSR forests within the planning area.

Coarse wood is extremely important as a biological legacy and habitat component. According to both the NW Forest Plan and the KNF LRMP coarse would should be protected and restored to its natural abundance. Unfortunately, the Bear Country Project will have the opposite effect.

Please review the following Amaranthus, 1989 for information on the importance of downed wood during and after both droughts and wildfire events. They are significant reserves of stored water, provide important habitat structures for wildland and to support natural regeneration, and support important mycorrhizal associates (Amaranthus. 1989). They also provide continuity between ecosystems when high severity fire events do occur and the flush of snags and coarse wood inputs following a stand replacing fire can be the only input for decades to centuries and are also vitally important for long-term ecosystem function.

Invasive Plant Species

Most noxious weeds are highly adapted to disturbance, including the soil displacement and compaction associated with yarding and heavy equipment use. New road and landing construction, along with timber hauling activities are also guaranteed to spread noxious and non-native plant species into new habitats and new watersheds. Even a simple increase in use associated with contract activities also significantly increases the risk of significant noxious weed spread.

The significant spread of noxious or non-native species such as star thisle, bull thisle, dyers woad, cheat grass, medusahead and others is a given for a project proposed at this size and at this scope. The potential for a landscape scale project like that proposed in the Bear Country EA to also become a vector for landscape scale noxious weed spread is not debatable. The spread of invasive non-native plant species cannot be effectively addressed with current Project Design Features or monitoring protocol. Prevention is far better than cure in this situation and deferring treatments or activities that are certain to spread weeds is far more appropriate than attempting to mitigate the spread with ineffective control efforts. Although, the Forest Service routinely speaks of forest treatments as a positive influence on native plant communities, the on-the-ground evidence tells a different story and this story is routinely ignored. Rather than benefitting plant communities, the project activities would spread weeds and impact native plant communities in both the short and long term.

Proposed project activities are certain to spread noxious weed species, yet this impact was not adequately analyzed in the EA and Project Design Features (PDFs) would not sufficiently mitigate these impacts.

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 the impact of these activities on multiple KNF timber sales including Salmon Salvage project. Given the steep, erosive nature of the landscape, wet weather logging can be in the Western Klamath Mountains where heavy winter rain and steep mountain slopes can compound erosion and sedimentation effects. 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 (BMPs) and Project Design Features (PDFs)

As well-meaning as BMPs and PDFs are, they are rarely 100% effective or fully implemented. They are identified specifically because project activities are likely to create adverse effects and both BMPs and PDFs are designed to mitigate these certain impacts. Less certain than the creation of impacts is the successful mitigation of these impacts. We are concerned that the size and scale of the project would make the implementation of BMPs and PDFs difficult and inconsistent across the planning area, leading to additional unanalyzed impacts. The current EA analysis is inadequate and these concerns should be addressed in a full EIS.

"NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 CFR 1500.1(b). NEPA was enacted to ensure that important environmental effects

"will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast." Robertson v. Methow Valley Citizens, 490 US 332, 348, 109 S.Ct. 1835. " ... NEPA requires consideration of the potential impact of an action before the action takes place." Tenakee Springs v. Clough, 915 F.2d 1308, 1313.

The analysis fails to disclose and analyze the likely impacts of the proposed logging, yarding, road construction and reconstruction, road maintenance, landing construction and tractor piling on the environment. The agency cannot rely on RPMs and BMPs to eliminate impacts. The USFS should be aware that the National Marine Fisheries Service (NMFS) criticizes the use of Best Management Practices (BMPs) and mitigation as poor surrogates for addressing cumulative watershed effects because BMPs are addressed to individual actions and fail to do limit the totality of individual actions within a watershed. In a 1997 Position Paper on the Oregon Forest Practices Act, NMFS points out that:

> Cumulative effects of forest practices may include changes in sediment, temperature, and hydrological regimes, resulting in direct, indirect or eventual loss of key habitat components (e.g., clean gravel interstices, large woody debris, low temperature holding pools, and protected off-channel rearing areas) necessary for spawning and rearing of anadromous salmonids. These changes often are not expressed "immediately" at the project site, but instead may occur subsequent to triggering events (fire, floods, storms) or are manifested off-site (downstream) of where the effects are initiated.

Please note that the prevention of potentially adverse impacts at the project site is indeed necessary, but not sufficient to avoid cumulative effects (CEQ 1971). As Reid (1993)[26] states:

The BMP approach is based on the premise that if on-site effects of a project are held to an acceptable level, then the project is acceptable, regardless of activities going on around it. Interactions between projects are beyond the scope of BMP analysis, and operational controls are applied only to individual projects.

However useful site specific BMPs are in minimizing effects of individual actions, they still do not address the cumulative effects of multiple actions occurring in the watershed which, though individually "minimized" through application of site-specific BMPs, may still be significant, in their totality, and have undesirable consequences for beneficial uses such as salmon populations and salmon habitat.

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[26] Reid, Leslie M. 1993. Research and cumulative watershed effects. Gen. Tech. Rep. PSW-GTR- 141. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 118 p.

Every BMP is an action and has an effect ... thus generally, the more the BMPs are applied the greater the cumulative effect. Only by minimizing the number of actions, i.e., the number of individual applications of BMPs, would cumulative effects by minimized. This is precisely why a cumulative effects assessment is needed—to establish the watershed-specific limits and excesses of BMP applications.

