6 January 2014

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

Dear Ms. Skalski,

Thank you very much for the opportunity to submit scoping comments on the Rim Fire project on the Stanislaus National Forest. I am a wildlife biologist and principal scientist with the Wild Nature Institute, a non-profit scientific research and advocacy organization whose mission is to study imperiled species and protect habitat. I have conducted and published numerous studies examining occupancy rates, habitat selection, space use, and diet of California Spotted Owls in post-fire landscapes of the Sierra Nevada. I have also conducted field research of the habitat needs and foraging ecology of the Black-backed Woodpecker in the Lassen National Forest (in the Sugarloaf and Peterson fire areas), and I am the principal author of the *Conservation Strategy for the Black-backed Woodpecker in California*, Bond et al. (2012), which the U.S. Forest Service commissioned, funded, and co-authored. I am submitting these comments on behalf of the Center for Biological Diversity and John Muir Project.

As is typical of fires in the Sierra Nevada management region, the 2013 Rim Fire burned in a mosaic of severities, creating a complex mixture of habitats including Complex Early Seral Forest – a critical habitat type for myriad species of plants and animals. In a paper about this forest type in the Sierra Nevada, my colleagues and I defined CESFs as such:

> Complex early seral forests occupy sites that occur in time and space between a stand-replacement disturbance and re-establishment of a closed-forest canopy. Today's young forests, if resulting from purposeful regeneration harvest or from fire salvage harvest, lack some of the features and characteristics of unmanaged forests. CESFs are rich in post-disturbance legacies (e.g., large live and dead trees, downed logs), and post-fire vegetation (e.g., native fire-following shrubs, flowers, natural conifer regeneration), that provide important habitat for countless species and differ from those created by logging (e.g., salvage or pre-fire thinning) that are deficient in biological legacies and many other key ecological attributes. Thus, to distinguish early seral forests from logged early seral, the term "complex" is used in association with early seral produced by natural disturbances.

Thus, high and moderately burned stands remain forest, but in a different seral stage from green forest. However, this natural and important stage in the life of a forest has been largely ignored

(Swanson et al. 2011). Complex Early Seral Forest habitat provides critical foraging and breeding elements for many native Sierra Nevada species. In particular, this Complex Early Seral Forest is highly suitable habitat for Black-backed Woodpeckers, a species strongly associated with recently severely burned forest. Moreover, Complex Early Seral Forest can provide foraging habitat for Spotted Owls and Northern Goshawks, which are species typically associated with late-seral forests.

The USDA Forest Service, Stanislaus National Forest, proposes to remove, through post-fire logging, a large proportion of the best Black-backed Woodpecker habitat in the Rim Fire area on the Stanislaus National Forest (scoping notice and maps). Specifically, post-fire salvage logging of approximately 30,000 acres, as well as many miles of hazard tree logging (and artificial conifer planting), are proposed within moderate/high-severity fire areas upon which Black-backed Woodpeckers and other post-fire species depend. These treatments occur in Complex Early Seral Forest habitat.

The Project will eliminate burned foraging and nesting habitat for Black-backed Woodpeckers. It is my opinion that this project together with other salvage-logging projects near the Rim Fire (e.g., American fire) and throughout the Sierra Nevada, will <u>further precipitate the need for listing the California/Oregon population of the Black-backed Woodpecker as a threatened species under the federal Endangered Species Act</u>. There is evidence not only that the Oregon/California population is genetically distinct from the Northern Rockies and South Dakota Black Hills populations, but also that there may be genetic distinctions between the eastern Oregon Cascades population and the California population (Siegel et al. 2013). I urge the Forest Service to withdraw the current proposal, and to instead, protect the Complex Early Seral Forest created by the Rim Fire.

<u>Purpose and Need for the Project are Flawed</u>

The project's purpose and need are to recover economic value from the burned timber, to remove trees that may potentially fall into roads, and presumably (in another project that has yet to be issued for scoping) to 'reforest' the burned areas. The presumed need for the reforestation component is misguided. In fact, high-intensity burned forest is not "deforested" – rather, the forest is in a different seral condition, called Complex Early Seral Forest, and this condition provides a critical habitat element for many native species in the Sierra Nevada: standing dead trees.

The scoping notice posits that logging is necessary to maintain the forests in a forested condition. In fact, removing the standing snags would actually eliminate the current forested condition. Severely burned areas are still forests, they are simply those that have been transformed into Complex Early Seral Forests comprised of standing dead trees and other vegetation such as montane chaparral. The standing dead trees are a major habitat element for species that thrive in severely burned forests. In a peer-reviewed publication in *Conservation Biology* (Hutto 2006), ornithologist Dr. Richard Hutto explained that:

> Everything from the system of fire-regime classification, to a preoccupation with the destructive aspects of fire, to the misapplication of snag-management guidelines, have led us to ignore the obvious: we need to retain the very elements that give rise to much of the biological uniqueness of a burned forest—the standing dead trees.

