Sierra Forest Legacy
Protecting Sierra Nevada Forests and Communities

Forest Issues Group

June 16, 2014

Rim Recovery
Stanislaus National forest
19777 Greenley Road
Sonora, CA 95370

Sent to: comments-pacificsouthwest-stanislaus@fs.fed.us

Re: Comments on draft EIS for the Rim Recovery Project

To the Rim Recovery Team:

These comments are submitted on behalf of Sierra Forest Legacy and seven other conservation organizations. We first want to recognize the efforts made by Forest Service staff to provide additional information during the 30-day comment period. We submitted a series of information requests and requested a conference call to ask additional questions about specific information relevant to the EIS. Your staff delivered information to us in a timely and responsive manner. We very much appreciate your consideration and thank you for your effort.

We have reviewed the draft environmental impact statement (DEIS) and specialist's reports. We have identified below numerous issues that should be corrected or included in the EIS. We ask that you correct the deficiencies in the EIS that we have identified and incorporate our recommendations in the record of decision.

I. Overview

The Rim Fire was an extraordinary event that occurred over several weeks beginning in August 2013. Ultimately, the fire area encompassed over 257,000 acres of public and private land and spanned elevations ranging from 1,900 feet to over 7,300 feet. A wide range of plant communities and wildlife habitats were affected by the wildfire and the fire effects on these resources were highly variable. A significant portion of the fire area had been burned and re-burned within the past 30 years with substantial areas on national forest and private lands being planted and re-planted with tree farms. The Rim Fire itself was a combination of unintentionally lit wildfire and intentionally lit fire intended to control the approaching wildfire. Because of this variability in the project landscape, the post-wildfire landscape presents a variety of challenges and opportunities.

In our scoping comments[1], we asked that the science of post-fire management be applied to future actions in the Rim Fire area. Since adoption of the most recent forest plan amendment in 2004, new perspectives on salvage logging, including harm to ecosystem function from its application and its relationship to ecological restoration, has been discussed at length in the forest ecology and conservation biology literature. As framed by Lindenmayer et al. (2008, p. 12-13):

> The notion that salvage logging assists the ecological recovery of naturally disturbed forests is fundamentally incorrect (Lindenmayer et al 2004). Hence justifications for salvage logging based on contributions to ecological recovery have little merit. We know of few circumstances where salvage logging has been demonstrated to directly contribute to recovery of ecological processes or biodiversity.

Thus, as directed by the new planning rule, the Rim Fire project must take into account the best available science information (BASI; 36 CFR § 219.3) in the design of the appropriate actions in the post-fire environment.[2] It is because of the state of the science on salvage logging and the high value that post-fire landscapes contribute to biological and ecological diversity, we promoted and co-hosted the series of technical field trips and workshops to develop recommendations for accomplishing ecological restoration in this post-fire landscape. As we will discuss below, we are disappointed that recommendations developed at that workshop were not included in the DEIS or dismissed out of hand.

As we noted in our scoping comments, we seek the adoption of a science-based alternative for the Rim Recovery Project that is congruent with the current knowledge regarding the ecological value of post-fire habitats as well as the Regional Forester's leadership intent on ecological restoration. We find that the Proposed Action (Alternative 1) is overly focused on the recovery of economic value from burned timber with an insufficient focus on actions that are of ecological benefit. Alternatives 3 and 4 are marginal improvements to the Proposed Action. We again ask that you adopt a recovery and restoration project that advances the commitment to protecting biodiversity, sustainable ecosystems, and water quality made by Region 5 in 2011 (*Region 5 Ecological Restoration Leadership Intent*, R5-MR-048[3]):

> Ecologically healthy and resilient landscapes, rich in biodiversity, will have greater capacity to adapt and thrive in the face of natural disturbances and large scale threats to sustainability, especially under changing and uncertain future environmental conditions such as those driven by climate change and increasing human use. Our goal is based on a

---

[1] We incorporate our scoping comments by reference into these comments on the DEIS.

[2] The National Environmental Policy Act (NEPA) also has requirements that apply to the Rim EIS and decision: 1) 40 CFR 1500.1(b): "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail." And 2) 40 CFR § 1502.24: "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement."

[3] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5351674.pdf

> commitment to land and resource management that is infused by the principles of Ecological Restoration and driven by policies and practices that are dedicated to make land and water ecosystems more sustainable, more resilient, and healthier under current and future conditions.

Here, ecological recovery goals embrace biological diversity, represented in the Rim Fire landscape by early-seral habitat, legacy trees, healthy wildlife populations, and resilience to a changing climate and fire regimes. These objectives are further emphasized in the Leadership Intent document by the commitment to:

> Ensure vegetation and fire management efforts are grounded in concern for biodiversity and ecological process **both before and after disturbances like fire**. (emphasis added)

We object to the action alternatives presented in the DEIS because they are inconsistent with recent recommendations from scientists on the management of post-fire landscapes, are inconsistent with Region 5's commitment to ecological restoration, allow habitat alteration that jeopardizes the persistence of California spotted owl and other at-risk species, and fail to incorporate recommendations from the technical workshops co-hosted by the Forest Service.

In our comments below, we first identify what we believe to be deficiencies in the environmental analysis and violations of policy and law. Following those comments, we propose the deletion of specific units in order to lessen the significant adverse environmental impacts of the project.

II. Salvage Logging Occurs at the Expense of Ecological Values

The action alternatives propose the removal of nearly all of the burned trees over approximately 27,826 acres to 30,399 acres. Within the salvage units, there is very limited retention of legacy snags and other valuable habitat structures. The action alternatives also include the removal of roadside hazard trees on approximately 16,000 acres. As we noted in our scoping comments, the adverse impacts from salvage logging have been extensively reviewed and affect a wide range of ecological values. We also stated that we do not oppose the removal of burned trees that are hazards to human safety and infrastructure; however, we do oppose post-fire logging for principally economic purposes given the high cost to ecological integrity.

We reviewed the unit by objective table presented in the DEIS, Appendix E, to assess the degree to which the alternatives addressed hazards to human safety and ecological objectives. For simplicity, we examined Alternative 4 since it was presented in the DEIS as the alternative designed to address public concerns about ecological integrity and other issues. We classified Objectives 1, 2, 5b, and 6 as principally economic objectives since there was no clearly stated ecological benefit associated with these objectives.[4] We considered Objective 2 not to be related

[4] Objective 5b is defined as "snag retention" in the DEIS, but it actually characterizes intensive snag removal over thousands of acres and seems to be trying to highlight areas where an additional 2 snags per acre are being retained. For the reasons stated above, we do not consider these actions to qualify as ecological benefit. Objective 6 is focused on research intended to answers questions about then impacts and ecological benefits. By design the outcomes of these treatments are speculative. We also do not consider these to meet the objective of providing ecological benefit in the Rim Fire. We do recognize that this research could improve practices in other post-wildfire landscapes.

to public safety or hazard reduction since this objective was simply assigned to units through which a road proposed for hazard reduction treatment passed. In such cases, the road hazard reduction aspect of the treatment is often a very small proportion of the treated area. Lastly and for the sake of this analysis, we assumed that units with a fuels treatment improved public safety. This analysis indicated to us that close to 50% of the area to be salvaged logged primarily is driven by economic objectives.

Table 1. Area of salvage summarized by principal objective. Information extracted from DEIS, Table 2.05-2.

Principal Objective	Objectives	# of Units	Area (acres)
Economic	1	24	331
	1,2,5b	77	5,255
	1,2,5b,6	36	3,369
	1,5b	26	965
	1,5b,6	15	685
	1,2	42	1,774
	1,2,6	1	31
	2,5b	1	15
Total		**228**	**12,425**
Fuels	1,2,3,5b	39	3,928
	1,2,3,5b,6	15	1,519
	1,2,3,6	1	360
	1,3,5b	13	350
	1,3,5b,6	3	76
	1,2,3	27	3,750
	1,3	15	269
	2,3,5b	4	659
	2,3	1	150
Total		**118**	**11,061**
Deer	1,5a,5b	1	185
	1,2,5a,5b	6	519
	2,5a,5b	7	2,788
	2,3,5a,5b	1	756
	5a,5b	1	92
Total		**10**	**4,340**

We also considered the volume of timber estimated for removal from the action alternatives and the capacity of local mills to utilize the timber. Volume yields for the salvage units for each action alternative are: 1) 660 mmbf (Alternative 1); 2) 622 mmbf (Alternative 3); and 3) 541 mmbf (Alternative 4). These volume estimates underestimate actual volume since they do not include the volume from the over 300 miles of hazard tree removal on an estimated 16,000 acres. The mill at Chinese Camp can accept up to 35 mbf per year of small logs and the mill in Standard can accept up to 90 mmbf per year of large logs. This amounts to a capacity of 123

mmbf per year combined for the two mills. Since it is expected that timber from the Rim Fire areas will not be viable after two years, 250 mmbf of timber would satisfy the local mill capacity for two years. Thus, the estimated volume (540 mmbf plus additional volume from the logging of dead and green trees during roadside hazard removal) from Alternative 4 (least acres affected) provides more than two-fold the volume that can be utilized by the local mills.

We are aware that other mills outside the local area may be interested in timber from the Rim Project area, but the travel distances are likely too far to be economical and those mills (e.g., the mill in Terra Bella with a capacity of 28 mmbf per year) are likely to be receiving timber from other salvage projects. For example, the Aspen salvage project on the Sierra National Forest expects to produce a minimum of about 28 mmbf in the coming two years with additional timber estimated in years 3 to 4. It is expected that the mill in Terra Bella will process this timber which meets their demand for at least one year.

From this analysis, we find that more salvage volume can be retained for ecological benefit while still providing significant contributions to the economy and more timber than the local mills can utilize each year. Thus, the statements in the DEIS that claim the economic objectives of the project will not be met if less area is salvaged or more snags retained are arbitrary and not supported by evidence. The analysis above indicates that there is significant area not directly contributing to a strategic fire management strategy (Objective 3) and significant volume beyond what can be utilized by the local mills that could be deleted from Alternative 4 or treatments redesigned to retain greater ecological value and still provide reasonable economic return.

In the final section of these comments and in Appendix A, we recommend the deletion of specific units from Alternative 4 to better meet ecological objectives while still providing social and economic benefit.

III. Adverse Impacts to Species At-Risk

Because the Sierra Nevada is an ecosystem that evolved with fire, most plants and wildlife are adapted to wildfire and depend on a cycle of fire to maintain some habitat components from increased soil moisture availability to snags and downed logs. Many wildlife species evolved with and benefit from fire in the Sierra Nevada, including species associated with old-forests and meadows species. Early successional stages support plant diversity and productivity, which also supports prey (mostly rodents and small birds) for a variety of species. Many of these species are known to forage in burned areas and productive grasslands, chaparral and meadows and riparian areas following fire. Heavily logged areas and tree plantations generally lack critical shrub and herbaceous plant species, multi-layered tree structure, downed wood and snags, and the fire regime that support diverse wildlife assemblages.

The purpose and need and alternatives do not adequately take into account the benefits of the burned landscape to species at risk and the risks to species from the proposed activities and provided very limited analysis of the adverse impacts to these species.

A. The Loss of Legacy Structures to Salvage Logging is not Disclosed

California spotted owl, great gray owl, goshawk, marten, and fisher are imperiled species facing habitat degradation or loss as a result of the action alternatives. Each of these species utilizes legacy trees that have been affected by fire and that ultimately becoming snags and downed wood. These large burned trees should be retained across the burn landscape to contribute important structure and diversity to the existing habitat.