WUI Definition:

While the risk of wildfire exists everywhere in these mountains due to extreme weather events, seasonal weather patterns and existing vegetation patterns, we believe identifying remote, isolated homesteads as Wildland Urban Interface is unwarranted. That is not to say, these isolated homesteads should be forgotten and abandoned to deal with the fire risk on their own. We also do not believe it is reasonable to implement commercial logging that would make fire hazards more pronounced in areas near these remote homesteads. To justify commercial logging in these locations based on Wildland Urban Interface designations is a significant stretch. Especially when these activities would mostly likely increase fire risks to adjacent communities.

Many of the residents living in remote locations in the Bear Country Planning Area strive to be independent and self-sufficient. They also chose to take on significant fire risk. To a certain extent taking on that risk is part of the lifestyle. Residents living in extremely remote locations take that risk in regard to wildfire, flood, heavy snow, medical emergencies, and many other aspects of life. Many of these risks are heavily influenced by the remote, difficult to reach location in which they live.

To demonstrate the misrepresentation of this landscape, as a Wildland Urban Interface, local residents have expressed opposition to numerous commercial logging treatments in the Indian Creek and Argus Creek drainages (Units 43, 68,69, 70, 71, 73, 76, 159, 160 and 162). At the relatively recent Bear Country Field Tour (July 2021) the Forest Service identified both units 159 and 76 as necessary for community fire protection and to support Wildland Urban Interface values. The very fire savvy community members at Blue Ridge Ranch expressed opposition to the logging treatments and ask that they not be implemented to supposedly protect their property. They offered to sign a waiver and state their opposition to the proposed commercial logging treatment, which they feel would only further threaten their homes and property.

Non-commercial fuel reduction thinning surrounding these private in-holdings may be warranted in some locations, but more importantly efforts should be made to mitigate fuel risks directly adjacent to homes and on private properties in the planning area. Federal treatments should compliment private land treatments to created defensible space, safe access for fire crews and escape routes for residents.

Ingress/egress treatments on main roads and escape routes are reasonable and important fire mitigations actions.

Fuel Break Construction and Maintenance

The development and maintenance of fuel breaks is proposed in Strategic Control Features for Long-Term Fire Management, Mastication and Chipping, and Mechanized Equipment for Piling and Drainage Construction prescriptions in the Bear Country Project. Yet, these are highly likely to be one-time treatments. Even if maintenance activity is approved in the Bear Country Project, recent experience demonstrates that maintenance would not effectively occur. Lack of maintenance is generally understood to be a limiting factor in fuel break effectiveness and has commonly occurred when fuel breaks are created on federal lands (Agee 1999). In the Sierra Nevada numerous studies demonstrate that fuel break maintenance is often neglected, rendering fuel breaks ineffective (van Wagtendonk 1996, Weatherspoon 1996, Weatherspoon and Skinner 1996, Sessions et al. 1996, Greenlee and Sapsis 1996). Fuel breaks are also often ineffective because spot fires can easily jump linear firelines.

In the Bear Country Project the following methods of fuel break creation would be utilized each with varying impacts and levels of effectiveness.

Mastication Effects

The Bear Country EA proposes mastication and chipping treatments on 2,271 acres and 24.4 miles of remote Salmon River ridgeline, yet does not provide site-specific treatment areas. Nothing in the Draft EA or any of the accompanying maps provides spatially explicit information regarding the location of mastication treatments. This omission to spatially identify mastication and chipping treatment areas does not meet NEPA "hard look" standards. Please provide locations and boundaries of proposed mastication treatments.

Mastication is a form of vegetation removal, but cannot honestly be described as fuel reduction. Instead it is simply fuel re-distribution and re-arrangement. The fuels are not removed per se, but are typically distributed across the forest floor and allowed to dry like kindling. The impact of mastication can increase fuel loading by depositing small, fire available fuel across the forest floor and letting it dry out to critical fuel moisture contents. By depositing this fuel bed of ground up woody vegetation onto the forest floor, the Forest Service admits that prescribed fires and wildfires could increase in intensity and generate more heat over a longer period of time by increasing the residence time of a fire event (USDA. 2021 P. 18). This has largely negative implications for vegetative recover, erosion rates, hydrophobic soil conditions, noxious weed spread, soil heating, nutrient cycling and soil structure characteristics.

Research by Backer (2004) demonstrates that fireline creation can spread noxious weeds or non-native species into remote areas otherwise buffered from noxious weed spread or lacking in seed sources (Backer 2004). The initial spread of weeds facilitated by fireline creation would only be compounded by mastication treatments, the soil disturbance they create, and the impediment of native species regeneration.

Research in the Rocky Mountains has shown that mastication can also disrupt seed germination for native plant species and alter vegetation recovery. The deposition of woody *"mulch"* from mastication creates a *"new forest floor layer that may act as a physical barrier to plant germination or as a nutrient sink that retards plant growth."* The slow breakdown of woody mulch in arid or cold environments may also extend these consequences (Battaglia. 2015). It is also estimated that mastication increased total surface fuel loading 2-3-fold in Colorado forests that are far less productive than those in our region (Battalgia. 2010).

Additionally, mastication has been shown to remove shrub-nesting habitat for birds and mammals, impede forest regeneration, disrupt nutirient cycling and mycorrhizae development (Johnson and Curtis 2001).

Research in California chaparral showed higher levels of non-native species cover, density and diversity in masticated areas when compared to untreated sites. (Brennan & Keeley. 2017). A similar result was documented outside Ukiah, California in northern California chaparral, including more non-native species cover (Wilkin etal. 2017). Likewise, fuelbreaks created in California demonstrated a significant increase exotic species which, then spread into adjacent areas (Merriam et al. 2006). The same was true in SW Oregon where non-native exotic grass cover more than double following treatments in chaparral (Perchemlides. 2008). Additional studies also showed a significant increase in non-native species, namely exotic grasses, which can alter fire regimes, making fires more flashy and frequent on the landscape (Muir & Hosten. 2010).