These standing dead trees are extremely important habitat for fire-following, wood-boring insects (e.g., Siegel et al. 2013 from a study on the Lassen National Forest – and my personal observation during the study, during which we quantified wood-boring beetle abundance on burned trees), as well as the wildlife species that forage upon those insects. Moreover, the dead trees provide substrates for a host of cavity-nesting vertebrates (Hutto 2006, Saab et al. 2007, personal observation during extensive field research in burned forests in Lassen National Forest and Sequoia National Forest). Native bark beetles that attack fire-weakened trees continue the important snag-creation process in the forests surrounding the fire area – especially critical for snag-dependent species as time since fire increases (e.g., Black-backed Woodpeckers, Dudley and Saab 2007). The assumption that fire-killed and fire-injured trees need to be removed to make way for the replanting of live trees is a deeply flawed assumption, as such action would significantly harm snag-dependent species.

The Forest Service has recognized that intensively burned forests are important habitats. However, merely mentioning that severely burned forests provides some wildlife habitat does not constitute a full recognition of this habitat as a critical, natural, and relatively rare type that is as important for biological diversity as is old-growth/late-seral forests, nor does it qualify as a comprehensive analysis of impacts on snag-forest-dependent species such as the Black-backed Woodpecker. In fact, unlogged severely burned forest habitat is far rarer on the current landscape than is late-seral forest habitat. Indeed, they are both critical habitat types that deserve to be protected wherever they occur. Research in areas relatively free of human manipulation other than fire suppression has indicated the policy of fire suppression successfully reduced the extent and frequency of fire in a variety of forest types in the Klamath, Cascade, and Sierra Nevada mountains compared to the pre-suppression era [i.e., before 1900] *(Mixed Conifer, Lassen NF, S. Cascades*: Beaty and Taylor 2001; *Mixed Conifer, Lake Tahoe Basin, Sierra Nevada*: Beaty and Taylor 2008; *Low- to high-elevation forests, Thousand Lakes Wilderness, S. Cascades*: Bekker and Taylor 2000; *Ponderosa Pine-Mixed Conifer, SE Klamath*: Fry and Stephens 2006; *Sequoia-Mixed Conifer, Kings Canyon NP and Sequoia NF, Sierra Nevada*: Kilgore and Taylor 1979; *Mixed Conifer, Yosemite NP, Sierra Nevada*: Scholl and Taylor 2010; *Red Fir, S. Cascades*: Taylor 1993). Therefore high-severity fire is natural and ecologically important in the fire area and throughout the Sierra Nevada.

Some land managers believe that the potential for high-severity fire and larger fires is currently greater than in pre-settlement times. However, recent evidence for this assertion in the scientific literature is equivocal for California forests. For example, using Mean Fire Return Intervals and High Fire Return Intervals, approximately 276,134–690,334 ha of mixed-conifer forests burned annually prior to European settlement in California compared with just 23,000 ha of all forest types burning annually between 1950 and 1999 (Stephens et al. 2007). Odion and Hanson (2006) noted that some of the largest high-severity patches within the three biggest fires that burned in the Sierra Nevada from 1999–2006 were comparable in size to those that burned during the pre-suppression period. Beaty and Taylor (2001) found that while most fire sizes during the pre-suppression era were typically small (mean = 106 ha) in a mixed-conifer forest, during certain dry years widespread fires burned across entire watersheds. Moreover, pre-suppression fires sometimes comprised >50% high-severity (Bekker and Taylor 2000). These studies indicate large, high-severity burns actually are an intrinsic part of California's mixed-conifer fire regime. Whether or not fire sizes are larger now as compared with earlier in the suppression era (i.e., 1980s), an overall fire deficit compared with pre-suppression times continues to exist in California (Stephens et al. 2007).

Another misguided need for the Project is to promote quicker recovery of the severely burned stands. In his 2006 publication, Dr. Hutto went on to state:

> Existing science-based data suggest that there is little or no biological or ecological justification for salvage logging. McIver and Starr (2000) note that because of this, the justification for salvage logging has begun to shift toward arguments related to rehabilitation or restoration, but those sorts of justifications also reflect a lack of appreciation that **severe fires are themselves restorative events** and that rehabilitation occurs naturally as part of plant succession (Lindenmayer et al. 2004).[Emphasis added].

In other words, the fire itself restored important habitat for snag-dependent organisms. The standing dead trees created by severe fire in the fire area provide a unique and necessary habitat for numerous fire-associated species, and therefore the removal of those trees by salvage logging would eliminate the capability of the burned stands to support those species (Bond et al. 2012, Siegel et al. 2012, 2013). In fact, published scientific studies have concluded that post-fire logging and replanting are not necessary for regeneration of green forests, due to natural post-fire regeneration in severely burned stands (Donato et al. 2006, 2009). Moreover, rapid regeneration of green forests after a fire is not a laudable goal given the critical ecological value of severely burned forest stands (Hutto 2008, Donato et al. 2012). Most avian ground and shrub nesters and secondary cavity nesters begin to colonize severe burns only several years post-fire (Siegel and Wilkerson 2005, Burnett et al. 2010). In the Manter Fire in the southern Sierra Nevada, Siegel and Wilkerson (2005) found that early post-fire stands (including severely burned forest) were preferred for 6 species of birds, and chaparral habitats that burned in 1950 were preferred by 9 species, underscoring the importance of the many natural post-fire successional stages.