The action alternatives call for very limited retention of snags within the salvage units. This is a concern for snags of all sizes, but especially for large legacy structures that may have taken over 100 years to develop. The DEIS essentially applies snag retention guidelines for green forests to the action alternatives. This practice has been identified by scientists studying burned forests as entirely inadequate to meet habitat requirements in post-fire landscapes (Beschta et al. 2004, Hutto 2006, Lindenmayer et al. 2008). In all cases, these scientists recommend that when necessary to meet other non-ecological objectives, legacy snags and down wood in addition to snags across all size classes should be retained. For instance, Beschta et al. (2004) recommend retaining 50% of the snags in an area to be salvaged.

The DEIS does not evaluate the potential loss of large structures from salvage operations. Our preliminary analysis of Alternative 4, which is limited to the salvage units and not the roadside hazard operations, indicates that approximately 4,782 acres of CWHR size class 5 stands (>24" dbh) occur within salvage units and of this area about 4,300 acres is in conifer dominated types. We also evaluated the extent to which CWHR 5 sized stands proposed for salvage occurred in sensitive owl habitat areas (i.e., pre-fire home range core areas; HRCAs)[5] and found that 3,681 acres of this type occurred within HRCAs and treatment units. The HRCAs for 41 owl sites would have some amount of CWHR size class 5 salvaged and ranged from less than an acre to over 300 acres for a given HRCA. The table below reports the area of size class 5 trees to be salvaged for eleven HRCAs (pre-fire boundaries) in which more than 150 acres of size class 5 would be affected by salvage operations.

Table 2. Amount of California Wildlife habitat Relationship size class 5 (>24" DBH) in home range core areas (HRCAs) using the pre-fire boundaries.

Owl Site	Area of CWHR 5 size class in Salvage Unit (acres)	Status based on 2014 Surveys as of June 1, 2014	Action Proposed for PAC
Spotted Owl HRCA TUO0027	150	Single	
Spotted Owl HRCA TUO0010	168	Pair, non-nesting	
Spotted Owl HRCA TUO0085	170	No detection	
Spotted Owl HRCA TUO0177	182	Single	proposed retire
Spotted Owl HRCA TUO0024	193	No detection	
Spotted Owl HRCA TUO0032	199	Pair, nesting confirmed	

[5] For purposes of these comments, we examine only the pre-fire HRCA and protected activity center (PAC) boundaries in order to illustrate the impact to areas previously designated as important to meeting spotted owls' life requirements.

Owl Site	Area of CWHR 5 size class in Salvage Unit (acres)	Status based on 2014 Surveys as of June 1, 2014	Action Proposed for PAC
Spotted Owl HRCA TUO0028	235	No detection	
Spotted Owl HRCA TUO0072	253	Pair, non-nesting inferred	proposed retire
Spotted Owl HRCA TUO0034	318	Pair	
Spotted Owl HRCA TUO0031	324	Single	proposed retire
Spotted Owl HRCA TUO0095	327	Pair	proposed retire

The DEIS does not provide information on the effects of salvage in these areas that have high densities of legacy structures. Also, as can be seen from the table above, some of these areas with high densities of large legacy structures slated for salvage logging are often closely associated with historically or currently occupied owl sites. The direct benefit that these areas could provide to meeting life requirements for spotted owl and the site specific impacts likely to result from their removal are not discussed in the DEIS. We also note that spotted owl areas overlap significantly with habitat areas, i.e., PACs, for northern goshawks and similar losses of legacy structures will affect this at-risk species.

We ask that the DEIS be revised to include an evaluation of legacy structures lost to salvage operations, including estimates lost to hazard tree operations that were not included above, and the impacts that this loss has on species at-risk, habitat structure and ecological integrity.

B. Survey Approaches for Sensitive Raptors Are Not Adequate for the Rim Landscape

As we will discuss in more detail below, we believe that the survey approaches being applied to detect sensitive raptors, including California spotted owl, northern goshawk, and great gray owl, are not adequate to detect breeding birds in the Rim Fire project area. Based on our review of preliminary survey data from 2014, conversations with specialists at the Regional Office and elsewhere, and our review of survey protocols and methods, it appears that raptors are adjusting their breeding territories due to the redistribution of breeding habitat and other resources that occurred after the Rim Fire. Furthermore, these raptors are continuing to nest within the project area in unexpected locations. To date, two goshawk and six spotted owls have been found in habitat thought to be unsuitable to these species and we have heard that great gray owls have been located nesting in severely burned habitat. Surveys for these species should be extensive and should be completed to protocol prior to salvage logging. Surveys should not simply include the known protected activity centers (PACs), but should also include suitable habitat outside PACs in order to provide adequate protection and avoid unintentional destruction of active breeding areas. In addition, a buffered area around a PAC regardless of the perceived habitat suitability in that area should be surveyed to detect raptors that may have moved their territories to accommodate habitat changes resulting from the fire.

This revision to the survey approach is necessary to avoid disturbing nesting raptors and to avoid salvage logging within their PACs as directed by the forest plan. If the survey approaches and avoidance of salvage logging in PACs is not undertaken as outlined above (and described in

more detail for each species below), then we expect the Forest Service to conclude, based on their own rationale applied to Alternative 1, that the selected action would lead to a trend toward federal listing for each of these raptors.[6]

C. Impacts to California Spotted Owls are not Disclosed

We know from recent research that spotted owls utilize forest habitat with fire effects ranging from low to high severity for foraging and nesting (Bond et al. 2009, Roberts et al. 2011, Lee et al. 2012). Post-fire logging in the Rim Recovery project is a major concern because a significant number of pre-fire PACs and HRCAs contain salvage logging units. For example, the proposed action would harvest over 4,200 acres within PACs (see analysis in our scoping comments).

1. Impacts to Suitable Spotted Owl Habitat are not Disclosed.

In the past, it has been assumed that fires generally have a negative impact on California spotted owl habitat and that catastrophic fire was considered to be a far greater concern than any other threat (USDI Fish and Wildlife Service 2006). This assumption was based on anecdotal evidence of resident birds in the Sierra Nevada that abandoned severely burned landscapes; however these same territories were also salvage logged and it is not possible to determine the specific cause for post-fire movements (Keane 2010). More recent research shows it is more likely that post-fire logging is a greater threat to spotted owls in the Sierra Nevada rather than fire (Lee et al. 2012). Spotted owls evolved with fire and when one considers average historic fire return intervals across the species range, one must conclude that California spotted owls lived in burned forests. Biologists have repeatedly documented that spotted owls use burned landscapes (including areas burned with high severity). Snag perches used by spotted owls during foraging and prey habitat are abundant after fire, even in high severity burns. These studies have broadened the definition of spotted owl habitat in the Sierra Nevada. Thus, salvage logging in forests affected by low, moderate and high severity can alter habitat suitability.

We included in our scoping comments a review of recent research on owl use of burned forests and asked that these new findings about habitat quality be included in the analysis presented in the DEIS. Although some of this research was noted in the narrative of the biological evaluation (BE), no evaluation of current habitat conditions within the project area and no evaluation of the change in habitat condition resulting from the fire itself or the likely to result from salvage logging where disclosed in the BE or DEIS. As we noted above, Alternative 4 includes salvage logging within the pre-fire HRCAs of 41 owl sites and the removal of a significant area within HRCAs that contain legacy structures. In our scoping comments we noted that 4,247 acres, under Alternative 1, was proposed for salvage logging in historic PACs[7] and 8,500 acres in historic HRCAs that are outside of the PAC. Thus, we have presented information that suggests that a significant number of owl sites are affected, and that both the quality and quantity of habitat is affected.

[6] We believe that even with the revised survey approaches we identify that the current action alternatives would lead to a trend toward federal listing for these raptors due to the magnitude of impacts resulting from the salvage of burned trees including legacy elements and the reduction in structural complexity of habitat.

[7] We are aware that specialists have remapped PACs to exclude areas proposed for salvage logging and that HRCAs have been remapped as well.

An assessment of the available habitat within specific PACs and HRCAs is necessary to evaluate the degree of impact on spotted owls in the project area from the alteration of habitat quality and to assess the benefit that the burned forest provides to specific owl sites. We also believe that such an assessment is required by National Environmental Policy Act (NEPA) and to evaluate compliance with the National Forest Management Act (NFMA).

2. Premature Retirement of PACs

The Forest Service is required under in the forest plan to protect spotted owl territories burned by wildfire unless the habitat has been rendered unsuitable within 1.5 miles of the activity center:

> PACs are maintained regardless of California spotted owl occupancy status. However, after a stand- replacing event, evaluate habitat conditions within a 1.5-mile radius around the activity center to identify opportunities for re-mapping the PAC. If there is insufficient suitable habitat for designating a PAC within the 1.5-mile radius, the PAC may be removed from the network.

(USDA Forest Service 2004, p. 40) Using this direction, ten spotted owl PACs in the Rim Fire area were retired, according to the Rim Recovery DEIS (Wildlife Appendix). However, survey results we received on June 5, 2014 indicate that single owls or pairs were detected at six of the owl sites slated for retirement. Based on these results, we believe that retirement of the PACs with detections is premature and retirement of PACs without detections is questionable.

To be in compliance with the forest plan, a PAC must be delineated around each detections of a territorial activity center:

> California spotted owl protected activity centers (PACs) are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known." (USDA Forest Service 2004, p. 37).

> 33. Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable California spotted owl habitat with unknown occupancy. Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results." (USDA Forest Service 2004, p. 57)

The action alternatives currently propose to salvage log within the PACs proposed for retirement. For at least the six sites with detections, this means that the alternatives are not likely in compliance with the forest plan, since salvage logging is prohibited in PACs:

> 16. Outside of WUI defense zones, salvage harvests are prohibited in PACs and known den sites unless a biological evaluation determines that the areas proposed for harvest are

rendered unsuitable for the purpose they were intended by a catastrophic stand-replacing event.

(USDA Forest Service 2004, p. 53) Additional guidance of management of PACs in burned landscapes has been provided by the Regional Office. In 2001, the Regional Office advised national forests on their duty to protect any occupied[8] owl territory, even in burned areas (see E5-6, below). During the Spotted Owl Question and Answer Session the Regional Office clearly prohibited salvage logging in PACs severely burned but still occupies post-fire. The standards referenced below were superseded by similar language in 2004 (USDA Forest Service 2004, p. 53), and the assumptions made by the cooperating agencies, such as the USFWS, and the public about protecting spotted owls during salvage logging are still relevant:

E5-6
Keyword: PACs

Question: Standards and guidelines for protected activity centers (PACs) state that PACs must be maintained unless rendered unsuitable by a stand-replacing event and surveys conducted to protocol confirm non-occupancy (SNFPA ROD pages A-34 and A-36). At what point does a burned protected activity center (PAC) no longer function as a PAC? What considerations should we apply to determine whether a PAC remains functional after it has been burned? Also, are surveys always required to eliminate a PAC?

Response: Literature shows that the greatest concentration of use within a California spotted owl's home range is centered around the activity center, in approximately 300 acres of suitable high quality habitat. Furthermore, literature for the central portion of the Sierra Nevada indicates that the mean home range core area is approximately 700 additional acres of high quality habitat around the activity center; hence a total home range core area of approximately 1,000 acres of suitable habitat. So, the PAC can be looked at as a subset of the owl's total home range core area. **It is difficult to determine a point at which a burned PAC, by itself, no longer functions as a PAC. In general, any given species will tend to shift its use pattern, within an established home range, when an "event" results in changes in habitat, or the species may adjust its home range to accommodate its biological needs. California spotted owls are known to shift nesting site locations over time even without an "event" occurring. Therefore, one needs to look at the PAC and home range core area together and determine whether the home range core area has sufficient remaining, post-fire habitat to provide for owl habitat requisites.** The question that should be answered is: Will the PAC be shifted or re-established within the home range core? If the entire 300-acre PAC has experienced a high intensity burn (70 to 80 percent mortality), then the PAC is no longer functional. However, an assessment of the home range core area should be completed to determine whether there is the potential for the PAC to shift or be re-defined within the home range core area in the future. There are, no doubt, numerous scenarios for PACs within the fire perimeter based upon the amount of habitat affected by the "event" and intensity under which the habitat burned. Each case will be unique and

[8] "Verified Unoccupied is determined when a complete survey has been conducted in a survey area, but no owls were detected." (1991 USFWS Spotted Owl Survey Protocol, p. 12)

will require local assessment. Objectives for both the home range core area and PAC are to provide the best habitat available for the species at present and into the future. This includes retaining all remaining large tree trees (as legacies for future nest tree, snags, and down woody material), large snags (for potential nest trees or down woody material recruitment), and down woody material. There is presently a limited amount suitable habitat available, and the disturbance resulting from the "event" will cause some disruption in the behavior patterns for the owls. It may take a few seasons for the birds to re-establish activity centers and home ranges.