Additionally research in Northern California in the northern Sierra Nevada Mountains identified significant concerns surrounding soil heating and high levels of mortality in mastication units subjected to prescribed fire. The paper also identified a significant concern with burning mastication units when soils are dry and can penetrate deeper into the soil strata. Not only does this soil heating degrade soil conditions, but it damage of kill vegetation by over-heating roots. (Busse 2005). It also demonstrates that this is a concern both during prescribed fire operations and wildfire events when soils are dry.

Research in the Sequoia National Forest also demonstrates that masticated fuel loads can be roughly ten times higher than natural downed woody fuels and can cause significant increases in fire induced tree mortality during prescribed fire operations (Anstedt 2011). Meanwhile, recent research by Prichard (2021) found

that mastication of surface fuels "can cause deep soil heating" and elevated fire intensities"

Although the Klamath National Forest has proposed mastication on strategic ridgelines for fire suppression activities, research shows that in wildland and prescribed fire settings, increased smoldering and fire duration in mulched fuelbeds often pose a significant challenge for fire suppression, containment and control (Bass et al 2012, Bradley et al. 2006, Knapp et al. 2011).

Mastication should be canceled within the planning area because it does not meet project objectives as stated in the Purpose and Need. Mastication does not reduce fuel loading, reduce fire intensity or spread, can increase vegetative mortality during fire events and can challenge fire suppression, containment and control by increasing residence time and heat output.

Mechanized Equipment for Piling and Drainage Construction

We are significantly concerned with the proposal to conduct mechanized equipment piling and drainage construction on previously created dozerlines. The proposal to make these previous created dozerline permanent is inconsistent with the intent of their creation. Following fire suppression activities, dozerline are rehabilitated to allow for vegetative recovery and reduce surface erosion from the disturbed dozer scars. The proposal to essentially make these dozerline permanent fire breaks would compound all the existing impacts of dozerline construction by re-compacting soils, removing vegetation, disturbing soils, increasing surface erosion rates, reducing water infiltration, disturbing hydrological processes, and spreading and encouraging noxious weeds. Yet, not a single one of these impacts was considered in the Bear Country Project EA.

Research by Backer (2004) shows that fireline creation can spread noxious weeds into remote areas that would otherwise not contain non-native seed sources (Backer et al. 2004). With the initial disturbance of fireline creation creating noxious or non-native weed introductions, the proposed mechanized piling treatments would only further compound this impact, continue spreading noxious weeds and create conditions highly conducive to weed spread.

It is also important to understand both the effectiveness of fuel breaks and the lack of historic maintenance of fuel breaks created by the Forest Service. Reducing canopy cover and removing woody vegetation through thinning can be immediately effective at reducing fuel loads, but often triggers a significant understory shrub response, creating even aged, densely pack understory fuels. Within 5-10 years of treatment fuel loading significantly increases in response to this understory growth and fire risks actually increase. The utility of firebreaks if not adequately maintained is dubious at best and potentially harmful to future fire suppression and containment actions. These problems are especially difficult to overcome when

heavy equipment is utilized. This is largely due to soil disturbance from heavy equipment and its tendency to triggered an excessive woody understory response.

Hazard Tree Removal

The Draft EA identifies hazard tree removal operations along ingress/egress roads and haul routes. These treatments can contain commercial tree removal, but were not adequately disclosed or analyzed in the Draft EA. Nothing in the Draft EA or in the maps accompanying the EA demonstrate where commercial operations will occur. This lack of specificity makes the analysis of impacts associated with this activity impossible to quantify. This lack of specificity also precludes site-specific analysis as required under NEPA regulations.

The agency also identified Region 5 Hazard Tree Guidelines allowing for the removal of "*dead, dying and weakened trees."* This would allow for the removal of living, green trees as well as dead standing snags. We oppose the removal of green trees under the hazard tree guidelines. We also oppose all commercial hazard tree removal and if any commercial removal is proposed or approved it must be spatially identified and fully analyzed for impacts in a full EIS analysis.

Prescribed Fire

In general, we are supportive of the use of prescribed fire in habitats that have been starved of fire by fire suppression. The Blue Ridge/Bear Country Area has the least active recent fire history in the Salmon River watershed and given the dense tree plantations created after the 1987 fires and the remote homesteads found in the area, this is also the least likely area in the Salmon River watershed to implement managed wildfire or to achieve acres burned through suppression strategies the facilitate confinement, loose herding or indirect containment. This means that prescribed fire may be necessary in many ecosystems.

Yet, the use of prescribed fire does not require commercial logging or even non-commercial manual treatments. Research conducted over decades has shown that tree removal is not necessary to lower fire intensity if appropriate burn windows are chosen (van Mantgem et al. 2013).

Recommendations for Specific Timber Sale Units:

Matthews Creek Units

Matthews Creek is a small tributary of the South Fork Salmon River and an important portion of the Eddy Late Successional Reserve. Rugged and diverse, the watershed contains a diverse blend of chaparral, mixed hardwood forests and mixed conifer forest dominated by old-growth Douglas fir. It provides important habitat connectivity linking the upland portions of the LSR with the South Fork Salmon

River Canyon and numerous old-growth stands were identified in the Matthews Creek area. (USDA 1997, Figures 3-10 and 3-11). Matthews Creek also contains three overlapping NSO activity centers and documented RA-32 habitat is embedded within the NRF habitat proposed for habitat removal in the Bear Country Project (USDA 2021a). Unit 80 should be protected and identified as high value habitat under Recovery Action 10 within the Eddy LSR.