As is typical of forest fires, the fire burned in a mosaic of fire severities. The Forest Service proposes to salvage log only the fire-killed and fire injured trees and mostly in severely burned stands. However, only fire that burns severely creates significant enough ecological change to support a unique composition of species – not the mild understory fires. Many species of vertebrates, invertebrates, and plants have evolved to take advantage of severely burned forest habitat (Hutto 2006, 2008). Using birds as an example, the following studies have documented the ecological value of severely burned forests for a number of species in different regions of the western U.S.:

- Raphael et al. (1987) monitored breeding birds in three periods after the 1960 Donner Fire in the Eastern Sierra Nevada, allowing for long-term effects of severe fire to be examined (fire severity was not specifically quantified but it was noted that the burned plot contained high-severity burn). The authors found that total density of birds was nearly the same on the burned and unburned plots but species richness increased on the burned plot. Thirty-eight species bred on the burned plot while 32 bred on the unburned plot (25 bred on both plots). More breeding species were unique to the burned plot (13) than to the unburned plot (7).

- Smucker et al. (2005) examined effects of fire of different severities and ages on songbirds in point-count transects that had been set up 5 years prior as a part of the Northern Region Landbird Monitoring Program in forests in Montana. The authors found that of the 40 species with adequate sample size to include in statistical analyses, 4 increased significantly in relative abundance after fire and 5 decreased significantly after fire, independent of fire severity. However, placing point count stations into categories that correspond with whether they burned at low, moderate, or high severity, the authors discovered significant changes in relative abundance from before to after fire at one or more severities for an additional 9 species. The data revealed that 12 species were significantly more abundant and 7 species were significantly less abundant after fire at one or more severities. An additional 4 species (including Black-backed Woodpecker, House Wren, Western Wood Pewee, and Three-toed Woodpecker) were detected more frequently after fire, although sample sizes were too small to include in the statistical analysis. Thus, a total of 16 species responded positively to at least one level of fire severity, underscoring the importance of accounting for fire severity. With respect to time since fire, for both increasers and decreasers the magnitude of change in relative abundance between the first two years after fire was greater at points that burned at high or moderate severity than at points that were unburned or burned at low intensity. This suggests that high and moderate severity fire (in contrast to low-severity fire) creates a unique and important habitat type for many bird species.

- Kotliar et al. (2007) published a similar study comparing bird densities before and after fire and in varying burn severities in New Mexico. Western Bluebirds were uncommon in all but the highest burn-severity level and Hairy Woodpeckers and House Wrens increased with increasing burn severity. The authors were able to analyze pre- and post-

> fire density patterns for 15 species, and 4 of the species showed significant burn-severity effects. Mourning Doves had higher densities across all burn severities, American Robins increased significantly after fire in high-severity patches and in comparison with pre-fire densities, and post-fire densities of Broad-tailed Hummingbirds and Western Bluebirds increased with increasing burn severity and were significantly greater in high-severity patches compared to unburned. Furthermore, the pre- and post-fire community was similar in all except high-severity areas. Like results from Smucker et al. (2005) in Montana, this means that forests after high-severity fire support a unique community of bird species.

Numerous studies on post-high-severity fire salvage logging have documented adverse effects on the Black-backed Woodpecker and other cavity-nesting bird species (e.g., Saab and Dudley 1998, Hutto and Gallo 2006, Hutto 2006, Hanson and North 2008, Cahall and Hayes 2009, Saab et al. 2007, 2009, 2011). Saab and Dudley (1998) followed 17 Black-backed Woodpecker nests from 1994 to 1996 in forests of western Idaho that burned in 1992 and 1994. Nest densities were more than quadrupled in unlogged stands versus both "standard salvage" and "wildlife salvage" treatments, despite significant snag retention in the treatments. Additional nest monitoring was conducted over subsequent years in the same study site. Saab et al. (2007) reported that nest densities were more than 5 times lower in partially logged burns. Hutto and Gallo (2006) examined nest densities of Black-backed Woodpecker in burned mixed-conifer forest in Montana and documented 10 nests per 148 ha in unlogged burned stands and 0 nests per 275 ha in salvage-logged stands. In the eastern Oregon Cascades, Cahall and Hayes (2009) found that partial salvage logging did not mitigate adverse effects to Black-backed Woodpeckers. In the Sierra Nevada, Black-backed Woodpeckers preferentially foraged in severely burned stands with larger snags and higher snag densities (Hanson and North 2008).

