CENTER *for* BIOLOGICAL DIVERSITY

THE JOHN MUIR PROJECT *of* EARTH ISLAND INSTITUTE

January 9, 2015

Lassen National Forest
Attn: Bald Project
477-050 Eagle Lake Road;
Susanville, CA 96130
FS-comments-pacificsouthwest-lassen@fs.fed.us w
Subject: Bald Project.

Lassen National Forest;
Attn: Eiler Project;
477-050 Eagle Lake Road;
Susanville, CA 96130;
FS-comments-pacificsouthwest-lassen@fs.fed.us
Subject: Eiler Project.

Re: Bald Project; Eiler Project

Dear Lassen Forest,

On behalf of the John Muir Project of Earth Island Institute (JMP) and the Center for Biological Diversity (CBD), we are submitting these comments on the proposed Bald Project and the proposed Eiler Project ("Projects").

While, as we detail below, an EIS is necessary due to the potentially significant impacts of each Project individually and cumulatively to wildlife, an EIS is also necessary due to the similarity and geographic proximity of the two Projects (and it is the same Ranger District within which the Projects are being evaluated). The scoping document suggests that because the Projects are in separate watersheds, they therefore need not be evaluated together, but impacts are not defined or confined by watershed boundaries, and in light of the close proximity and similarity of the Projects (they both essentially propose the same purpose and need), one EIS is necessary here.

Due to significant adverse impacts to wildlife, we respectfully request the following:

- An EIS be conducted due to the potential for significant impacts to a sensitive species (spotted owl), a species with a positive ESA 90-day finding and slated to become a species of conservation concern (black-backed woodpecker), and the many avian species that rely on post-fire habitat (see Hanson 2014, Burnett et al. 2012, Siegel et al. 2011);

- That all moderate to high intensity burn areas within 1.5 km of a spotted owl site be protected from logging and that the 1.5 km areas incorporate owl surveys conducted in 2015 so as to be most reliable for habitat conservation (see Bond et al. 2009); moreover, that all potential winter habitat be protected from logging (see Ganey et al. 2014);

- That all moderate to high intensity burn areas, that pre-fire were mature forest, be protected for black-backed woodpeckers and for other avian species; this should include protection of not only the high snag basal area, but also the post-fire shrubs and natural conifer regeneration;

- That the only exception to the above be the felling of hazard trees to protect humans on/in e.g., public roads (level 3, 4 and 5 roads), campgrounds or other infrastructure;

- That flushing be addressed and incorporated into the discussion of the Project and the post-fire area so as to most accurately reflect conditions as they change over time due to the flushing that is likely to occur in the spring and summer of 2015 and thereafter (see Hanson and North 2009; see also Rim fire RAVG versus Rim fire MTBS [attached as exhibit A]);

- That logging and reforestation not be conducted in the name of wildlife conservation and that instead natural regeneration be allowed in order to protect complex early seral forest habitat from logging and from shrub eradication and to allow natural conifer growth;

- Acknowledge and incorporate that the 2004 Sierra Nevada Forest Plan Amendment (2004 Framework), pursuant to which the project was prepared, is no longer reliable regarding post-fire actions due to significant new information regarding the importance of burned forest habitat for wildlife, especially imperiled wildlife such as the California spotted owl and black-backed woodpecker. The project's purpose and need statement, and proposed prescriptions, reflect those of the 2004 Framework and should be changed in light of the new science.

Discussion

The project as proposed – e.g., "capture remaining forest product economic value and benefit, . . . and reforest suitable portions of the landscape . . . before the sites are fully occupied by competing vegetation" – would entail significant adverse environmental impacts, due to removal of important habitat for the black-backed woodpecker and California spotted owl, as well as wildlife that relies on post-fire shrub habitat. Research as to woodpeckers (e.g., Siegel et al. 2014a, Siegel et al. 2014b, Siegel et al. 2014c, Tingley et al. 2014, Seavey et al. 2012, Hanson and North 2008,) spotted owls (e.g., Bond et al. 2009, Bond et al. 2013, Clark 2007, Clark et al. 2013, Ganey et al. 2014), and avian species in general (e.g., Hanson 2014) demonstrates the importance of maintaining burned forest, especially intensely burned forest, on the landscape in its entirety instead of logging it. The targeted trees and/or shrubs are essential habitat for wildlife in a post-fire landscape. Indeed, the "snag forest habitat" areas created by high-intensity fire cannot be termed "deforested" at all and instead are essential aspects of forest including acting as the forest's nurseries for many if not most native bird species (DellaSala et al. 2014, Raphael et al. 1987, Burnett et al. 2010, Burnett et al. 2012).