Additionally, Pacific fisher have been documented just downstream of Matthews Creek and likely utilized the proposed logging units. While monitoring the Matthews Creek units, KFA monitoring personnel documented a Pacific fisher just below the mouth of Matthews Creek on the South Fork Salmon River. A managed goshawk nesting territory is also located in Matthews Creek (USDA 1997 P 3-17), along with a Peregrine Falcon Eyrie (USDA 2021 P 102).

Logging the old forests in Matthews Creek as proposed in the Bear Country Project would increase fire risks, dramatically increase fuel loading and impact the areas natural fire resilience. Many of the forest stands currently contain high levels of fire resistance, high canopies, large, old trees with thick insulating bark, closed canopies that have suppressed understory fuel development and support cool, moist microclimates, effective wind breaks and significant shading. These conditions would be badly degraded if logging prescriptions are implemented and to make matters worse these units would not receive future fuel maintenance (USDA 2021 P. 20).

The impact of these particular units cannot be overstated and all units located in stands over 80 years of age should be canceled in the Matthews Creek watershed to protect LSR values. Below are units or particular concern:

Unit 80

Unit 80 contains important biological values that would be degraded by the commercial logging proposed in the Bear Country Project. Even the Forest Service identifies Unit 80 as "a unique stand comprised almost solely of Douglas- fir with many very large individuals." The agency also acknowledges that more than any other stand proposed for logging unit 80 is expected to sustain loses in large tree over 26" DBH, stating this is because the stand already has " a high density of large trees" including roughly 17 trees per acre between 32" and 48" diameter (USDA 2021 P. 57).

Unit 80 is located on lower Matthews Creek just above Matthews Creek Campground. The Forest Service has identified this area as old-growth forest (USDA 1997, Figures 3-10 and 3-11) and has acknowledged that the stand contains "some of the last undisturbed mature or old growth conifer stands" in the area (USDA 1997 P. 1-2). Due to previous fire history and subsequent post fire logging in 1977 and 1987 large swaths of Blue Ridge/Bear Country are dominated by early

successional vegetation. Yet, Matthews Creek and nearby Black Bear Creek were identified as important late successional refugia (USDA 1997 P. 1-2).

Unit 80 is Nesting, Roosting and Foraging habitat for the NSO and contains a block of documented RA-32 habitat. It is our position that the entirety of Unit 80 should be protected as Recovery Action-32 habitat and should also be maintained under Recovery Action-10 to provide demographic support and hedge against barred owl competition. It is acknowledged in Recovery Action 10 that maintaining high value NSO habitats would reduce competition with the barred owl and this is particularly important in the Matthews Creek watershed where barred owls have been documented (USDA 2021a).

Unit 80 consists of mostly dry Douglas fir with a few scattered ponderosa and sugar pine trees. The area contains significant old forest habitat with large diameter, fire resistant trees, significant stand complexity, large downed wood and old standing snags. The canopy layer is heavily dominated by groupings of old-growth Douglas fir, while understory species include live oak, madrone, poison oak and hazel.

Dominant Douglas fir trees range from 3′ to 5′ diameter and existing stand conditions create important nesting, roosting and foraging habitat for the Northern spotted owl and denning habitat for the Pacific fisher. The Forest Service has identified high quality Northern spotted owl habitat, known as Recovery Act-32 (RA-32) habitat in the northern portion of the unit. Although this habitat would not be directly impacted by logging activities, additional nesting, roosting and foraging habitat surrounding these acknowledged high quality spotted owl habitats would be logged, removing important habitat features and removing the area as suitable habitat.

The Klamath National Forest has proposed treating this unit with an "Improve Late Seral Habitat" prescription, and as nice as that sounds, this translates into relatively heavy commercial logging, large tree removal and significant canopy reduction. The prescription also calls for creating an undisclosed number of "openings" in the currently closed forest canopy, but the size of these openings is not currently identified. No diameter limit has been identified to protect large, old trees throughout the planning area and canopy cover would be heavily degraded if the proposed logging occurs.

We are perplexed by the EA statement on page 61, "Within the *Promote Forest Health and Resilience* objective, light treatments are planned to remove smaller overtopped trees, create small gaps and openings to improve forest structure and biodiversity, and reduce fuel loading. This results in retention of all trees already greater than 26 inches dbh for modeled stands, and improved growth is seen in several stands over a thirty-year projection…"

In the Bear Country Draft Prescription Matrix that was provided upon request, only Nesting and Roosting habitat was afforded the >26"dbh limit. We urge the agency to retain all trees over 26"dbh throughout the project area.

Not only would late successional habitat characteristics be removed, impacting Northern spotted owl and Pacific fisher habitat, but the canopy and large tree removal would also trigger an aggressive understory shrub response, replacing large, fire resistant trees with dense, young shrubs, hardwoods and conifer reproduction. This highly flammable, low-statured vegetation is both less resistant to wildfire and more likely to contribute to high severity fire effects in future fire events.

We recommend that unit 80 be canceled. It contains important habitat characteristics and is among the most fire resistant habitats in this portion of the Salmon River canyon.

Unit 139 & 141

These units are located just beyond unit 80 on lower Matthews Creek and due north of the RA-32 habitat at unit 80's margin. They were also identified as old growth and part of an important late successional connectivity corridor allowing dispersal and migration for late successional species in the Eddy LSR (USDA 1997 Figures 3-10 & 3-11). These units contain significant mid to late successional forest habitat, with groupings of old-growth trees and tie together habitat in unit 80 with additional RA-32 habitat identified upsteam on Matthews Creek.