<u>The Project Will Degrade Black-backed Woodpecker Habitat and Threaten Black-backed Woodpecker Populations, and the Analysis Fails to Incorporate the Best Available Science</u>

The Project, according to the scoping notice and maps, would eliminate a large proportion of potential burned Black-backed Woodpecker habitat in the fire area, as discussed above. It is important to note that this is *potential* habitat, as these woodpeckers do not always occur within all parts of a fire area, and the impact of the proposed project on these woodpeckers may be greater than just the simple number of acres receiving treatment if the areas slated for logging occur where woodpeckers occur at higher densities. In fact, scientific experts have noted that the high-quality Black-backed Woodpecker habitat – stands with high basal area of larger snags but also with high densities of smaller trees – are often the very same stands targeted for post-fire salvage logging (see, e.g., Dr. Rodney Siegel's comments on the California Department of Fish and Game's status review of the petition to list the Black-backed Woodpecker under the California Endangered Species Act).

In 2012, The Institute for Bird Populations and California Partners in Flight, commissioned by the U.S. Forest Service, published a Conservation Strategy for the Black-backed Woodpecker in California. Among the management recommendations were the following:

Recommendation 1.1. Where post-fire snag removal is to occur, patches retained to support Black-backed Woodpeckers should incorporate areas with the highest densities of the largest snags to provide foraging opportunities…as well as high density patches of medium- and small-diameter snags … in the interior of the fire area to support higher nesting success in the early postfire years ….

Recommendation 1.2. Within burned forest, focus on retaining large patches of predominately prey-rich trees as evidenced by wood-boring beetle holes on trunks, or by using another appropriate index (see Recommendation 6.2). Where snag removal is proposed to meet other objectives, Black-backed Woodpeckers would likely benefit from targeting areas with relatively prey-poor snags, and retaining patches of snags that are relatively prey-rich. Because insect colonization varies among sites, identification of prey-poor and prey-rich areas is best informed by site-specific information on prey distribution …. Where such data are not available, managers should focus on retaining as many snags as possible within the larger size classes available. Note that Black-backed Woodpeckers regularly forage on partially or completely charred snags – charred bark does not imply that the snag has been burned too severely to serve as foraging substrate.

Recommendation 1.3. If post-fire management is intended to be compatible with Black-backed Woodpecker conservation, area of post-fire clear-cut patches (where all the snags in an area are removed) should not exceed 2.5 ha [6.18 acres]…

Recommendation 1.5. Avoid harvesting fire-killed forest stands during the nesting season (generally May 1 through July 31). This management recommendation will protect dozens of other nesting bird species associated with burned forests in addition to the Black-backed Woodpecker. After about 8 years postfire, such stands are unlikely to contain many nesting Black-backed Woodpeckers, but many other bird species will nevertheless still be nesting in snags during this period.

The Project makes no effort to retain prey-rich trees, to ensure cut patches not exceed 2.5 ha, and to refrain from any post-fire salvage logging (including danger tree removal) from May 1 through July 31 anywhere in the project area in 2014 or 2015. The failure to follow the Black-backed Woodpecker Conservation Strategy with regard to logging in nesting season is of particular concern because it creates an ecological trap scenario (post-fire habitat attracts breeding Black-backed Woodpeckers, whose chicks could be subject to mortality from post-fire logging in nesting season). This effect compounds adverse impacts of post-fire logging on already imperiled Black-backed Woodpecker populations. Post-fire logging of occupied nest sites during nesting season results in the direct killing of chicks that have not yet fledged (chicks that are not mature enough yet to fly away). This is a serious adverse impact that would unnecessarily create significant risks for the viability of Black-backed Woodpecker populations in the Sierra Nevada.

The Forest Service commissioned me other Black-backed Woodpecker experts to write the Conservation Strategy for Black-backed Woodpecker populations in California. This Strategy includes a set of recommended conservation measures to avoid a serious risk to the viability of Black-backed Woodpecker populations. The scoping notice not only does not incorporate our conservation recommendations, but also does not analyze the adverse impacts, and cumulative effects, to Black-backed Woodpecker populations that will result from the failure to follow the conservation recommendations. There is simply no sound basis for ignoring the Strategy.

First of all, there is no assessment of the varying quality of habitat in terms of prey richness or snag densities – all burned forest is not created equally in the eyes of the Black-backed Woodpecker. Second, what is the scientific basis for suggesting that removing this proportion of all potentially suitable woodpecker habitat in the fire area on the national forest will not seriously threaten Black-backed Woodpecker populations, especially in combination with large proportions to be removed in the post-fire logging projects on the other national forests? These salvage-logging projects together will remove a substantial proportion of the existing Black-backed Woodpecker habitat, and likely higher proportions of the high-quality habitat used for nesting. There appears to be no intention to analyze the cumulative effects of the post-fire logging projects on the adjacent national forests. This falls far short of a meaningful analysis of adverse impacts or cumulative effects.