If the entire PAC (and much of the home range core area) has experienced a high intensity burn (70 to 80 percent mortality) and there are obviously no green trees or very few green trees remaining, there is little need to survey to protocol. The probability of occupancy is extremely low. However, **if there are portions of the PAC that have remained green, the remaining suitable habitat within the defined PAC and adjacent home range core area should be surveyed to determine occupancy. There is a high probability that individual birds or pairs will merely shift use patterns and relocate the activity center. A lost PAC does not always lead to the abandonment of a home range core area.**

The need to survey a PAC rendered unsuitable was previously addressed in the response to Question LA4-3 on the SNFPA website. The assumption made in this response was that, while green standing trees remained, the stand might not meet the standards normally associated with owl nesting/roosting habitat.
Question and Answer LA4-3 did not address PACs experiencing total loss." (Summary of Question and Answer Session Regarding Spotted Owls and the Sierra Nevada Forest Plan Amendment, question E5-6).

Question: LA4-3
Key Words: Survey, Owl

Question: Do we need to do a non-occupancy confirmation survey (2 year) before we can salvage timber from the catastrophic Storrie Fire in an area that was a PAC?

Response: Assuming that the fire rendered the PAC unsuitable, the following standard and guideline from Appendix A of the ROD would apply: Designating California Spotted Owl PACs: Maintain PACs regardless of California spotted owl occupancy status, unless habitat is rendered unsuitable by a catastrophic stand-replacing event and surveys conducted to protocol confirm non-occupancy (page A-34).

Surveys to protocol include two options: (1) 1 year - 6 visits or (2) 2 year - 3 visits per year. In the absence of surveys to confirm non-occupancy of a PAC rendered unsuitable by a catastrophic stand-replacing event, you must maintain the PAC and follow the standards and guidelines detailed on pages A-34 and A-35 for limited operating period, fuel treatments, and new roads and other developments.

In addition, when activities are planned within or adjacent to a PAC and the location of the nest site or activity center is uncertain, you must conduct surveys to establish or

> confirm the location of the nest or activity center (Appendix A, page A-34)." (Summary of Question and Answer Session Regarding Spotted Owls and the Sierra Nevada Forest Plan Amendment, question E5-6).

In light of current survey results, six of the ten PACs proposed for retirement had either single owls or pairs present. Based on these survey results, we believe that retirement of the PACs with detections is premature. We expect that PACs will be maintained for these owl sites and this is likely to mean that salvage units will need to be dropped from the selected alternative to meet requirements in the forest plan.

We also believe it is premature to retire the 4 PACs where there have not been detections, but for which the survey protocol has not been completed. Because owls site are typically surveyed infrequently, we have limited information on owl site occupancy prior to 2014. At best, we can see from survey data from 2011, 2012 and 2014 that of the 4 PACs proposed for retirement and lacking detections in 2014, one (TUO0028-Bear Mountain) had a reproductive pair in 2012 and nearly all others were not visited in 2011 and 2012.

We ask that you not allow salvage logging within the existing PAC or within a circular area of 500 acres surrounding the activity center until status can be confirmed. When status is confirmed as occupied, we expect that a PAC with HRCA will be delineated around the activity center. We also ask that any decision for this salvage logging project specifically state the process that will be applied to the delineation of new PACs and the retirement of PACs in order to ensure that a reappearance of birds in the second year of surveys or the appearance of birds in unexpected locations is not ignored.

3. Completion of Surveys in Suitable Habitat

We are concerned that surveys have been applied only to areas with historic PACs. In fourteen cases, the 2014 results indicated that there were no detections. Only three of the fourteen PACs were visited in either 2011 or 2012 and the remaining eleven were not visited. For these eleven, we have no information to indicate their historic activity. For the three that were visited since 2011, two have detections. It is possible that the effects of wildfire or some other activity has led to a loss of site fidelity for owls occupying these sites and they may be ranging beyond historic areas. For these reasons, pre-fire suitable habitat within 0.25 miles of any salvage logging unit should be surveyed, as required by the forest plan. Failing to complete such survey could result in not locating territorial or reproducing owls, failing to delineate a PAC where required and degrading sensitive habitat from salvage logging.

D. Persistence of California Spotted Owl is Jeopardized by Salvage Operations.

Results from demographic studies for California spotted owls indicate that there is a decline in population status for this species. Keane (2013) in a science synthesis for the Sierra Nevada bioregion found that:

> Ongoing research of recent population trends indicates increasing evidence for population declines on the three studies on National Forest Service lands and a stable/increasing population on the National Park Service study area...

These findings are consistent with Conner et al. (2013) who examined the spotted owl population data for three study sites in the Sierra Nevada and found that the probability of a >15% decline in population size was high for the two population studies on national forest lands, i.e., Lassen and Sierra studies. Specifically, they found that:

> …the probabilities of a >15% decline over 18 years were 0.69, 0.40, and 0.04 for the 3 study areas, whereas the probabilities the populations were stationary or increasing were 0.07, 0.22, and 0.82.

Further, the only study area where there is a stable or increasing trend is on the national park which is largely and has an active managed fire program.

This backdrop of population decline heightens concerns about territory abandonment of any owl site. Habitat alteration that has the potential to increase territory abandonment is likely to contribute to the decline in status for this species. Recent research on spotted owls' use of burned forests for nesting and foraging (Bond et al. 2009, Roberts et al. 2011, Lee et al. 2012) underscore the value of unsalvaged stands to spotted owl persistence, especially in landscapes that have been altered by wildfire and now present what may appear to be atypical habitat. For these reasons, salvage operations and the removal of burned trees in within the more focused habitat areas for spotted owls, e.g., HRCAs, should be avoided in order to minimize territory abandonment by owls. Furthermore, the initial decision to retire certain PACs should be abandoned and salvage logging avoided in these historic PACS and HRCAs to provide the least disturbed or degraded habitat to meet life requirements.

E. Forest Carnivores: Marten and Fisher

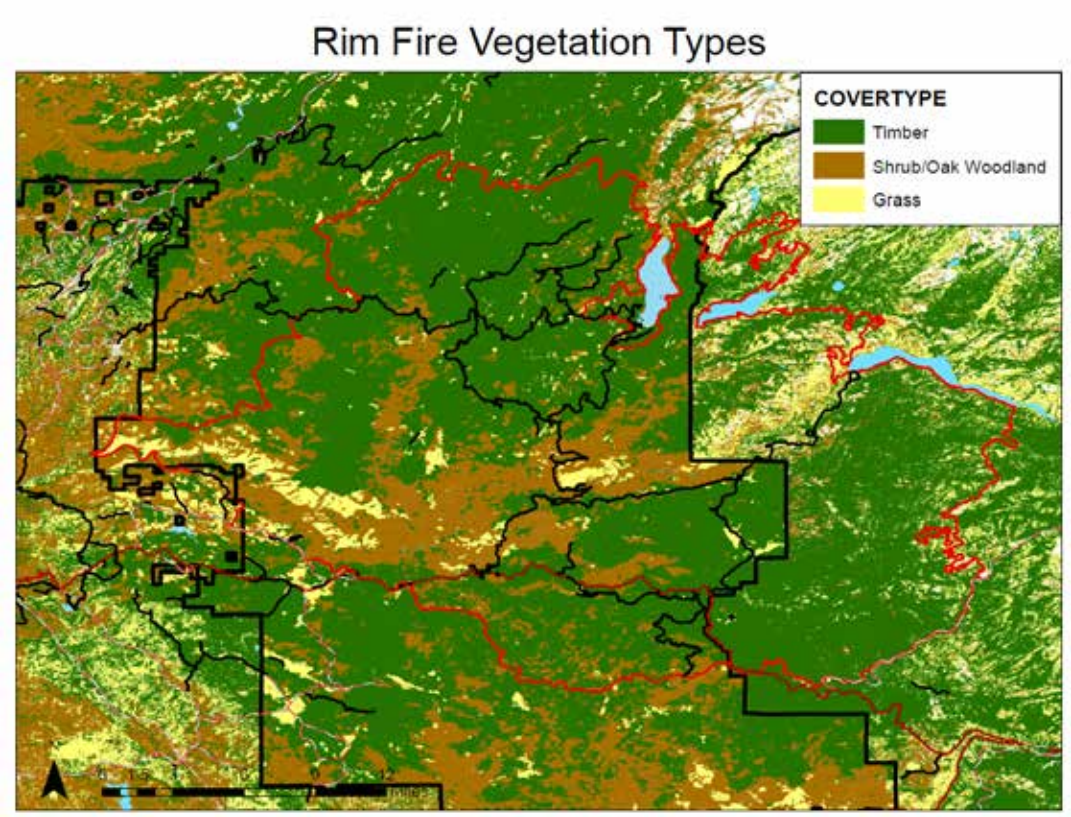
We appreciate the introduction of the forest carnivore connectivity corridor (FCCC) in Alternatives 3 and 4 (DEIS, p. 32)[9]. We believe that such land allocations are needed to provide direction in the forest plans and to manage for connectivity across the landscape. However, we have several concerns about the proposed FCCC.

The proposed FCCC includes habitat to the south of Cherry Lake considered to have low/no probability for fisher or marten occurrence or travel according to Spencer and Rustigian-Romsos et al. (2012; see maps on pp. 12 and 15). It seems likely that the reason this area has a low or no probability of occurrence for either fisher or marten is that the vegetation type in that area is dominated by shrub and oak woodland (Figure 1). This vegetation type is unlikely to provide much more than the infrequent linkage for fisher or marten. We see the current location of the FCCC as misplaced because the expected vegetation type that would dominate the area does not have a high likelihood of supporting fisher or marten movement. The desired condition statement for this new land allocation appears to be framed as a mechanism to promote the growth of a dense conifer forest (DEIS, p. 28: "a future forested area is desired with a minimum

[9] We found the map in the DEIS to be very confusing and possibly not correct with respect to location of old forest emphasis areas and HRCAs. We found the map in the BE (p. 107) to be much clearer and suggest that it replace the map displayed in the DEIS.