Identified as an "Improve Late Seral Habitat" unit, ironically habitat conditions for species requiring late successional habitat would be downgraded, removed or degraded if the proposed logging occurs. Current canopy conditions sustain cool, moist microclimates in an otherwise hot, dry river canyon and are also suppressing dense woody vegetation. Stand conditions are naturally moderating fuel conditions and also contain the natural adaptations of fire resistance such as large, old trees with thick bark, high canopies, and cool, moist microclimate conditions.

Protected by canopy and large old trees these NRF habitats are important for connectivity in the Eddy LSR and maintain some of the most contiguous NRF habitat in the southern portion of the LSR. The area also provides habitat connectivity between higher elevation portions of the Eddy LSR and the South Fork Salmon River corridor. Prescriptions in the Bear Country Project would impact overlapping NSO activity centers and remove the area from habitat suitability. Important habitat elements, that take centuries to replace, would be removed in the proposed logging operations including, large old trees and snags that support viable NSO habitat and provide for long term snag and coarse wood recruitment. Canopy cover would be reduced below 40% and canopy layering would also be removed badly degrading NSO habitat conditions.

Neither unit 80, nor units 139 and 141 would benefit from the proposed silvicultural treatments and should be canceled.

Unit 53

Unit 53 straddles the ridgeline dividing the two major forks of Matthews Creek and also supports late successional habitat important for species like the Northern spotted owl and Pacific fisher. Located within a relatively large, interconnected block of NRF habitat and directly above documented RA-32 habitat.

The stand is also a dry Douglas fir forest within a mosaic of oak woodland, live oak groves, rock outcrops and chaparral. Mature, fire resistant stands of closed canopy forest, like those in unit 53, provide important thermal cover, landscape heterogeneity, and vegetative diversity. The stand contains old living trees, large standing snags, abundant downed wood, structural complexity and multi-layered canopy structure important for the NSO. These habitat features would be badly degraded if the Bear Country Project is implemented and habitat suitability would be removed impacting overlapping NSO activity centers and LSR values.

Unit 80, 139, 141 and Unit 53 contain fire resistant old forest with important habitat values. Logging prescriptions proposed in the Bear Country EA would undermine both forest health and fire resilience by removing large trees, felling large snags, reducing canopy cover, damaging long term snag and downed wood recruitment and reducing structural complexity.

Unit 53 should be deferred from treatment in the Bear Country Project and maintained for its natural fire resistance and late successional habitat value.

Unit 50

Unit 50 is located at the headwaters of Matthews Creek in relatively productive mixed conifer forest. The stand contains mature, old trees up over 4′ diameter and mid to late seral stands of closed canopy forest. The area is located in a large block of NRF habitat, in the Eddy LSR, and within an important connectivity corridor identified in previous Forest Service planning efforts (USDA 1997 Figure 3-11). This same planning effort also identified portions of the stand as old-growth forest (USDA 1997 Figure 3-10). The agency also identified a large block of RA-32 habitat below the unit in the headwaters of Matthews Creek.

The area is important for the NSO and helps to maintain LSR values at the headwaters of Matthews Creek. Logging these stands would remove suitable NSO habitat, dramatically reduce canopy cover, remove large, old trees, decrease fire resistance and significantly degrade wildlife habitat.

Dominated by large trees and sustaining canopy conditions that suppress understory fuel development, the stand also supports high levels of natural fire resistance. Unit 80 burned at low severity during the 1987 fires, which maintained the overstory canopy and further moderated understory growth.

When KFA monitoring crews visited this unit, a portion of it was marked for commercial tree removal. Based on that mark, many large, old trees would be removed in this unit, Northern spotted owl habitat values would be badly diminished, fire risks would increase and currently cool, moist forest refugia would be converted into a more hot, dry and windy condition.

Unit 50 and the other old forest units in the Matthews Creek drainage are important Northern spotted owl habitat and should be canceled.

Unit 197

Unit 197 is also located at the headwaters of Matthews Creek and within a large Late Successional Reserve intended to protect old forest habitat. It also borders a large block of high quality (RA-32) habitat for the Northern spotted owl. The unit contains mid to late successional forest, including large, old trees and closed canopy conditions that are actively suppressing understory growth with overstory shading. The unit is nesting, roosting and foraging habitat for the Northern spotted owl and contributes to the overall habitat value of the Matthews Creek watershed. Located within an important connectivity corridor and a large interconnected block of NRF habitat (USDA 1997 Figures 3-10 & 3-11), the area is important for its late successional habitat, LSR values and NSO habitat.

Unit 197 has been marked by the Forest Service for tree removal and the current mark proposes large, fire resistant tree removal and significant canopy reduction, degrading Northern spotted owl habitat and decreasing fire resistance. Unit 197 and other mature forests targeted for logging in Late Successional Reserve habitat should be canceled.

Matthews Campground Unit

Known for its spectacular beauty, deep swimming holes, rugged terrain and dramatic canyon scenery, the Matthews Campground is not only one of the more scenic locations in the Wild and Scenic South Fork Salmon River canyon, it also a popular campground and day use area.

The forests directly above the Matthews Creek Campground have been proposed for logging in the Bear Country Timber Sale, potentially damaging the scenic and recreational values of the Wild and Scenic South Fork Salmon River and diminishing habitat values.

Unit 81

Unit 81 of the Bear Country Timber Sale supports beautiful, fire resistant groves of Douglas fir directly above Matthews Creek Campground and within the Wild and Scenic River corridor. Also located within the Eddy LSR the stand supports NRF habitat and is located in an important connectivity corridor connecting the South Fork Salmon River to the higher elevation portions of the Eddy LSR (USDA 1997 Figures 3-10 & 3-11).