Third, as discussed above, new scientific evidence suggests that there may be a genetic distinction between the eastern Oregon Cascades population of the Black-backed Woodpecker and the California population (Siegel et al. 2013). While the degree of this distinction is still being analyzed, this new information indicates that the combination of the current post-fire logging projects presents potentially serious unknown and uncertain risks by severely reducing and fragmenting suitable habitat in a population that may be even smaller and more isolated than previously assumed. The fact that there may be a genetic distinction between Oregon and California (Siegel et al. 2013) indicates that the discontinuities and gaps in habitat between the two populations are already significant.

Moreover, the Forest Service's current basis for dismissing impacts to Black-backed Woodpeckers from post-fire logging is both misleading and inaccurate. First, the Forest Service relies upon an unauthored 4-page Forest Service document, dated June 13, 2013, for the proposition that only 5.3% (all fire severities) to 8.9% (of moderate/high-severity fire) of Black-backed Woodpecker habitat has been logged in fire areas since 2005. This USFS report describes the forest types/structures (using CWHR) and fire severity categories used for this analysis, and mentions that the Forest Service's FACTS database (which records acres of post-fire logging) was used. Based on this approach, this Forest Service document reports that a total of 784,432 acres of fire (all severities) occurred on Forest Service lands from 2005–2012 in the forest types/structures relevant to Black-backed Woodpeckers, and concludes, based upon the FACTS database, that only 5.3% of the post-fire habitat was logged. The document also reports that 428,546 acres of moderate/high-severity fire occurred within these forest types/structures from 2005–2012 on Forest Service lands, and that only 8.9% of this was logged. However, this Forest Service report bases these figures on errors in the tabulation of acreage in the FACTS database. The FACTS database shows the acreage of all post-fire activities, including where several different activities (e.g., salvage logging, piling/burning of fuels, logging road skid trails, artificial reforestation, etc.) occur on the same acreage. As such, unless multiple actions on the same acreage are eliminated from the analysis, the result is a dramatic overstatement of the overall acreage burned, which results in a dramatic understatement of the proportion of Black-backed Woodpecker habitat that has been salvage logged. Using the very same criteria used by the Forest Service's document with regard to forest type/structure and fire years, and using the comprehensive Fire and Resource Assessment Program (FRAP) database, which includes the total acreage of all fires on all lands in each year in California (http://www.frap.fire.ca.gov/), only 274,497 acres burned (all severities) on Forest Service lands in the selected forest types/structures from 2005–2012, not 784,432 acres, and only 140,370 acres of moderate/high-severity fire occurred in these years in the selected forest types/structures, not the 428,546 acres reported by the Forest Service document. Thus, because of this basic error, the Forest Service document seriously underestimated the proportion of moderate/high-severity fire areas that are salvage logged, and improperly minimized adverse impacts, and cumulative effects, to Black-backed Woodpeckers.

Second, the Forest Service has noted that Black-backed Woodpeckers are occasionally found in unburned forests—once again improperly minimizing adverse impacts of salvage logging the primary, essential habitat for this species: post-fire habitat. The Forest Service has not sufficiently acknowledged our findings in Siegel et al. (2013)—specifically, that the Black-backed Woodpeckers had much larger home ranges in unburned forests than in burned forests, indicating the birds had to travel farther and expend more energy to forage for food. Rota (2013), in a radiotelemetry study of Black-backed Woodpeckers in the Black Hills, found that: a) home ranges were much larger in low-severity prescribed burn areas, and in unburned areas with high tree mortality from beetles, than in mixed-severity wildland fire areas; b) predation of Black-backed Woodpeckers by raptors was much higher in low-severity and unburned areas (where Black-backeds have no camouflage advantage); and c) low-severity and unburned forest areas had steeply declining populations, while only areas of recent higher-severity fire occurring in dense, mature/old forest had stable or increasing populations.

Finally, the Forest Service has improperly relied upon the California Department of Fish and Wildlife's (DFW's) recommendation regarding the petition to list the Black-backed Woodpecker under the California ESA, despite numerous inaccuracies and significant omissions in the DFW report (see, e.g., June 12, 2013 response by JMP and CBD).

Conclusion with Regard to Black-backed Woodpeckers

The Black-backed Woodpecker is under intensive scrutiny, and scientists and conservationists have expressed grave concerns about the future of these birds. The Oregon/California population of the Black-backed Woodpecker is being considered for listing under the federal ESA. The onus is on the Forest Service to demonstrate that this logging project will not reduce important habitat and adversely affect the local and regional populations of these species to the point where listing becomes necessary.