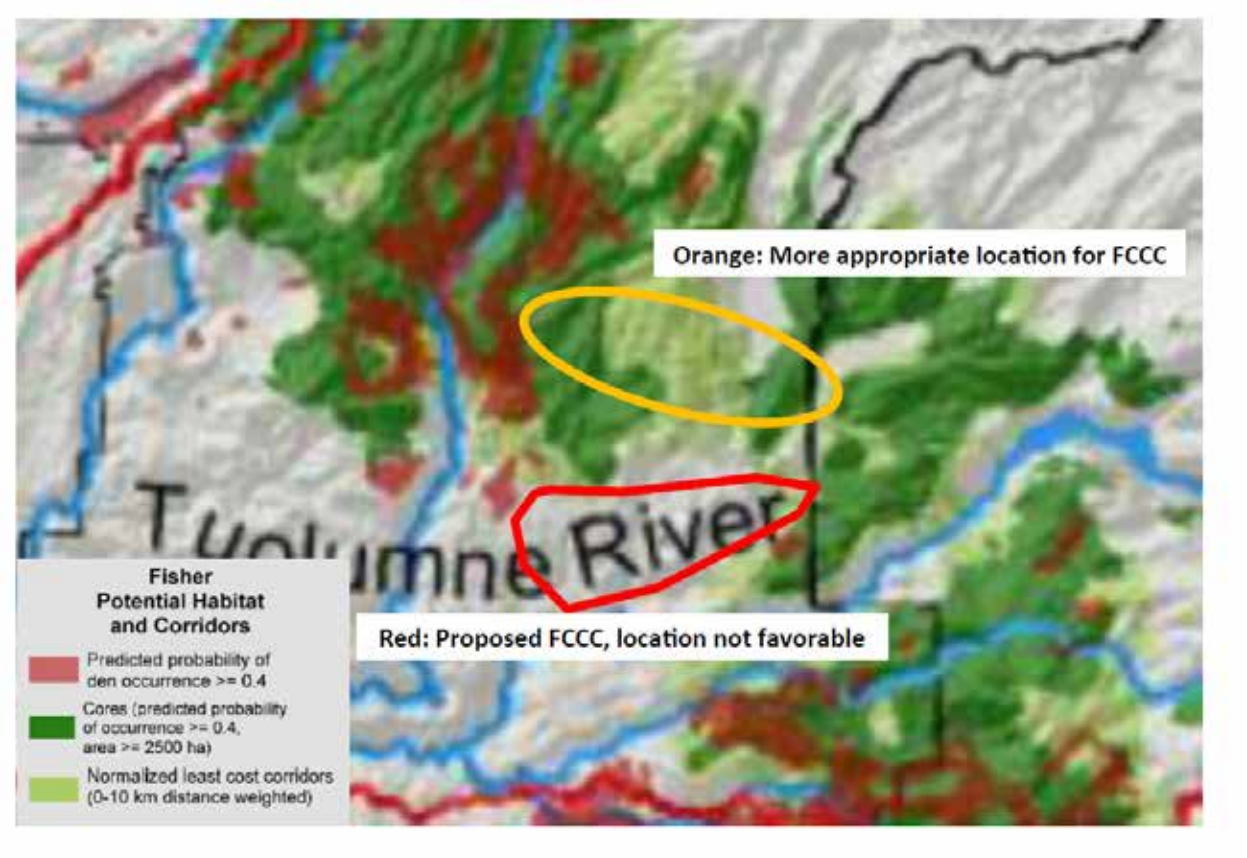
of 50 percent of the forested area having at least 60 percent canopy cover") where such conditions may not be sustainable or desirable.

Figure 1. Map of vegetation types in the Rim Fire area. Provided by Becky Estes, US Forest Service.



As recommended by Spencer and Rustigian-Romsos (2012) the FCCC would be best established to the north to include the mature forest on the west side of Cherry Lake that burned with mixed severity (Figure 2). As shown in Spencer and Rustigian-Romsos (2012, p. 17 and map excerpt below in Figure 2), this area has a high probability for fisher occupancy and would link to potential denning habitat in the Clavey watershed.

Figure 2. Potential fisher habitat and corridors (excerpted from Spencer and Rustigian-Romsos 2012, p. 17, Figure 8). Annotations added to identify approximate location of proposed FCCC (red polygon) and more appropriate location for the FCCC (orange polygon).



We ask that the FCCC be moved north to a location that includes the southern end of Cherry Lake since this area provides the most likely area that fishers would use for movement and provides the most direction linkage to lands capable of supporting high quality habitat on the national forest and national park. Also, the mature forest on the West side of the lake provides important resting and foraging habitat for forest carnivores (snags, forest cover, etc.) today and should be managed to maintain that now and in the future. The emphasis on habitat protection for forest carnivores in the proposed FCCC should include high quality habitat presently available, not just low quality habitat proposed for carnivore habitat management in the future. Similarly, suitable habitat for fisher and marten should also be protected where it exists in PACs, HRCAs and bald eagle management areas around Cherry Lake and within the fire perimeter. Shifting the FCCC to the north as indicated by the orange polygon in Figure 2, above, may also benefit marten since there is some overlap in this area with potential habitat for marten (spencer and Rustigian-Romsos 2012, p. 12, Figure 4).

We also believe that the desired conditions for the FCCC should include additional attributes important to fisher and marten life requirements, including retention of dense canopy, increased levels of large down wood, increased retention of large snags, management for understory and shrub diversity. We also ask that the desired condition to retain woody as small as 3" diameter be explained in more detail. What is the biological purpose of retaining this small size debris for

forest carnivores? If the purpose is to meet soils or watershed standards, then what are the downed wood habitat management goals in the FCCC for forest carnivores?

F. Townsend's Big Eared Bat

The Forest Service sensitive species Townsend's big ear bat (TBEB) was not addressed in the BE. This species should have been evaluated because the presence of this species has been documented on the Groveland Ranger District. Breeding habitat, in the form of mines and abandoned buildings, and night roosts, including tree cavities, occur on the district. As described in NatureServe[10] for the Western subspecies of this bat, snags are important foraging habitat and provide night roosts for individual bats to rest in when out all night long foraging:

> Uses caves, buildings and tree cavities for night roosts. Throughout much of the known range, commonly occurs in mesic habitats characterized by coniferous and deciduous forests (Kunz and Martin 1982)…..Habitats in western California include: cultivated valleys bordered by broad-leafed trees and dense thickets of brush; nearby hills with extensive grassy slopes, groves of oaks, areas of chaparral, and forests of coniferous trees and madrone; oak-covered hills just below the juniper and pinyon belt; coastal lowlands supporting dense ocean-side vegetation such as brush and lush annuals (see Handley 1959).

NatureSeve also provides information on management requirements relevant to activities in the Rim Fire area:

- Canopy cover should be maintained in areas surrounding caverns, rock faces, and other sites used for roosting.
- Large diameter snags and stands of old growth should be retained for use as roost sites.
- Caves and mines should be surveyed prior to any logging or mine closures in suspected occupied habitat.

We ask that you evaluate the potential impacts of the proposed salvage operations on Townsend's big eared bat with respect to disturbance from salvage operations, reduction in cover due to the loss of snags that may be removed near to caverns, rock faces and other sites used for roosting, and the removal of large diameter snags that may be used for roosting.

---

10 http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=103228&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=102452&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=102452&selectedIndexes=103869&selectedIndexes=103228&selectedIndexes=104608&selectedIndexes=105024&selectedIndexes=106329&selectedIndexes=100716&selectedIndexes=106433

G. Bald Eagle Territory at Cherry Lake

As best we can determine, there are salvage units proposed within the Bald Eagle Management Area (BEMA) at Cherry Lake. We see from information in the Wildlife Appendix, that the nest site was mapped and units within 0.5 miles of the nest were evaluated with respect to various indicators. The direction in the forest plan is to provide 300 acres of target nesting stands. The proposed salvage logging units within 0.5 miles of the nest tree occur within approximately the 300 acre area to be managed as "target nesting stands." The reduction in habitat quality expected from the salvage operations is not consistent with habitat management in a BEMA.

Table 3. Direction on bald eagle management taken from Stanislaus Forest Plan 2010 (USDA Forest Service 2010, p. 42)[11]

Bald Eagle (5-E)	Meet the Forest's share of the bald eagle recovery plan goal of three active breeding sites.	For each bald eagle territory identified on the Bald Eagle Habitat Map (Map 2, Appendix I) provide 300 acres of bald eagle target nesting stands. These stands should be 150 years or older, multi-storied, having 20-40% canopy closure with an average of 10 suitable nest trees per acre where possible. Preferred species are ponderosa pine, sugar pine, and Douglas fir which are 100 to 200 feet high and dominant in the overstory. Manage for 3 to 4 hard snags per acre with the largest sizes equal to the largest trees available. Provide a ¼ mile buffer between target nest stands and developed recreation facilities. When nesting bald eagles are found, implement suitable restrictions on nearby activities based on the Regional habitat management guidelines and the habitat capability model for the species. Protect all historic and active nests, as required by the Bald Eagle Protection Act and the Migratory Bird Treaty Act.

To be consistent with the forest plan and guidance on habitat management for bald eagle, units O08, O09, and O10B should be dropped from the action alternatives. We note that the objectives for these units are purely economic (DEIS, p. 488). Unit O10A indicates that there is a fuels objective for this unit. To address the fuels objective while meeting the management intent of the BEMA, salvage operations should be focused on the removal of small diameter material, the fuels concern in the next 20-30 years) and should leave the larger structures to provide for habitat and structural heterogeneity.

H. Black-Backed Woodpecker

We appreciate that Alternative 4 dropped an additional 2,572 acres for the benefit of black-backed woodpecker. This change results in providing habitat for approximately 21 breeding pairs or 54% of the pairs estimated on for national forest lands in the Rim Fire area (BE, p. 134). However, additional conservation of habitat for this species is warranted because the habitat type is ephemeral and uncommon in the Sierra Nevada. The rarity of this habitat type is due to fire suppression which has led to a significant reduction in the area historically affected by fire. The Rim Fire landscape likely provides an opportunity to boost population numbers and genetic diversity for black-backed woodpecker. Because of the importance of this species as a

[11] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5154788.pdf

"engineer" in developing cavities for secondary cavity nesters (see Manley and Tarbill 2012) and its low numbers in the Sierra Nevada bioregion, scientists working on this species recommended, at the technical workshops held in December 2013 and January 2014, that 75% of the breeding pairs on national forest lands be conserved. The current retention levels in Alternative 4 fall considerably short of that recommendation.

The DEIS (p. 46) claims that developing an alternative that conserved enough habitat to provide for 75% of the predicted nesting pairs was not viable since economic and fuel objectives could not be met. We disagree, in part, with this assessment and offer that additional key habitat areas which have a high potential contribution to support this species can be dropped from the salvage project and still meet objectives to address fuels, road improvements and economic outputs. Specifically, not removing burned trees in 9 units would conserve an additional 1,325 acres of higher value BBWO and support an estimated 2-3 pairs of BBWO.

Table 4. Units recommended for removal from the action alternatives to improve conservation for BBWO.

Unit	Area (ac)
A08A	111
B22X	19
B23	100
B24X	87
B32	62
D04A	32
D04B	345
E03A	174
Q14A	395
Total	**1,325**

The units above increase the amount of high value habitat retained in the Clavey watershed and along the Yosemite National Park boundary.

We asked in our scoping comments that a limited operating period for nesting BBWO be adopted for all salvage operations. This was based on recommendation 1.5 in the BBWO conservation strategy:

> Recommendation 1.5. Avoid harvesting fire-killed forest stands during the nesting season, generally May 1 through July 31.

(Bond et al. 2012) The action alternatives do not adopt this recommendation. There is little discussion about this recommendation, and the action alternatives fail to evaluate the consequences of not adopting the recommendation. The BE (see for example p. 130) mentions that there would be benefits from LOPs for other species, but does not evaluate the extent to which this would benefit BBWO. If breeding black-backed woodpeckers are not protected the first three to five years post-fire (by habitat avoidance or with a multi-year limited operating period), then the project is likely to directly kill BBWO nestlings in felled trees and indirectly

kill nestlings and fledglings by nestling starvation. This could create an "ecological trap"—the effect of allowing an at-risk species to be drawn into an area where it will be killed—which can have a disproportionately negative effect on the population.

We ask that you include a limited operating period in the action alternatives as recommended in the conservation strategy prepared by the Forest Service and its partners.

I. Great Gray Owl

We are pleased to read that the PACs for great gray owls were not redrawn and that it has been accepted that burned forest can provide foraging and nesting habitat for this species. We also support the removal the selection of group O units adjacent to the PAC in Wilson Meadow Lower and Wilson Meadow Upper proposed in Alternative 4. These are design measures necessary to ensure that the habitat characteristics to sustain this imperiled species are maintained.