Unit 81 contains old-growth mixed conifer forest dominated by Douglas fir. Growing on the extremely steep north-facing slopes above the Matthews Creek Campground, although the prescriptions call for improving late successional habitat conditions, the level of canopy reduction and large tree removal proposed would have the opposite effect.

Extending from the Salmon River canyon to the rugged ridgeline above, this unit contains significant late successional conifer forest and maintains natural fire resistance. Currently the stand is dominated by large, old trees, closed forests, with relatively mesic understory conditions, and a dense canopy that has suppressed understory fuel development. This canopy also maintains the cool, moist habitat as a climate and fire refugia.

The proposed logging would also impact the small spring that provides water to the Matthews Creek Campground. Logging is proposed in the watershed immediately surrounding the camp's water source potentially impacting both water quality and quantity.

Unit 81 would not benefit from the logging prescriptions proposed; fire resistance and habitat values would be diminished and the scenic qualities of the Matthews Campground and Wild and Scenic South Fork Salmon River would be heavily impacted.

Unit 81 should be canceled along with all other old forest units in the Bear Country Timber Sale.

Butcher Gulch Units

Butcher Gulch lies just above Matthews Creek in the Wild and Scenic South Fork Salmon River canyon. The watershed contains a diverse mixture of south and west facing oak woodland, live oak groves, dry mixed conifer forest and chaparral. On the less harsh north-facing slopes the watershed contains spectacular low elevation, old growth forest. These forests contain abundant old trees and habitat conditions similar to Unit 80. The stand is located in the Eddy LSR and in a large block of NRF habitat (USDA 1997 Figure 3-10). It is also located in an important

connectivity corridor connecting high and low elevation habitats in the Eddy LSR (USDA 1997 Figure 3-11).

Logging the old forests on Butcher Creek as proposed in the Bear Country Project would increase fire risks, dramatically increase fuel loading and impact the areas natural fire resilience. Many of the forest stands currently contain high levels of fire resistance, high canopies, large, old trees with thick insulating bark, closed canopies that have suppressed understory fuel development and support cool, moist microclimates, effective wind breaks and significant shading. These conditions would be badly degraded if logging prescriptions are implemented and to make matters worse these units will not receive future fuel maintenance (USDA 2021 P. 20).

The units proposed for logging on Butcher Gulch are located at the heart of the most scenic portion of the Wild and Scenic South Fork Salmon River, at the edge of the Trinity Alps Wilderness, adjacent to the Gray Pine Botanical Area, and in a designated Late Successional Reserve forest meant to protect Northern spotted owl habitat. Biological values are extremely high in Butcher Gulch. Unfortunately, the Bear Country Timber Sale would degrade the areas biological values, botanical values, Northern spotted owl habitats and scenic qualities.

Units 56, 123, 125, 126, & 138

Units 56, 123, 125, 126 and 138 contain old, complex, fire resistant, forests, important wildlife habitats and climate refugia in the sun-baked South Fork Salmon River canyon. Much of the South Fork canyon contains unproductive serpentine soils, rocky substrates, and harsh soil conditions more conducive to oak woodland, live oak, chaparral and unique habitats containing the northernmost stands of gray pine. Yet, Butcher Gulch's north-facing slopes provide cool, moist habitat refugia, interior forest, thermal cover, and highly fire resistant old-growth forests.

Designated as Late Successional Reserve forests and located partially within the Wild and Scenic South Fork Salmon River, these old-growth forests contain highly complex stand conditions, layered canopies, large downed wood, spectacular standing snags and living trees between 3′ and 6′ in diameter. These north facing forests also provide nesting, roosting and foraging habitat, connectivity between suitable habitats and important dispersal corridors for the Northern spotted owl and the Pacific fisher. Along with the old forests targeted for logging on Matthews Creek these are "some of the last undisturbed mature or old growth conifer stands" in the area (USDA 1997 P. 1-2).

The Forest Service has identified a large block of high quality Northern spotted owl habitat (RA-32 Habitat) at the center of these proposed logging units and it is our contention that additional, currently unidentified RA-32 habitat exists throughout

this forested corridor. This relatively large block of old forest should be maintained under Recovery Action 10 to reduce competitive pressures from barred owls.

Maintaining and retaining all complex forest for Northern spotted owl habitat and connectivity is consistent with Late Successional Reserve management; whereas, the proposed logging would only degrade these important habitats and the value of this Late Successional Reserve in long-term owl recovery.

Unit 126 is located on a more exposed south facing slope, but the lower slope maintains relatively complex mixed conifer forest, while the upper 1/3 of the slope supports rock outcrops, pine and cedar forests, isolated oak woodlands and a spectacular meadow basin with seeps, springs, seasonal ponds, large milkweed patches and beautiful big leaf maple. These meadows and the surrounding woodlands are incredible wildlife habitats and constitute extremely high quality winter range for deer and elk that inhabit the watershed.

Units 56, 123, 125, 126 and 138 should be canceled to maintain the area's unique habitat values and scenic qualities.

North Fork Salmon River Units

The North Fork Salmon River cuts through steep mountain canyons, bedrock gorges and broad gravel bars as it flows from Sawyers Bar to Forks of Salmon. The canyon contains a mixture of old forest, live oak woodland, deciduous oak groves, sweeping slopes of chaparral and early seral habitat regenerating from the numerous large wildfires that have burned through the area in recent years. Like the rest of the Salmon River, the North Fork pours through extremely rocky, rugged terrain, past river washed boulders and into deep blue pools. Set between the Marble Mountains Wilderness and Russian Wilderness Area, the North Fork is one of the most spectacular streams in California's Wild and Scenic River system and is very important from a connectivity standpoint. Unfortunately, the Klamath National Forest has proposed significant old forest logging in the heart of the Wild and Scenic River corridor.