Science-based recommendations for management of Black-backed Woodpecker habitat (Bond et al. 2012) were not incorporated into design of the Project. This lack of regard for the needs of wildlife when planning where and when to conduct salvage logging will result in adverse short-term and long-term effects on the many species of wildlife that are associated with the fire-killed trees within severely burned stands of the fire. There has been a large body of scientific literature produced over the past decade on the impacts of fire and insects on native wildlife species and habitats, as well as on fire-risk reduction and post-fire salvage logging that directly refutes the need for post-fire salvage logging. Disturbances such as high-severity fire and insect outbreaks are natural and important elements of healthy forests in the western U.S. and Canada and post-fire salvage logging adversely impacts soils, vegetation, and wildlife of the Complex Early Seral Forest. Therefore, I recommend against conducting salvage-logging and reforestation of this important snag-forest habitat.

The Project Fails to Adequately Analyze Effects to California Spotted Owls, Northern Goshawks and Bats

***California Spotted Owls* --**

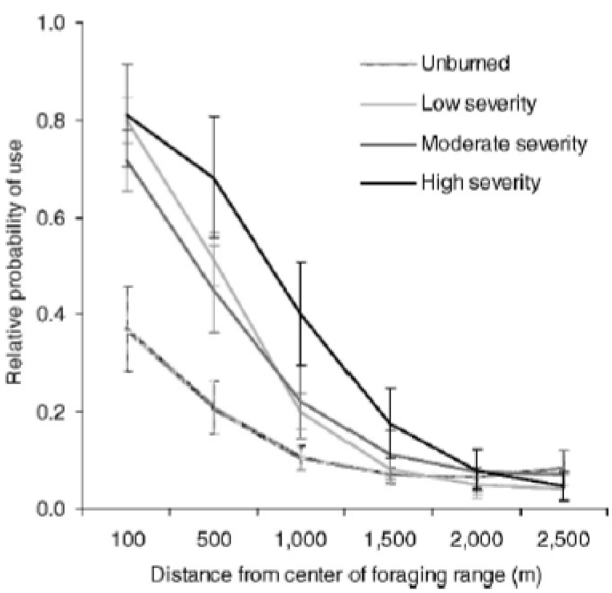
The scoping notice follows the management direction from the SNFPA (2004). Unfortunately, even 10 years ago the 2004 SNFPA did a poor job of incorporating the latest science on the use of burned habitat by, and the effects of fire on Spotted Owls and other native species in the Sierra Nevada. The EIS for the 2004 SNFPA contained many flaws on the issue of owls and fire that have not been addressed by the Forest Service in the interval. Both the earlier 2001 and amended 2004 SNFPA inappropriately blamed stand-replacement wildfires as a major risk to spotted owl populations, despite the lack of published data, the agency's own numbers showing most PACs continued to be occupied by owls post-fire, and the fact that a very large proportion of burned habitat was routinely salvage logged. Since that time, peer-reviewed published studies in the Sierra Nevada have indicated that most severe fire within Spotted Owl core areas (e.g., 200-ha surrounding nests and roosts) does not reduce site-occupancy (Lee et al. 2012), and burned survey areas did not have lower occupancy rates of owl sites than unburned (Roberts et al. 2011). Further, the probability of use of severely burned forests by foraging California Spotted Owls when these stands occur near nests and core areas was greater than unburned forests for a sample of owls in the southern Sierra Nevada (Bond et al. 2009). Finally, post-fire salvage-logged stands appear to be unsuitable habitat for Spotted Owls (Lee et al. 2012, Clark et al. in press for Northern Spotted Owls).

The Forest Service currently uses definitions of suitable habitat that are nearly two decades old and based on suitability definitions in forests not affected by fire. Thus, the current approach to analyzing the effects of the Project on Spotted Owl habitat is fundamentally flawed from the start because the analysis is premised on PACs that will be re-drawn after fire to exclude areas slated for salvage logging.

Also, the Forest Service does not currently properly characterize the current science on Spotted Owls and fire. Clark (2007) found that habitat designated as nesting/roosting/foraging habitat pre-fire that then burned at moderate and high severity was selected over early seral forests by Northern Spotted Owls for foraging, and these forests were used in equal proportion to their availability. The rare use of salvage-logged stands by Clark's sample of owls was concentrated in areas where there were patches of wildlife leave trees, riparian buffers, or stands of thinned trees – not areas which were clear-cut. Bond et al. (2009) found California Spotted Owls inhabiting a burned landscape four years post-fire (McNally Fire) had a significantly greater probability of using a burned site for foraging than an unburned site within 1.5 km of the nest or core-roost area. Furthermore, the greatest selection probability was for high-severity burned sites closest to the nest/core. As opposed to Clark's study area, the habitat available to this sample of owls experienced very little post-fire salvage logging, confirming that owls are able and willing to use unlogged severely burned forests for foraging. Bond et al. (2009) actually mapped salvage logged areas, which were a very small proportion of the landscape, but owls were detected in those areas only 3 times out of 301 foraging locations (unpublished data), similar to the very few locations in salvage-logged areas reported by Clark. Thus, salvage logged stands were essentially non-habitat for the sample of foraging owls in the McNally Fire as well as the fires in Clark's study area. Moreover, owl home ranges in mixed-severity forests in the McNally fire area were similar to those in unburned mature/old forests (the ones in the fire area were actually somewhat smaller, indicating high territory fitness, but there was no statistically significant difference), and the owls had an abundant diet of small mammals in the post-fire habitat (Bond et al. 2013).