Several salvage units surrounding Ackerson Meadow should also be dropped to accrue benefits similar to those described for the Wilson Meadow area mentioned above. Units Q6, Q7, Q8, Q9, Q13, T22, T23, and T24 are all in close proximity to the suite of PACs around Ackerson meadow. Full retention of snags in these units would increase habitat capability for great gray owl by maintaining the maximum number of snags for potential nests and hunting perches for great gray owl, compensate to some degree for loss of potential ness and hunting perches to high levels of roadside hazard salvage, and provide high stem densities that great gray owls are likely to use for screening and cover. Making these changes to the action alternatives is especially important since great gray owl nesting has been recently documented in at least two sites in the Ackerson Meadow complex. Additional measures must be taken in this location to protect reproductive potential. We also note that the units we identified above, with the exception on unit T24, were assigned objectives 1, 2, and 5b. As such their primary benefit is economic since full retention of snags would better meet habitat requirements for great gray owl. Unit T24 overlaps to some extent with the edge of a fire management area. Since Unit T24 is on the edge in site that is higher elevation and mesic, we suggest not treating this area will not significantly compromise the fuel strategy.

J. Northern Goshawk

According to the BE (p. 66), four of the 22 PACs for northern goshawk have been targeted for retirement. We are aware that survey results indicate that goshawks are nesting in two PACs that were targeted for retirement. We also heard during a call with the Regional Office that salvage units had been dropped from an area that intersected an occupied goshawk PAC. Because goshawks (as well as other raptors) are behaving in this landscape in ways that are unexpected to many biologists, it is essential that the retirement of PACs not follow a standard paradigm that clearly does not fit the Rim Fire landscape. More thorough surveys on the landscape need to be completed for this species.

The forest plan requires goshawk surveys in all suitable habitats:

> 34. Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when vegetation treatments are likely to reduce habitat quality are proposed in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol.

(USDA Forest Service 2004, p. 54). The protocol provided by the forest (dated August 9, 2000) does not provide much detail on the characteristics of suitable habitat, but does direct the survey of all such habitat that may be affected by the project. The more recent survey and monitoring guide for northern goshawks in issued by the Forest Service identified burned forest as being a component of suitable habitat (Woodbridge and Hargis 2006, p. 2-10). This survey guide also indicates that search radius of about 0.6 miles (1000 meters) is needed to locate about 95% of the alternative nests:

> Although most alternate nests are grouped within a stand or cluster of adjacent stands, a search radius of 0.5 km is required to locate about 75 percent of alternate nests used over a period of several years, and a search radius of 1 km is required to locate about 95 percent of alternate nests (Reynolds et al. 2005).

(Woodbridge and Hargis 2006, p. 2-3) Based on the actual use of burned habitat for nesting by northern goshawk we believe that it essential for their protection that existing PACs not be retired and that surveys of suitable habitat outside of PACs be completed. Furthermore, since our understanding of what constitutes suitable habitat is now being challenged by the significant use of burned landscapes for nesting, it is critical that surveys of existing PACs be extended outside the PAC about 0.3 mile in order to mirror the 1 km search radius (about 0.6 mile radius covering about 725 acre) noted in the 2006 survey guide (Woodbridge and Hargis 2006).

These surveys are necessary to avoid disturbing nesting northern goshawks and to avoid salvage logging within their PACs as directed by the forest plan. If the survey approaches and avoidance of salvage logging in PACs is not undertaken as outlined above, then we expect the Forest Service to conclude, based on their own rationale applied to Alternative 1, that the selected action would lead to a trend toward federal listing.

IV. Salvage Logging in Riparian Conservation Areas (RCAs)

Beschta et al. (2004) discuss at length the potential adverse impacts from salvage logging in sensitive riparian and near-stream areas and recommend that:

> Salvage logging generally should be prohibited on sensitive sites, however, including riparian areas, moderately or severely burned areas, fragile soils, steep slopes, roadless areas, watersheds where sedimentation is already a problem, where significant impacts to early successional vegetation may occur, and sites where accelerated surface erosion or accelerated mass soil erosion are likely to occur.

Additional review of the response of riparian areas and sensitive watersheds lead Lindenmayer and Noss (2006) to recommend establishment of riparian buffers designed to protect these features. Lindenmayer and Noss also recommend significant retention (upwards to 50% of the standing biomass distributed across all size classes), in cases where salvage logging is undertaken. Based on the acute concern expressed in the literature about the effects of salvage logging on aquatic resources, the action alternatives must provide far more detail and criteria on which to base a decision to salvage log in these sensitive areas. Nonetheless, the current action alternatives allow extensive salvage logging in Riparian Conservation Areas without establishing how such activities will benefit riparian function or meet the riparian conservation objectives in the forest plan (USDA Forest Service 2004).

The Rim Salvage project appears to allow far more disturbance in sensitive riparian areas than any other recent salvage project that we have reviewed. This occurs because the Stanislaus National Forests (STF) appears to be implementing atypical practices in Riparian Conservation Areas (RCAs). Apparently, the STF imposes an equipment exclusion zone only within the first 15 feet of any stream course regardless of classification. This appears to be based on something referred to as "Forest guidance for Mechanized Equipment Operations in RCAs (Frazier 2006)" (DEIS, p. 35). We question whether this "guidance" is consistent with the Riparian Conservation Objectives in the forest plan. We are also unaware of any NEPA analysis done to support this guidance and its forestwide application.

Common practice on national forests in the Sierra Nevada is to establish equipment exclusion zone of varying size depending on stream classification and slope. These typically range from 25 feet to 100 feet and increase with slope. We are aware of no other national forest, except the STF, that utilizes an equipment exclusion zone as small as 15 feet. For instance, the Eldorado National Forest utilized the following equipment zones (Table 5) in the Blacksmith Project (USDA Forest Service 2013a, p. 30) for a project that proposed logging of green and hazard trees.

Table 5. Exclusion buffers adopted by the Eldorado National Forest in the Blacksmith Project (USDA Forest Service 2013a).

Table 4 Exclusion Buffers for Mechanical and Skyline Treatment in Proximity to Streams

Aquatic Feature Type	Buffer Distance (Feet)
Perennial Streams and Special Aquatic Features*	100
Intermittent Streams	50
Ephemeral Streams - <35% Slope	25
**Ephemeral Streams - 35-70% slope	50
Ephemeral Streams - 70+% slope	75
*special aquatic features in the area include Ralston pond as well as its inlet and outlet channels. **Feller Bunchers would not operate on slopes greater than 35% within the RCA	

In the recent Chip-munk salvage logging project on the Plumas National Forest (USDA Forest Service 2013b), even broader exclusion buffers and standards were established to address retention of legacy structures in the RCA:

> Full suspension within RCA Equipment Exclusion Zones would be required to reduce the threat of direct mortality to plant and wildlife species within RCAs, as well as to minimize soil disturbance, erosion, stream bank damage, and disturbance to critical wildlife habitat. Limitations on the removal of large trees (greater than 30" dbh) within RCA equipment exclusion zones were cooperatively developed by the interdisciplinary team to prevent excessive disturbance and degradation of riparian habitat through the removal, or attempted removal, of large diameter trees.

(Ibid., p. 14) The following two tables (Figure 6) illustrate the exclusion zones adopted in this project.

Figure 6. Equipment exclusions zones in the Chip-munk Project, Plumas National Forest (USDA Forest Service 2013b, p. 34, Tables 4 and 5).

Table 4. Riparian Conservation Area (RCA), RCA snag retention and equipment exclusion zones, and burn pile restriction widths (fullbank width, measured horizontal from both sides of stream channel) in RCAs for ground-based mechanical equipment operations under salvage timber actions.

			Equipment Exclusion Zone	
Stream Type	Riparian Conservation Area (RCA) buffer and RCA snag retention zone widths	Minimum distance to burn pile	Slope ≤ 35%	Slope >35%
Perennial stream	300 feet	40 feet	100 feet	excluded
Intermittent stream over 3,500 ft. elevation	150 feet	40 feet	100 feet	excluded
Intermittent stream below 3,500 ft. elevation	150 feet	25 feet	50 feet	excluded
Ephemeral stream	100 feet	25 feet	25 feet[a]	excluded

a – For Clear Creek watershed, the equipment exclusion zone width for ephemeral streams would be 50 feet.

Table 5. Riparian Conservation Area (RCA), RCA snag retention and full suspension zone widths (fullbank width, measured horizontal from both sides of stream channel) in RCAs for skyline salvage timber actions.

Stream Type	Riparian Conservation Area (RCA) buffer and RCA snag retention zone widths	Full suspension zone
Perennial Stream	300 feet	75 feet
Intermittent Stream over 3,500 ft. elevation	150 feet	75 feet
Intermittent Stream below 3,500 ft. elevation	150 feet	50 feet
Ephemeral Stream	100 feet	25 feet

a – RCA equipment exclusion zones are not applicable to skyline operations because motorized equipment does not leave roads or constructed landings. No landings would be constructed within RCAs.

Lastly, the Aspen Salvage Project on the Sierra National Forest utilizes equipment exclusion zones similar to those adopted by the Eldorado National Forest, i.e., 25 feet to 100 feet depending on stream class and slope. The project defines limited exceptions with specific conditions under which equipment may enter an exclusion zone (USDA Forest Service 2014). All of these examples provide significantly greater protection from ground disturbance and disruptive actions compared to the management requirements for the Rim salvage project.

We also found no specific discussion in the DEIS about the Riparian Conservation Objectives (RCOs) or the consistency of the action alternatives with the RCOs. The forest plan specifically directs that consistency with the objectives will be determined at the project level:

> 92. Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species.

(USDA Forest Service 2004, p. 62) We ask that consistency with the RCOs be explicitly evaluated in the EIS for all actions proposed in the RCAs.

The atypical practices generally conducted on the STF and proposed for implementation in this enormous salvage project create significantly greater risks to aquatic resources in the Rim project area compared to other salvage projects being proposed or undertaken on national forests in the Sierra Nevada. The extensive area affected by salvage and the significant size of treatment units call for a more protective approach in riparian areas. We believe additional protection for riparian areas is required to avoid adverse cumulative impacts and prevent degradation of aquatic and riparian resources.

V. Inadequate Range of Alternatives

The National Environmental Policy Act requires the Forest Service to rigorously explore and objectively evaluate all reasonable alternatives 40 CFR § 1502.14 (a). Our review of public comments, comments from scientific experts, and important information presented at two Rim Fire Ecological Workshops, indicates that the DEIS failed to bring forward a "reasonable range" of alternatives for full consideration. This range of alternatives can include alternatives the agency does not like (NEPA's Forty Most Asked Questions 2a.) and can include alternatives that are outside the jurisdiction of the lead agency (NEPA's Forty Most Asked Questions 2b.)

The nature of environmental disclosure serves two fundamental purposes: 1) to inform the Federal decision-maker, agency experts and the interested public via high quality, scientific information as to the environmental impacts associated with action-forcing decisions, in order to make an informed decision (40 CFR §1500.1 (b); and 2) to recognize the "profound impact of man's activities on the natural environment" and to lessen, avoid or fully mitigate harm to the natural environment in order to "create and maintain conditions under which man and nature can

exist in productive harmony. . . ," and "prevent or eliminate damage to environment and the biosphere." (Sec 2. 42 USC § 4321; Sec. 101 42 USC § 4331)

A. There is Little Difference Among Action Alternatives

Alternatives 1, 3, and 4 are extremely similar in actions and outcomes and fail to provide for a "reasonable range" of alternatives as called for in NEPA. This failure has both procedural and substantive impacts by arbitrarily limiting options in the project design and by increasing harm to the natural resources within the Rim Fire landscape as discussed below.