These logging units would significantly impact the values of the Wild and Scenic Salmon River including the scenic river canyon, the ancient old growth forests and the habitat values of the area. According to the Scoping Comment submitted by Salmon River Restoration Council, earlier in the planning process the Klamath National Forest assured local residents that commercial logging units in the North Fork Salmon River canyon would be canceled, but this has not transpired.

These north-facing units act as climate refugia, maintaining cool moist, shaded habitat conditions in the North Fork canyon. These stands are important for the connectivity of late successional species and have been almost entirely identified as nesting, roosting and foraging habitat for the NSO. From both a climate and fire

perspective, these are some of the most resilient habitats in the watershed due to the relatively intact forest legacies (Olson 2012, Lesmeister 2019).

These same stands are also being targeted for commercial logging that would remove suitable NSO habitat values, degrade late successional forest conditions, remove large, old trees, reduce canopy cover to 40% or below and limit these stands ability to maintain NSO habitat into the future, contribute to the recovery of the NSO and buffer against climate change.

Units 34, 54, 108 and 109

This cluster of units is located at the heart of the Wild and Scenic North Fork Salmon River, in the Heiney and Jones Gulch watersheds. Located across from the Red Banks Campground and within the Wild and Scenic River corridor, the area contains important scenic and recreational qualities that would be degraded by commercial logging prescriptions proposed in the Bear Country Project.

Large portions of these units are also old-growth or late successional forest habitats. Located on the north-facing slope of Blue Ridge, the area supports relatively productive forests of Douglas fir, sugar pine, live oak, bigleaf maple and madrone. Large, fire resistant trees between 3′ and 6′ diameter can be found in groupings or fire generated clumps scattered across the slope, while mature hardwoods fill in the canopy gaps. The forest is structurally complex, relatively moist and supports important nesting, roosting, and foraging habitat. Although not identified as such, portions of the stand create high quality, RA-32 habitat for the Northern spotted owl.

Unit 34 was identified in initial Forest Service maps for an "Improve Late Seral Habitat" prescription, but the removal of large trees, the reduction of canopy and the creation of "openings" or "gaps" through group selection logging would have the opposite effect, removing Northern spotted owl habitat values, eliminating canopy layering, and reducing habitat complexity.

The removal of canopy and large, fire resistant trees would also trigger an aggressive understory response, generating young, even-aged vegetation, where old forest once grew. The removal of forest canopy would dry out forest stands and increase wind speeds during fire events and lead to an increase in future fire severity.

Units 34, 54, 108 and 109 should be canceled to protect the important scenic and biological qualities of the Wild and Scenic North Fork Salmon River, NSO habitat values, connectivity values, and natural fire resilience.

Additional North Fork Salmon River units:

Additional Bear Country Timber Sale units have been proposed up the Wild and Scenic North Fork Salmon River from just above Forks of Salmon to the Little North Fork. Located across the river from North Fork Salmon River Road on the steep north-facing slopes of Blue Ridge and Smith Ridge, in all, 24 commercial logging units have been identified in the Forest Service Scoping documents. The majority of these units contain significant late successional or old-growth forest and provide not only complex, fire resistant old forest habitat, but also currently support the scenic qualities the North Fork is so well known for. New road construction is proposed on Smith Ridge above the Wild and Scenic North Fork Salmon River, which could degrade scenic resources and biological values even further.

Units 110 and 111 are located high on the slopes above a series of rugged bluffs and rock outcrops and have been identified by the Forest Service as late successional forest. Units 65, 66, 127, and 128, also contain late successional forest habitat and lie adjacent to a large block of high quality Northern spotted owl habitat (RA-32). Units 129, 130, 219, 220, and 658 are also located within a large swath of old forest in the North Fork canyon and lie adjacent to identified RA-32 habitat. Currently these units provide a highly important corridor of interconnected climate and fire refugia, complex forest, NRF habitat and RA-32 habitat. Just over the ridge is the Shiltos Creek NSO Activity Center and this habitat is certainly utilized by both NSO and Pacific fisher. Through a history of wildfire and extensive logging, these particular units proposed for logging in the Bear Country Project are the most intact old forest habitats in the watershed and are also extremely important for connectivity.

Logging these units would negatively impact habitat values, Wild and Scenic River values, and fire resilience. These units should be canceled to protect the Wild and Scenic North Fork Salmon River and its many important scenic, recreational and biological values.

Argus Creek and Indian Creek Units

Argus Creek is a tributary of Black Bear Creek, while Indian Creek flows independently into the South Fork Salmon River. Indian Creek has been affected by both excessive timber harvest and high severity wildfire, followed by extensive post-fire logging and plantation development. Argus Creek is less degraded by previous land use, but has been subjected to previous timber harvest in multiple areas, road construction and wildfire effects.

Units 68, 69, 70, 71, 72, 73, 76, 156, 157, 158, 159, 160, & 162

The Forest Service has proposed numerous commercial logging units in the Argus Creek watershed, extending across the headwaters of the stream below Blue Ridge Lookout. Located directly below these units is a NSO Activity Center documented to support recent occupancy and reproduction. The breeding pair in this area has been

fairly stable for many years and is one of only three known occupied sites with reproducing owl pairs in the western Klamath National Forest. The habitat proposed for logging is likely utilized by this breeding pair and would be badly impacted by proposed logging activities.