Another recent paper discussing the landscape-scale effects of fire on California Spotted Owls in the Sierra Nevada is Lee et al. (2012). In Lee et al. (2012) my colleagues and I used modern occupancy modeling techniques and 11 years of Forest Service survey data from 41 burned and

145 unburned California Spotted Owl breeding sites throughout the Sierra Nevada, including before- and after-fire survey data for the burned sites (which included all 6 fires during that time period for which Spotted Owl survey data were available). Fires that occurred from 2000 to 2007 had no significant effect on local colonization and extinction rates for these sites. In other words, there were no differences in occupancy rates between burned and unburned sites, after accounting for detectability. Lee et al. (2012) reported the average amount of suitable habitat and the average burn severity of the sites (32 percent high-severity, on average, of all forested habitat, conifer and hardwood). This 32 percent figure from Lee et al. was an average—not an absolute threshold above which fire would render a site unoccupied, and Lee et al. (2012, on p. 798) included Spotted Owl sites with well over 50% high-severity fire, the majority of which remained occupied post-fire (until and unless they were salvage logged). Previous studies also found that sites with a relatively high degree of high-severity burn around core areas can be occupied and reproductive (Bond et al. 2002, Jenness et al. 2004). However, territories that are salvage logged following fire, within a 1128-meter radius around the territory center, strongly tend to lose occupancy (Lee et al. 2012), which is a major concern in this fire area, given planned logging within multiple spotted owl territories.



In Bond et al. (2009), we observed foraging-site selection for all burned sites within approximately 1.5 km of the center of the foraging range (nest trees or core roost sites). See Figure at left. Because of this result, we recommended not conducting salvage-logging within 1.5 km of nests or core roost sites until effects of salvage are more fully understood (Bond et al. 2009; page 1,123). The scoping notice appears to ignore this important recommendation. It appears that PACs are being realigned after the fire to exclude the high/moderately burned stands and salvage logging is then slated to occur in those excluded stands. This creates a context for an erroneous conclusion by the Forest Service that because the project does not conduct area salvage or reforestation logging within the re-drawn PAC, then the project does not result in a trend towards listing or loss of viability. This circular approach (i.e. re-drawing a PAC to exclude the areas to be salvage logged and then stating the salvage logging will not occur in the PAC thus the effect on the PAC is insignificant) completely fails to acknowledge and incorporate the finding that owls select high/moderate burned sites within 1.5 km of core areas for foraging – which is particularly important given that owls were detected in the area after the fire.

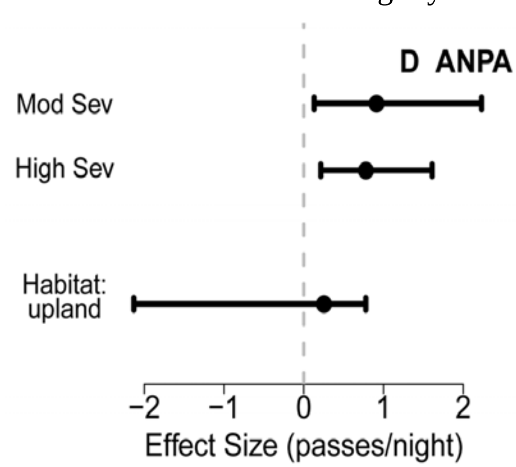
A clear finding from Bond et al. (2009) is that forests burned at all severities, including at high-severity, and that forests which are not salvage logged (the habitat type known as ‘Complex Early Seral Forests’), constitute potential suitable foraging habitat for resident California Spotted Owls in the Sierra Nevada. The elimination of the trees used for perching by foraging owls in the Project would potentially reduce foraging habitat. Yet it does not appear that this habitat type will be analyzed as potentially ‘suitable’ for California Spotted Owls in the EA, rendering the Forest Service’s analysis flawed.

Overall, the scoping notice fails to incorporate the best available science on fire and Spotted Owls, and the proposed project fails to include recommendations from scientific experts to minimize harm from post-fire salvage logging on this important Management Indicator Species.