Areas of high similarity in the effects report among alternatives exist throughout the Rim DEIS. Examples include:

- Sediment impacts to foothill yellow-legged frogs (DEIS, p. 124): "A change this small (in modeled sediment production) means there may be no detectable difference between the two alternatives" (i.e., among Alternatives 1 and 4)

- Fire behavior outcomes are identical under all action alternatives (DEIS, p. 149)

- Invasive plant location sites by alternative (Alternative 1: 144 acres; Alternative 3: 143 acres; Alternative 4: 142 acres) and concluding: "All action alternatives have roughly the same affected environment and acreage of invasive plant species across similar treatments. The direct, indirect and cumulative effects are also expected to be very similar" (DEIS p. 157).

- Nearly identical area affected by salvage ground based tree removal, Alternative 1: 24,127 acres; Alternative 3: 26,253 acres; Alternative 4: 24,176 acres.

- Nearly identical mileage affected by hazard tee removal, Alternative 1: 341 miles; Alternative 3: 314.8 acres; Alternative 4: 324.6 miles.

- Percent of each watershed treated is similar among action alternatives

- Nearly the same amount of area is proposed for biomass treatment: Alternative 1: 7,626; Alternative 3: 8,379; Alternative 4: 7,975 acres.

As can be seen in the table comparing alternatives (DEIS, p. 51), there is little difference in activities and outcomes among the alternatives and 67% (25 out of 37) of the comparative measures were the same among the alternatives.

The failure to consider a "reasonable range of alternatives" has serious consequences for the land and its resources and the public process. Action alternatives that could have been developed based on issues raised during scoping include: 1) limiting skyline and helicopter removal cost and the resulting higher residual fuel loads countering the fuels strategy, limiting erosion and sediment impacts and limit dependence on removal of larger ecologically valuable trees to fund these logging approaches, 2) proactively addressing climate change and likely impacts (see

discussion below); and 3) placing greater emphasis on conservation measures and not allowing economic outputs to drive all alternatives. By limiting the alternatives analyzed in detail, the Forest Service has artificially constrained the NEPA process and arbitrarily narrowed the future options on the Rim Fire landscape.

B. Reasonable Alternatives that Would Lessen Impacts

1. Reduced Impacts by Limiting Logging Footprint

The salvage logging proposed in the Clavey River watershed threatens rare and unique resources. Protection of these and other unique resources should have been considered in a conservation alternative. As stated in the Watershed Report (p. 9):

> The Clavey River is a proposed Wild and Scenic River. At 47 miles in length it is one of the longest remaining free flowing streams in the Sierra Nevada. It is also designated as a Critical Aquatic Refuge (CAR) in the Forest Plan Direction (USDA 2010). At 100,000 acres, the Clavey River is the largest CAR in the Pacific Southwest Region of the Forest Service. The Clavey River is also the first designated wild trout stream by the California Department of Fish and Wildlife, established in 1971. It has also since been designated a Heritage Trout Water by CDFW – one of only ten streams in California that "best exemplify indigenous strains of native trout within their historic drainages" (CDFW 2014). In addition, the middle portion of the Clavey River watershed contains the largest contiguous remaining old growth forest area on the Stanislaus National Forest.

Salvage logging, as noted below, in the uplands and riparian areas of this watershed increase the likelihood of sediment transport and increase risks to water quality. Salvage logging of merchantable trees and biomass involves removal via ground-based, skyline and helicopter equipment. The biomass removal will often involve a second entry into the salvage units (Watershed Report p. 35). The area of these treatments includes: 3,702 acres of helicopter logging, 1,330 acres of skyline logging, and 8,000 ac of biomass removal (7,626 to 8,379 acres, depending on alternative). Chase (2006) established a strong relationship between ground disturbance and sediment production that was highest in cable units. Sediment production rates increased in burned and salvage logged sites compared to unlogged (Ibid., p. 64).

Furthermore, recent research indicates that post-fire salvage logging may increase sediment projection at the plot and swale scales by 1-2 orders of magnitude as compared to burn-only controls (Robichaud et al. 2011). The watershed report (Table 13, p. 50 and 69) displays the "Annual % ERA" for each HUC 6 and HUC 7 watershed. The analysis displays seven watersheds over the Threshold of Concern (TOC) out to 2016-2019. Despite implementation of BMP and management requirements, increased stream sedimentation is anticipated as a result of Alternative 3[12], particularly in areas where logging activities create more effective sediment transport networks to stream channels (Watershed Report, p. 64). Furthermore, nine of twenty HUC 6 and 7 watersheds have salvage logging proposed in 20% or greater of the total acres for Alternative 4 (Watershed Report, p. 71) which substantially increases their risk of experiencing adverse cumulative watershed effects. An alternative should have been developed that reduced

[12] Increased sedimentation is expected despite having designed Alternative 3 to address sensitive watersheds.

the area affected and eliminated skyline and cable logging in order to minimize watershed impacts.

2. Avoiding High Fuel Loadings from Skyline and Helicopter Logging

The Rim Fire fuels analysis provides no comparative measure of fuel loads by prescription. We are left the unlikely assumption that there will be 10-20 tons per acre outside SPLATS and SFMF and 10 tons per acre within these zones with identical fire behavior (expressed as flame length and fire line intensity) today and up to 20 years out. The DEIS (p. 148-149) suggests that the residual fuel loads will be pile burned or jackpot burned since biomass and dozer piling is not an option on steep ground. In our experience, residual logging slash from traditional skyline and helicopter operations will result in high levels of fuels on 5,000 acres on steep slopes and that follow up treatments are unlikely to be completed.

The Rim Fire DEIS should have developed an alternative that is less reliant on speculation and better supported by site-specific analysis of current and likely future conditions associated with the costly, remote and higher risk treatments. Modeled fuel loads based on data from past treatments and experience, by prescription and by treatment unit would have higher credibility. Dropping the skyline and helicopter treatments due to resource impacts, excessive fuel loads, cost, remoteness, and failure to contribute to the long term fuels strategy should have been considered in a separate alternative. The DEIS also lacked accurate information to make a fair assessment of the effects of these treatments.

3. An Alternative Consistent with Standard 13 in the Forest Plan

The forest plan identifies the protection of "remnant old forest structure (surviving large trees, snags, and large logs) from high severity re-burns or other severe disturbance events in the future" (USDA Forest Service 2004, p. 52) as an objective when designing a salvage project. In contrast to the objective to protect old forest structure, the action alternatives are actually targeting standing large, old forest structures for removal. An alternative should be developed that protects most large, old forest structures (living or dead).

4. Alternative(s) that Tracked Key Issues from the Two Ecological Workshops held December 18, 2013 and January 31, 2014

The two Rim Fire Ecological Workshops were attended by approximately 60 scientists, natural resource specialists and conservation professionals. Below are a few key highlighted issues from the workshop notes (Ecological Workshop Notes for December 18, 2013 and January 31, 2014 9; submitted to Stanislaus National Forest staff) that should have been incorporated into alternatives. Quoting from the cumulative notes for the two workshops:

Landscape Goals

1. Immediate and future establishment of fire as a disturbance regime
2. Ecological resilience under predicted future climate conditions
3. Forest heterogeneity & habitat mosaics
4. Maintain and restore natural hydrologic connectivity and minimize undesirable hydrological connections

5. Promote a range of post-fire habitat conditions

Landscape Themes

Themes to consider in all geographic units, with varying degrees of emphasis as appropriate, include the following:

1. High vegetation burn severity patches (mostly dead trees)
2. Green tree islands within high severity patches
3. Moderate severity patches that will likely need some treatment to deal with near-term increases in fuel loads
4. Enhance resiliency of late-seral/old growth where it still exists
5. Strategic fire management zones associated with private lands/roads/ridgelines where ability to resist fire is identified as a top priority
6. Recovery of riparian resources and watershed function
7. Consequences of changing climate
8. Opportunities to study response to fire and salvage logging
9. Use tribal and cultural information to evaluate historical locations for oak and other desired

(Ecological Workshop Notes for December 18, 2013 and January 31, 2014)

Theme 4 includes conservation of older and larger structures, e.g., large trees, snags and large down wood, before and after the fire. This is similar to Standard 13 in the forest plan: "Protect remnant old forest structure (surviving large trees, snags and large logs) from high severity reburns or other disturbance events in the future." (USDA Forest Service 2004, p. 52) This theme is also consistent with the Region 5 Leadership Intent (p. 3) to "Ensure vegetation and fire management efforts are grounded in concern for biodiversity and ecological process both before and after disturbances like fire" (emphasis added).

Goal 2 and Theme 7 Consequences of future Climate Conditions were major topics at both Ecological Workshops. The approximately 60 scientists, Forest Service managers and experienced stakeholders spent considerable time discussing the scale and intensity of the Rim Fire. The vegetation conditions at the time of the fire and the climatic conditions (extreme dryness) and unstable weather were all a part of this theme.

Additional issues relevant to the EIS and from the workshop area-specific tables include:

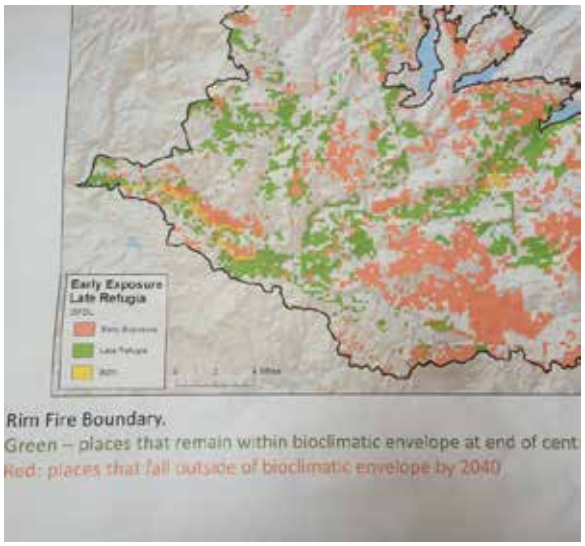
- Retain legacy structures
- Retain high value areas for BBWO and other post-fire/snag dependent species
- Monitor long-term vegetation changes to track climate-related vegetation changes
- Consider climate projections in planning (e.g., where conifers may survive given predicted water deficits)

These goals, themes, and additional workshop specific issues not mentioned here were well-documented and of significant concern to the majority of resource professionals attending the workshops. All the key concerns relevant to the Rim Fire should have been grouped into issues for the DEIS and used to develop reasonable alternatives to be analyzed in detail.

The Council on Environmental Quality specifically called out in their "Special Arrangements" letter dated December 9, 2013 to Forest Service Chief, Tom Tidwell that the Ecological Workshop was to be attended and communication was to continue. It is certainly reasonable to consider the content and outcomes from these two workshops as containing materials, ideas and issues which should have driven a broader range of alternatives. Failure to consider that depth of relevant information and issues from the Ecological Workshops is a violation of NEPA's requirement to conduct an "accurate scientific analysis" 40 CFR § 1500.1 (b); and to rigorously explore and objectively evaluate all reasonable alternatives 40 CFR §1502.14. There are negative social consequences to the NEPA process from ignoring the Ecological Workshop information and negative ecological consequence (mentioned here and elsewhere is this comment letter) stemming from having a limited range of alternatives and from the pre-determined, over-the-top bias towards economic performance trumping balanced conservation measures in the Rim Fire DEIS.

5. Bioclimatic Envelope Mapping Presented by the Forest Service (Carlos Ramirez, Remote Sensing Lab) at the Rim Fire Ecological Workshops

The Rim DEIS should have also considered a forward thinking alternative to address climate change. The image below, presented at the Ecological Workshops, displays projections of areas in the Rim Fire that move out of the current bioclimatic envelope by 2040 and those areas the remain (refugia) within the bioclimatic envelope until the end of the century. This critical information was provided to the Forest Service and should have been used to inform the NEPA process for the DEIS. An alternative that carefully crafts management responses in areas that are likely to significantly change verses areas that may remain "late refugia" are critical to ecosystem resilience. In terms of connected actions such as reforestation, meadow restoration, water quality management (e.g., roads, culverts, closures, etc.) and fuel break creation all should be informed by this bioclimatic mapping effort and engagement with Regional and Zone ecologists who participated in the two Ecological Workshops.