Canopy cover would be dramatically reduced, large trees would be removed, snags would be felled, understory canopy layering would be largely removed, and stand complexity would generally be reduced, removing the area from habitat suitability and impacting the adjacent Activity Center.

Having burned in 1987, many of these stands are dominated by large old trees, but relatively open spaced, despite supporting largely closed canopy. The burn patterns created small openings to support early seral vegetation, snags, downed wood and other elements important for the NSO and also maintained the mature forest canopy necessary for nesting, roosting, foraging and other portions of their lifecycle. The protection these stand provide for the NSO and its recovery is vitally important. The agency has acknowledged that these are old growth forests, supporting a large block of NRF habitat and provides for connectivity from the North Fork Salmon River to the South Fork Salmon River across the Eddy LSR (USDA 1997 Figures 3-10 & 3-11).

These forests support important climate and fire refugia needed to support the NSO, the Pacific fisher, Del Norte Salamanders, and other species requiring late successional habitat. Logging these stands would only reduce habitat values and stand resilience.

We are also concerned by the proposed temporary road construction and the road reconstruction proposed at the headwaters of Argus Creek. The largest proposed new road construction appears to cross Argus Creek, potentially creating legacy sedimentation issues. Finally, we are concerned by impacts to soils, understory plant diversity and noxious weed spread from tractor logging. All logging, road construction and reconstruction in the headwall of Argus Creek should be canceled.

Units 43, 45, 170, & 171

Unit 43 is located in a stringer of mature forest surrounded by large plantation stands developed after post fire logging took place in 1977 and 1987. The isolated closed forest habitat is important from a biodiversity standpoint and is likely one of the most intact, fire resistant stands in the Indian Creek watershed. At a recent KNF field trip we saw a proposed tree removal mark and were concerned by the intensity of logging proposed, the dramatic decline in canopy this logging would create, the large trees it would remove and the loss of late successional characteristics. The stand has behaved as fire refugia and has survived previous wildfires with low to moderate severity fire effects. By and large, the post fire

canopy is suppressing understory fuel development, while large trees moderate microclimate conditions and create fire resistant habitat.

We oppose the commercial logging proposed in this unit and importantly so do the surrounding residents the Forest Service claims to be serving and protecting with these treatments. Residents of Blue Ridge Ranch offered at the field trip to sign a waiver expressing their opposition to this unit and its logging prescriptions, they believe the logging and the understory response would dramatically undermine fire resilience and their personal safety. This unit could easily be treated with prescribed fire with only minor non-commercial treatment. Local residents at the KNF field trip agreed that prescribed fire could effectively be utilized with very minimal manual treatments.

We are concerned that commercial logging prescriptions adjacent to Blue Ridge Ranch on two sides and consisting of units 45, 170 and 171 would negatively impact fire safety for the residents at Blue Ridge Ranch, trigger an aggressive understory response and increase future fire severity by increasing potential wind speeds, solar exposure, and the effects of stand drying. Additionally treatments in units 139 and 107 should maintain all large trees over 20" in diameter and existing canopy cover conditions to suppress understory fuel development. Non-commercial treatments could adequately address any issue in these stands and commercial logging prescriptions would only reduce fire resilience by increasing fire risks and fuel loading, while reducing the climate and fire buffering effects of microclimate. These units should be deferred from commercial entry and treated with prescribed fire to improve fire safety for residential communities in the area. Minimal manual treatments would be necessary for fireline creation, fire control and to create the desired fire effects.

Project Recommendations:

- Refocus the Bear Country Project on community fire safety, plantation thinning, maintaining wildfire escape routes for local residents, and implementing prescribed fire treatments adjacent to homesteads or communities on the Salmon River. These activities would increase fire safety and community fire resilience.
- Prioritize manual fuel reduction treatments within 500 of residences, along major ingress/egress routes, and in plantation stands.
- Commit to implementing and maintaining any and all fuel treatments in the long-term.
- Retain all large, fire resistant trees over 26″ diameter throughout the project area.
- Maintain 70% canopy cover in all dry Douglas fir stands to maintain fire resistance, reduce an aggressive understory shrub response and protect Northern spotted owl habitat conditions.

- Cancel all new road construction and road reconstruction. Utilize the existing road network, while focusing on communities and timber plantations, rather than logging natural conifer stands and emphasizing timber production.
- Cancel commercial logging units in the Wild and Scenic Salmon River corridor.
- Manage the Wild and Scenic River corridor specifically to enhance and maintain the numerous scenic, recreational and biological values the Salmon River is famous for.
- Cancel all logging units over 80 years of age in Late Successional Reserve forest.
- Cancel all commercial logging units currently supporting Nesting, Roosting and Foraging for the Northern spotted owl.
- Declare all suitable NSO habitat in the project area as high value, so as to provide for dispersing juveniles and to maintain as much habitat as possible in Activity Centers.
- Do not downgrade, degrade or remove suitable Northern Spotted Owl habitat.
- Cancel mastication units. If fuel reduction is needed on this landscape, that work can be done manually.
- Cancel Mechanized Equipment for Piling and Drainage Construction units. Creating additional soil impacts to recovering dozerlines is unnecessary, unacceptable and counterproductive.

- Identify a minimum road system for the Bear Country Planning Area and decommission roads as needed to meet biological objectives and to restore hydrological values.

Sincerely,

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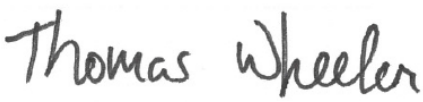

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Appendixes and Supporting Information will be sent via USPS on a flashdrive or CD to the Scott/Salmon District Ranger Ruth Damico