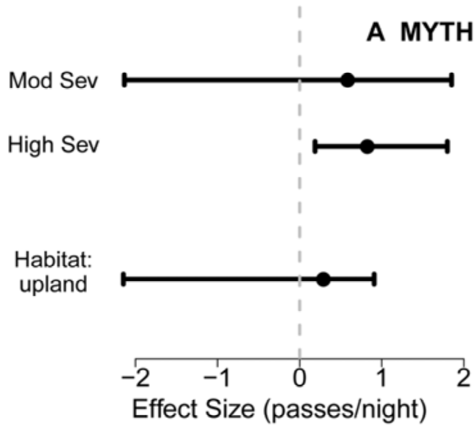
***Northern Goshawk* –** The current Forest Service approach for the Northern Goshawk uses habitat suitability definitions for unburned forests and fails to discuss <u>any</u> studies of goshawk use of burned forests. In fact, Northern Goshawks have been documented using burned areas during larger-scale bird surveys in burned and unburned forests. Bock and Lynch (1970) reported Northern Goshawks occurring in 5–7 year-old burned mixed-conifer forests (mostly high-severity, according to the description and photographic evidence in Bock and Lynch 1970) in the north-central Sierra Nevada during surveys for breeding birds. Goshawks were not found on the unburned plot (Bock and Lynch 1970; Table 1, page 184). More recently, Kennedy and Fontaine (2009) summarized results from fire and fire surrogate studies in ponderosa pine forests of the southern Rocky Mountain and plateau and sky-island regions of Arizona and New Mexico, and reported that Northern Goshawks responded positively to high-intensity fires 4–9 years postfire, and did not respond to the conditions created by moderate or low-intensity fire. The authors surmised that the fire-created large-diameter snags that could be used by goshawks for nesting, and that several species of woodpecker eaten by goshawks increase in high-intensity fire. It was not known why goshawks did not increase in low- and moderate-intensity burned sites because other important prey species increased in these burns.

There is no supporting evidence for the assumption that mixed-severity fire is harmful to Goshawks. While the fire may have reduced nesting habitat, it also may have increased foraging habitat. Indeed, although published scientific research on goshawks in burned forests is sparse, the available evidence suggests that goshawks may respond to moderate- and high-severity in a similar manner to Spotted Owls, which is to nest and roost in unburned or lightly burned stands and forage in more heavily burned stands.

***Fringe-tailed Myotis and Pallid Bats* –** The importance of Complex Early Seral Forests has also been demonstrated for bats, including the pallid bat (*Antrozous pallidus*) and the fringe-tailed

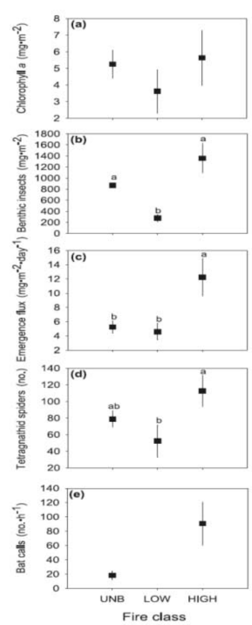


myotis (*Myotis thysanodes*) in the Sierra Nevada. In an important study recently published, Buchalski et al. (2013) recorded significantly more passes per night for bats (as an index of activity) in very large patches of high-severity burned forest one year post-fire in the McNally Fire in the Sequoia National Forest. This was the first study to document response of bats to fires of different severities in the Sierra Nevada. The figures below (from Figure 2 of Buchalski et al. 2013) show bat activity relative to unburned riparian control stands for the fringe-tailed myotis (A) and the pallid bat (D).



The authors concluded on p. 4:

> "Our results suggest response of bats to wildfire in the southern Sierra Nevada in California varies among species, but that **most phonic groups show higher activity in areas burned with moderate- to high-severity**." Emphasis added.



Studies in other regions have reported similar increased use of high-severity burned forests by bats. Malison and Baxter (2010) compared various food web components in unburned watersheds with those that had experienced low- and high-intensity fire. The researchers measured local-scale responses across three trophic levels: biomass of periphyton (attached stream algae), benthic insects and emergence of adult aquatic insects, and occurrence of spiders and bats. The study was conducted 5 years post-fire in Douglas-fir and ponderosa pine forests in the Frank Church River of No Return Wilderness in central Idaho. High-severity burned sites had almost five times the biomass of zoobenthic insects than low-intensity burned sites. High-severity sites also had highest number of emerging adult aquatic insects, more than 3 times more than low-severity burned and 2 times more than unburned. The frequency of bat echolocation calls was significantly greater in high-severity burned sites than in unburned sites. These stark results of the benefits of high-severity fire are shown in graphical format in the Figure to the right from Malison and Baxter (2010), which shows food web components in 3 fire classes within 16 streams, (a) periphyton chlorophyll a; (b) biomass of benthic insects; (c) emergence flux; (d) no. of tetragnathid spiders; (e) no. of bat echolocation calls.

The bats' increased use of severely burned forests over unburned forests in the Sequoia National Forest suggests that wildfire does not reduce suitability for these bats, but actually enhances it, and proposed post-fire salvage logging would remove or severely reduce most of the habitat features created by high-severity fire which are potentially important to bats (e.g., snags for roosting, and flowering shrubs, which are important for flying insect prey).

Thank you again for the opportunity to provide these comments for this project.

Sincerely,

Monica L. Bond

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