Therefore, we respectfully request that you withdraw the Projects as currently proposed and instead issue a document that incorporates and explains the importance of post-fire wildlife habitat (as discussed below), educates the public about it, and seeks to protect it. While we recognize the need to protect humans from hazard trees along public roads or next to infrastructure or campgrounds, all other burned forest should be protected due to its rarity and its significance as critical wildlife habitat for many species (see, e.g., Baker 2014, Beaty and Taylor 2001, Bekker and Taylor 2001, Bekker and Taylor 2010, Bond et al. 2009, Bond et al. 2013, Buchalski et al. 2013, Burnett et al. 2010, 2011, Clark 2007, Clark et al. 2013, Ganey et al. 2014, Hanson 2013, Hanson 2014, Odion et al. 2014, Siegel et al. 2014a, 2014b, 2014c, Tingley et al. 2014).

California Spotted Owl

The Forest Service considers suitable California spotted owl habitat as mature forest stands represented by CWHR classes 4M, 4D, 5M, 5D, and 6 in mixed conifer, red fir, ponderosa pine/ hardwood, foothill riparian/hardwood, and east-side pine forests. The last time the Forest Service formally adopted a definition of suitable habitat for spotted owls was in 2004, as part of the 2004 SNFPA. The SFNPA states the following as to suitable habitat:

> 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.
>
> PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 300 acres of habitat in as compact a unit as possible. The best available habitat is selected for California spotted owl PACs to include: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater; (3) at least 70 percent tree canopy cover (including hardwoods); and (4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50 percent canopy cover (including hardwoods). Aerial photography interpretation and field verification are used as needed to delineate PACs.
>
> Desired Conditions
>
> Stands in each PAC have: (1) at least two tree canopy layers; (2) dominant and co-dominant trees with average diameters of at least 24 inches dbh; (3) at least 60 to70 percent canopy cover; (4) some very large snags (greater than 45 inches dbh); and (5) snag and down woody material levels that are higher than average.
>
> …

> A home range core area is established surrounding each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core area sizes are as follows: 2,400 acres on the Hat Creek and Eagle Lake Ranger Districts of the Lassen National Forest, 1,000 acres on the Modoc, Inyo, Humboldt-Toiyabe, Plumas, Tahoe, Eldorado, Lake Tahoe Basin Management Unit and Stanislaus National Forests and on the Almanor Ranger District of Lassen National Forest, and 600 acres of the Sequoia and Sierra National Forests.
>
> Aerial photography is used to delineate the core area. Acreage for the entire core area is identified on national forest lands. Core areas encompass the best available California spotted owl habitat in the closest proximity to the owl activity center. The best available contiguous habitat is selected to incorporate, in descending order of priority, CWHR classes 6, 5D, 5M, 4D and 4M and other stands with at least 50 percent tree canopy cover (including hardwoods). The acreage in the 300-acre PAC counts toward the total home range core area. Core areas are delineated within 1.5 miles of the activity center.
>
> When activities are planned adjacent to non-national forest lands, circular core areas are delineated around California spotted owl activity centers on non-national forest lands. Using the best available habitat as described above, any part of the circular core area that lies on national forest lands is designated and managed as a California spotted owl home range core area.
>
> HRCAs consist of large habitat blocks that have: (1) at least two tree canopy layers; (2) at least 24 inches dbh in dominant and co-dominant trees; (3) a number of very large (greater than 45 inches dbh) old trees; (4) at least 50 to 70 percent canopy cover; and (5) higher than average levels of snags and down woody material.

Because the Forest Service relies on the 2004 SNFPA for its management direction, the agency has never recognized the foraging habitat suitability of severely burned (and not salvage logged) forest stands for spotted owls and, in fact, regularly re-draws Protected Activity Centers (PACs), or even removes them from the PAC system, after severe fire to exclude these areas. The 2004 SNFPA facilitates this due to two key factors 1) its definition of suitable habitat and 2) because it explicitly states: "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."

The result is a lack of protection for suitable *burned* foraging habitat close to nests/roosts, which in turn allows this suitable foraging habitat to be open to post-fire salvage logging, which in turn can adversely affect occupancy. This is a major issue, given that a disproportionately large amount of foraging occurs within a 1500-meter radius of nest/roost trees (Bond et al. 2009, Fig. 1). As we have pointed out to the Forest Service many times, Bond et al. 2009, Bond et al. 2010, Bond et al. 2013, Lee et al. 2012, Ganey et al. 2014, and Clark et al. 2013 all show the importance of protecting owls from salvage logging and yet this science continues to be downplayed or discounted for no good reason. At the very least, precluding salvage logging within 1.5 km of spotted owl core sites (Bond et al. 2009), and protecting burned (of all severities) CWHR 4M, 4D, 5M, 5D, and 6 conifer forest, are necessary to protect post-fire owl habitat.

Bond et al. (2009) quantified habitat selection, which is how much owls used forest that burned at a particular severity compared with the availability of that burn severity. The authors banded and radio-marked 7 California spotted owls occupying the McNally Fire in the Sequoia National Forest four years after fire, and radio tracked them throughout the breeding season. Males and females forage independently, and analyses compared each bird's foraging locations with random locations within their own foraging ranges. Furthermore, all owls had unburned, low, moderate and highly burned patches of forest in their foraging ranges from which to choose, so the authors could quantify whether owls selected or avoided any of these burn intensities. This is the first study to specifically examine foraging habitat selection by spotted owls in burned forests that were not subjected to substantial post-fire logging. Spotted owls used all burn severities for foraging, but the probability of an owl using a site for foraging was strongest in severely burned forests, after accounting for distance from nest (see Figure 1 below). Selection for a particular burn class occurred within 1.5 km from the nest.