Instead, the DEIS contains an insufficient one page statement that the emissions associated with the project are minimal and would not have measurable effects on global climate patterns (DEIS, p. 59). This statement totally misses the point. Global climate patterns are having a significant impact on the Stanislaus National Forest and the Rim Fire landscape. An alternative that carefully considers the climate change affects that have impacted, and will continue to affect this landscape, is critical to building science-based management responses to climate driven changes in precipitation, warming, expanded fire seasons and fire intensity, and changes in water availability and quality.

Many of the currently planned and future connected actions (e.g., tree removal, tree retention, road repair maintenance, decommissioning, fuel break construction, water quality protection, and reforestation) would all be better informed by the "Bioclimatic—Early Exposure and Late Refugia" mapping effort that includes the whole Rim Fire perimeter.

The Bioclimatic map includes Yosemite National Park, Private lands and the Stanislaus National Forest. It is an excellent tool for an "All Lands" collaborative approach which is National Forest direction in the 2012 Planning Rule and general USDA-Forest Service Policy. As stated by Agricultural Secretary Tom Vilsack:

> The Forest Service must not be viewed as an agency concerned only with the fate of our National Forests, but must instead be acknowledged for its work in protecting and maintaining all American forests, including state and private lands. Our shared vision adopts an 'all-lands approach,' requiring close collaboration with the NRCS and its work on America's private working lands.
>
> Our shared vision begins with restoration. Restoration means managing forest lands first and foremost to protect our water resources, while making our forests more resilient to climate change. (emphasis added)

(Agricultural Secretary Tom Vilsack, August 14, 2009 Release No. 0382.09). The new planning rule (§ 218.8 Sustainability), the 2010 Forest Service National Report on Sustainable Forests (FS 979 June 2011, p. I-16 and elsewhere), and the Region 5 Leadership Intent for Ecological Restoration (March 2011) all emphasize the need to seriously analyze the impacts of changing climate patterns on forests, water, wildlife and other resources. Specifically, the Region 5 Ecological Restoration Leadership Intent states:

> Ensure the retention and sustainability of forests, forest resources, and forest carbon over the long term, even as climates change.
>
> Ensure that vegetation and fire management efforts are grounded in concern for biodiversity and ecological processes both before and after disturbances like fire

(Region 5 Ecological Restoration Leadership Intent R5-MR-048 March 2011, p. 3) The DEIS fails to provide any alternative that effectively uses existing resources that were created by the Forest Service for the purpose of understanding and evaluating climate change resilience in the Rim Fire landscape.

In conclusion, the scoping comments that we submitted (January 6, 2014) and the issues and outcomes of the Ecological Workshops provided ample identification of reasonable and feasible alternatives for full consideration in the DEIS. (See Ecological Workshop Notes for December 18, 2013 and January 31, 2014) The DEIS fails to meet NEPA's requirements to conduct "accurate scientific analysis," (40 CFR § 1500.1 (b)) and to rigorously explore and objectively evaluate all reasonable alternatives (40 CFR §1502.14). The DEIS also fails to assess the impacts of climate patterns and effects based technical information generated by Region 5 staff and fails to assess the connected and cumulative actions that result from changing climate

patterns. These omissions arbitrarily limited the range of alternatives in the DEIS for the Rim Fire Restoration landscape.

VI. Additional Units Recommended for Removal from Alternative 4

Based on our review of the project objectives and impacts to resources, we suggest that additional units be dropped from the Rim salvage project in order to improve conservation of sensitive resources. We suggest that 126 units totaling 10,422 acres be dropped to improve habitat conditions for sensitive raptors and BBWO, reduce watershed disturbance and impacts, increase retention of legacy structures, support the development of complex early seral stages, and eliminate costly treatments. We estimate that this would result in a project with 17,404 acres of logging in salvage units with a volume yield of about 207 mmbf. We estimated volume using a factor of 32 mbf per acre which was derived from the reduction in volume that resulted from the deletion of 2,572 acres between Alternative 3 and 4. We expect the miles of road requiring the removal of hazard trees to increase due to the need to treat roads that are no longer associated with a salvage unit. We are limited in our ability to estimate this number, but believe is could be 10-15% greater than 324 miles which was the value for Alternative 4. When combined with volume estimated from hazard reduction on level 2 roads, we expect the volume yield to exceed 300 mmbf. We believe this is a conservative (i.e., low) estimate of volume since it relies on a yield of 32 mbf per acre and the average yield per acre for Alternative 4 is about 19 mbf per acre.

These units were selected for removal because they do not contribute substantially to Objective 3 to manage fuels in strategic locations. Removal of these units would result in less commercial timber value being recovered, but the estimated volume remaining after removal of these units and the volume from roadside hazard removal for level 2 roads would still provide sufficient volume to meet the capacity of the mills in Standard and Chinese Camp for over two years.

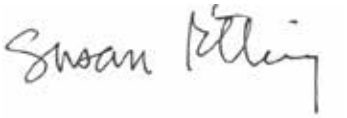
The specific units we identified are listed in Appendix A of these comments. We ask that you adopt the removal of these units in the final decision.

VII. Conclusion

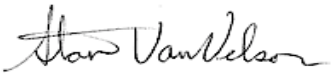
The race to salvage log in the Rim Fire is in conflict with completing the necessary surveys and analysis to protect at risk species and other sensitive resources. It is critical that we have current information about resource conditions in the project area prior to initiating salvage logging. Conservation measures must also still be developed to address protection of habitat for sensitive aquatic and wildlife resources. This work must also be done prior to conducting salvage operations.

We remain committed to working with the Forest Service, scientists, and others to identify management actions for the Rim Fire landscape that restore natural disturbance cycles and processes and provide for ecological integrity and biodiversity. If you have questions about these comments, please contact Sue Britting (britting@earthlink.net; 530-295-8210).

Sincerely,

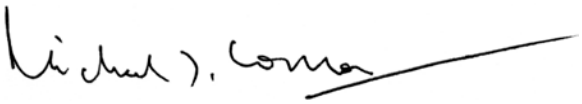


Susan Britting, Ph.D.
Executive Director
Sierra Forest Legacy
PO Box 377
Coloma, CA 95613



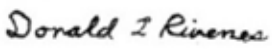
Stan VanVelsor, Ph.D.
Regional Conservation Representative
The Wilderness Society
San Francisco, CA

Craig Thomas
Conservation Director
Sierra Forest Legacy
Garden Valley, CA



Michael J. Connor, Ph.D.
California Director
Western Watersheds Project
Reseda, CA

Greg Suba
Conservation Director
California Native Plant Society
Sacramento, CA



Don Rivenes
Executive Director
Forest issues Group
Grass Valley, CA

Ani Kame'enui
Washington Representative, Federal Policy
Sierra Club
Washington, DC

Pamela Flick
California Representative
Defenders of Wildlife
Sacramento, CA

Greg Haller
Conservation Director
Pacific Rivers Council
Portland, OR

References

Beschta, R. L., Rhodes, J. J., Kauffman, J. B., Gresswell, R. E., Minshall, G. W., Karr, J. R., Perry, D. A., Hauer, F. R. and Frissell, C.A. 2004. Postfire management on forested public lands of the western United States. Conservation Biology. 18:957–967.

Bond, M. L.; Lee, D. E.; Siegel, R. B. and Ward, J. P. 2009. Habitat use and selection by California spotted owls in a postfire landscape. Journal of Wildlife Management. 73: 1116–1124.

Bond, M. L., R. B. Siegel, and D. L. Craig. 2012, A conservation Strategy for the Black-backed Woodpecker (Picoides arcticus) in California. Version 1.0. The Institute for Bird Populations and California Partners in Flight. Point Reyes Station, California.

Chase, E.H. 2006. Effects of Wildfire and Salvage Logging on Site Conditions and Hillslope Sediment Production: Placer County, California. Thesis, Colorado State University, Fort Collins, CO. 72 pages.

Conner, M. M., Keane, J. J., Gallagher, C. V., Jehle, G., Munton, T. E., Shaklee, P. A. and Gerrard, R. A. (2013), Realized population change for long-term monitoring: California spotted owl case study. The Journal of Wildlife Management, 77: 1449–1458. doi: 10.1002/jwmg.591

Hutto, R. L. 2006. Toward Meaningful Snag-Management Guidelines for Post Fire Salvage Logging in North American Conifer Forests. Conservation Biology: 20(4): 984-993.

Hutto, R. L. and Gallo, S. M. 2006. The effects of post-fire salvage logging on cavity- nesting birds. The Condor 108:817–831.

Hutto, R. L. 2008. The ecological importance of severe wildfires: Some like it hot. Ecological Applications 18:1827–1834.

Keane, J. J, 2010. California Spotted Owl module of the Plumas-Lassen Administrative Study. In: Plumas- Lassen Study 2009 Annual Report. Pacific Southwest Research Station, USDA Forest Service. March, 2010.

Lee, D. E., Bond, M. L. and Siegel, R. B. 2012. Dynamics of breeding-season site occupancy of the California Spotted Owl in burned forests. The Condor 114:792-802.

Lindenmayer, D. B, Burton, P., and Franklin, J. 2008. Salvage Logging and Its Ecological Consequences. Island Press. 227 pgs.

Lindenmayer, D. B. and Noss, R. F. 2006. Salvage logging, ecosystem processes, and biodiversity conservation. Conservation Biology 20:949–58.

Manley, P. N, and Tarbill, G. 2012. Ecological succession in the Angora fire: The role of woodpeckers as keystone species. Final Report to the South Nevada Public Lands Management Act. U.S. Forest Service, Pacific Southwest Research Station, Davis, California.

Roberts, S. L., van Wagtendonk, J. W., Miles, A. K., and Kelt, D. A. 2011. Effects of fire on spotted owl site occupancy in a late-successional forest. Biological Conservation 144(1): 610-619.

Robichaud, P.R., W.J. Elliot, L. MacDonald, R. Coats, J.W. Wagenbrenner, S.A. Lewis, L.E. Ashmun, and R.E. Brown. 2011. Evaluating Post-fire Salvage Logging Effects on Erosion. Final Report Joint Fire Science Program 06-3-4-21. 21 pages.

Spencer, W. and Rustigian-Romsos, H. 2012. Decision support maps and recommendations for conserving rare carnivores in the inland mountains of California. Conservation Biology Institute. August 2012.

Thompson, C., Purcell, K., Garner, J and Green, R. 2011. Kings River Fisher Project Progress Report 2007-2010. USDA Forest Service, Pacific Southwest Research Station, Fresno, CA.

Thompson, I., Mackey, B., McNulty, S. and Mosseler, A. 2009. Forest Resilience, Biodiversity, and Climate Change. A synthesis of the biodiversity/resilience/stability relationship in forest ecosystems. Secretariat of the Convention on Biological Diversity, Montreal. Technical Series no. 43, 67 pages.

Thompson, J. R., Spies, T. A., and Ganio, L. M. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. PNAS Vol. 104:25. National Academy of Science June 2007.

USDA Forest Service 2001a. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement. Pacific Southwest Region. January 2001.

USDA Forest Service 2001b. Sierra Nevada Forest Plan Amendment, Record of Decision. Pacific Southwest Region. January 2001.

USDI Fish and Wildlife Service 2006. 12-month finding for a petition to list the California Spotted Owl (Strix occidentalis occidentalis) as Threatened or Endangered. 71 Federal Register (no. 100) 29886-29908. (May 24, 2006).

USDA Forest Service 2004. Sierra Nevada Forest Plan Amendment, Record of Decision. Pacific Southwest Region. January 2004.

USDA Forest Service 2013a. Blacksmith Ecological Restoration Project, Environmental Impact Statement. Pacific Ranger District, Eldorado National Forest. http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/81847_FSPLT3_1462293.pdf

USDA Forest Service 2013b. Chip-munk Recovery and Restoration Project, Environmental assessment. Mt. Hough Ranger District, Plumas National Forest. April 2013.

http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/93729_FSPLT3_1449912.pdf

USDA Forest Service 2014. Aspen Recovery and Reforestation Project, Environmental assessment. http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/97367_FSPLT3_1643446.pdf

Woodbridge, B. and Hargis, C.D. 2006. Northern goshawk inventory and monitoring technical guide. Gen. Tech. Rep. WO-71. Washington, DC: U.S. Department of Agriculture, Forest Service. 80 p.

Appendix A: High Priority Units to Drop from Alternative A

We recommend dropping from Alternative 4 a total of 126 units covering 10,422 acres. We estimate that this would result in an action alternative, for salvage units alone, covering 17,404 acres. We estimate the volume of timber from the salvage units in this action alternative to be approximately 207 mmbf using a factor of 32 mbf per acre of volume for the units deleted. This factor of 32 mbf per acre was derived from the reduction in volume (82.8 mmbf) that resulted from the deletion of 2,572 acres in the design of Alternative 4 compared to Alternative 3.

We expect the miles of road requiring the removal of hazard trees to increase due to the need to treat roads that are no longer associated with a salvage unit. Our ability to estimate this number is limited, but based on changes observed between Alternatives 3 and 4, we believe there could be an increase of 10-15% compared to road miles in Alternative 4. When the salvage unit volume is combined with the volume estimated from hazard reduction on level 2 roads, we expect the volume yield to exceed 300 mmbf. We believe this is a conservative (i.e., low) estimate of volume since it relies on a high yield of 32 mbf per acre when calculating the volume of retained timber. By comparison, the average volume yield per acre for Alternative 4 is 19 mbf per acre.

The units below were selected for removal because they provide ecological benefit to the various resources listed below by retaining the burned trees and they do not contribute substantially to Objective 3 to manage fuels in strategic locations. Removal of these units would result in less commercial timber value being recovered, but the estimated volume remaining after removal of these units and the volume from roadside hazard removal for level 2 roads would still provide sufficient volume to meet the capacity of the mills in Standard and Chinese Camp for over two years, i.e., 250 mmbf.

Codes to Explain "Primary Reasons for dropping"

The codes below indicate our primary reasons for dropping specific units; there also are many secondary ecological benefits to dropping these units.

A = to benefit California spotted owl, unit with higher amount of pre-fire CWHR and/or close proximity to PAC
B = benefit to black-backed woodpecker; higher value habitat in key locations
C = benefit to great gray owl; retaining burned stands adjacent to PACs and meadows
D = higher ecological value based on bird and wildflower presence
E = helicopter and skyline units removed due to marginal benefit and high cost
F = conservation benefit to bald eagle and management area at Cherry Lake

Unit	Logging System	New construction?	PAC Present?	SPLAT or Fuels Area?	Area (ac)	Objectives from DEIS (p. 483 for definitions)	Primary Reasons for Dropping
A05C	Helicopter	No	Yes		85	1,2,5b	A E
A08A	Tractor	Yes	Yes		111	1,2,5b	A B
A08C	Helicopter	Yes	Yes		18	1,5b	A E
A09	Helicopter	No	No		81	1,5b	A E

Appendix A: High Priority Units to Drop from Alternative A

Unit	Logging System	New construction?	PAC Present?	SPLAT or Fuels Area?	Area (ac)	Objectives from DEIS (p. 483 for definitions)	Primary Reasons for Dropping
A15	Helicopter	Yes	Yes	YES	22	1,3,5b,6	A E
AA04	Helicopter	No	No	YES	28	1,3,5b	A E
AA09	Helicopter	No	No	YES	66	1,3,5b	A E
AA11	Skyline	No	No		12	12	E
AA13	Skyline	No	No		12	12	E
B22X	Tractor	Yes	No		19	1,5b,6	A B
B23	Tractor	No	No		100	12	B
B24X	Helicopter	No	Yes		87	1,5b,6	A B E
B32	Tractor	No	No		62	12	B
C02	Helicopter	Yes	Yes		86	1,5b	A E
D01E	Tractor	No	NO		18	1	A
D03	Tractor	No	No		26	1,5b	A
D04A	Tractor	No	Yes		32	1,5b	A B
D04B	Tractor	No	Yes		345	1,2,5b	A B
D08	Tractor	No	No		42	1,2,5b	A
D09	Tractor	No	No		37	1,2,5b	A
E03A	Tractor	No	No		174	12	B
F01	Helicopter	No	No		196	1,5b,6	A E
F02A	Tractor	No	Yes		604	1,2,5b,6	A
F03	Helicopter	No	No		58	1,5b	A E
F13	Helicopter	Yes	No		177	1,5b	A E
F15	Helicopter	No	No		33	1,2,5b	E
F17	Skyline	No	No		12	1,2,5b	E
F20	Helicopter	No	Yes		145	1,2,5b	A E
G03A	Tractor	No	Yes		131	1,2,5b	A
G03B	Tractor	No	Yes		119	1,2,5b	A
G10	Skyline	No	Yes		6	1,5b,6	A E
G11A	Skyline	No	Yes		5	1,2,5b,6	A E
G11B	Skyline	No	Yes		7	1,2,5b,6	A E
G12	Skyline	No	Yes		10	1,2,5b,6	A E
G13A	Skyline	No	No		16	1,2,5b	E
G14A	Helicopter	No	Yes		6	1,5b,6	A E
G14B	Helicopter	No	Yes		6	1,2,5b,6	A E
H11	Tractor	No	Yes		27	1,2,5b	A
H11X	Tractor	No	Yes		17	1,2,5b,6	A
H13A	Tractor	No	Yes		54	1,2,5b	A
H13AX	Tractor	No	Yes		52	1,2,5b,6	A
H13B	Tractor	No	Yes		13	1,2,5b	A

Appendix A: High Priority Units to Drop from Alternative A

Unit	Logging System	New construction?	PAC Present?	SPLAT or Fuels Area?	Area (ac)	Objectives from DEIS (p. 483 for definitions)	Primary Reasons for Dropping
H13BX	Tractor	No	Yes		52	1,2,5b,6	A
L01	Skyline		No		39	1,2,5b	E
L02BX	Tractor	No	Yes		215	1,2,3,5b,6	A
L02C	Tractor	No	Yes		610	1,2,5b	A
L02CX	Tractor	No	Yes		185	1,2,5b,6	A
L02D	Tractor	No	Yes		257	1,2,5b	A
L02E	Helicopter	No	Yes		62	1,2,5b	E
L02F	Tractor	No	Yes		185	1,2,3,5b	A
L05AX	Helicopter	No	Yes		9	1,2,5b,6	A E
L05BX	Helicopter	No	Yes		17	1,5b,6	A E
M04A	Tractor	No	Yes		260	1,2,5b	A
M05A	Helicopter	No	No	YES	34	1,3,5b	A E
M05B	Helicopter	No	No	YES	120	1,2,3,5b	A E
M09	Helicopter	No	No		224	1,2,5b,6	A E
M13	Helicopter	No	Yes		10	1,2,5b	A E
N01C	Tractor	No	Yes		225	1,2,5b	A
N01D	Tractor	No	Yes		14	1,5b	A
N01E	Tractor	No	Yes		71	1,5b	A
N01H	Tractor	No	Yes		49	1,5b	A
N01I	Tractor	No	Yes		28	1,5b	A
O03	Helicopter	No	Yes		46	1,5b	A E
O06	Helicopter	No	No		33	1,5b	E
O07	Helicopter	No	No		48	1	E
O08	Tractor	No	No		27	1	F
O09	Tractor	No	No		10	1	F
O10B	Tractor	No	No		6	1	F
O201A	Tractor	No	No		156	2,5a,5b	A D
O201B	Tractor	No	No		121	2,5a,5b	A
P201	Helicopter	No	No		185	1,5a,5b	E
Q06	Tractor	No	No		19	1,2,5b	C
Q07	Tractor	No	No		13	1,2,5b	C
Q08	Tractor	No	No		42	1,2,5b	A C
Q09	Skyline	No	No		18	1,2,5b	A C E
Q13	Tractor	No	No		81	1,5b	A C
Q14A	Tractor	No	Yes		395	1,2,5b,6	A B
Q15	Skyline	No	No		17	1,2,5b	A E
R07A	Skyline	Yes	No		98	12	E
R12X	Tractor	No	Yes		56	1,5b,6	A

Appendix A: High Priority Units to Drop from Alternative A

Unit	Logging System	New construction?	PAC Present?	SPLAT or Fuels Area?	Area (ac)	Objectives from DEIS (p. 483 for definitions)	Primary Reasons for Dropping
R16	Tractor	No	No		98	1,2,5b	A
R17X	Tractor	No	Yes		72	1,2,5b,6	A
R18	Skyline	No	No		83	1,2,5b	A E
R18X	Skyline	No	No		17	1,5b,6	A E
R19D	Tractor	No	Yes		91	1,2,3,5b,6	A
R20	Helicopter	Yes	Yes		50	1,5b,6	A E
R23	Helicopter	No	Yes		13	12	A E
R33X	Helicopter	No	Yes	YES	12	1,2,3,5b,6	A E
R35A	Skyline	No	No	YES	10	1,2,3,5b	A E
S04	Tractor	No	Yes		284	1,2,5b	A D
S08	Skyline	No	No		81	1,2,5b	E
S10	Helicopter	No	No	YES	9	1,3,5b	E
T03	Skyline	No	No		29	12	A E
T22	Tractor	No	No		18	1,2,5b	A C
T23	Tractor	No	Yes		28	1,2,5b	A C
T23X	Tractor	No	Yes		54	1,2,5b,6	A
T24	Tractor	No	Yes	YES	154	1,2,3,5b	C
T25	Skyline	No	Yes		6	12	A E
T25X	Skyline	No	Yes		26	1,2,5b,6	A E
T26	Skyline	No	No		15	12	A E
V14B	Tractor	No	Yes		382	123	A
V14C	Tractor	No	Yes		70	1,2,3,5b	A
V15	Helicopter	No	Yes		61	12	A E
X02	Helicopter	No	No	YES	43	123	E
X03	Skyline	No	No	YES	58	1,2,3,5b	E
X05	Helicopter	No	No	YES	33	123	E
X06	Helicopter	No	No	YES	60	123	E
X08	Helicopter	No	No		20	1	E
X10	Helicopter	No	No	YES	8	1,2,3,5b	E
X110	Tractor	No	No		18	1	A
X111X	Tractor	No	Yes		32	1,2,5b,6	A
X112	Tractor	No	Yes		14	12	A
X114X	Tractor	No	Yes		18	1,2,5b,6	A
X116	Tractor	No	No		110	1,2,3,5b	A
X117	Tractor	No	Yes		9	1,2,5b	A
X118	Tractor	No	Yes		7	12	A
X118X	Tractor	No	Yes		156	1,2,5b,6	A
X119X	Tractor	No	Yes		113	1,2,5b,6	A

Appendix A: High Priority Units to Drop from Alternative A

Unit	Logging System	New construction?	PAC Present?	SPLAT or Fuels Area?	Area (ac)	Objectives from DEIS (p. 483 for definitions)	Primary Reasons for Dropping
X12	Skyline	No	No	YES	23	1,2,3,5b	E
X120	Helicopter	No	No		24	1,3,5b	E
X17	Skyline	No	Yes	YES	51	1,2,3,5b,6	E
X22	Skyline	No	Yes		52	1,2,3,5b	A E
X23	Helicopter	No	No	YES	353	1,2,3,5b	E
X24	Skyline	No	Yes		76	1,2,5b	A E
X25	Skyline	No	Yes		253	1,2,5b,6	A E
X27	Skyline	No	No		34	1,2,5b	A E
				Total Area (acres)	10,422		