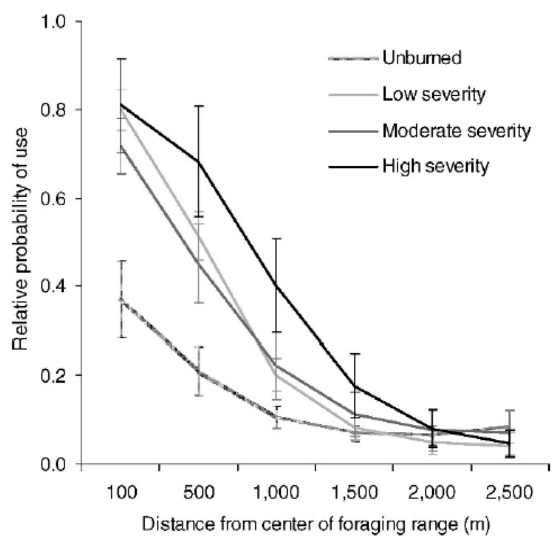

Figure 1. Relative probability of use of a site for 7 California spotted owls foraging at different distances from the center of the breeding range in forest burned at different intensities in the McNally Fire, Sequoia National Forest, 2006. From Bond et al. 2009; Figure 1 on page 1,121.

Bond et al. (2009) also measured vegetation and found that high-intensity burned sites had the greatest herb and shrub cover and basal area of snags. This result suggests that snags, herb, and shrub cover are important components of a post-fire forest that supports foraging habitat for spotted owls. Because severely burned, non-salvage-logged forests can offer suitable habitat for foraging spotted owls, the authors of Bond et al. 2009 recommended "that burned forests within 1.5 km of nests or roosts of California spotted owls not be salvage-logged until long-term effects of fire on spotted owls and their prey are understood more fully."

Post-fire logging has a harmful effect on California spotted owls because it eliminates or degrades habitat that would otherwise be used. For example, Lee et al. (2012) reported that mixed-severity fire, averaging 32% high-severity fire effects, did not reduce occupancy of California spotted owl sites in the Sierra Nevada, and even most territories with >50% high-severity fire remained occupied (at levels of occupancy comparable to unburned forests). This, however, was not the case in salvage-logged sites, as every site that was salvage logged lost occupancy, even though they were occupied after the fire but before the salvage logging (Lee et al. 2012). Specifically, post-fire logging occurred on eight of the 41 burned sites; seven of the eight sites were occupied immediately after the fire but none were occupied after post-fire logging. While Lee et al. 2012 notes that this particular "sample size was too small for this effect to be included as a covariate," the results nonetheless are best available data regarding post-fire logging and California spotted owls. Moreover, a study of northern spotted owls is also illustrative: Clark et al. (2013) found post-fire salvage logging in high-severity fire areas was a factor in territory extinction of northern spotted owls (*S. o. caurina*) in southwestern Oregon ("Our results also indicated a negative impact of salvage logging on site occupancy by spotted owls. We recommend restricting salvage logging after fires on public lands within 2.2 km of spotted owl territories (the median home range size in this portion of the spotted owl's range) to limit the negative impacts of salvage logging.")

The Project must also keep in mind that California spotted owls are in a steep decline and therefore their viability is at extreme risk. Now outdated studies of California spotted owls strongly suggested population declines, but statistical power was too low to provide solid evidence. Recent scientific studies, however, using additional data and robust statistical methodology, have very clearly demonstrated that California spotted owl populations are declining throughout the range of the subspecies (Connor et al. 2013; Tempel and Gutierrez 2013). Over the past 18 years, a spotted owl population in the logged Lassen National Forest declined by 22% and another population in the logged Sierra National Forest declined by 16% (Conner et al. 2013). By contrast, in the same 18-year period a population in the unlogged national parks of Sequoia and Kings Canyon increased by 22%. In the logged Eldorado National Forest, the number of territories occupied by spotted owls declined by about half over the course of just over two decades (Tempel et al. 2014 [Figure 2]). None of these demography study areas experienced significant levels of fire during the study periods (except some post-fire logging in a minor portion of the Eldorado Study Area following the Star fire of 2001), thus fire could not be implicated as a factor in the population declines. These studies demonstrate that the California spotted owl is currently on a trajectory towards extinction on our public forest lands in the Sierra Nevada. Current regulatory mechanisms on public forest lands have permitted harmful forest management practices, such as salvage logging in owl habitat, and have proven inadequate to stabilize or reverse the population declines. The data therefore indicate that the California spotted owl is imperiled throughout most of its range, and logging in National Forest lands is an example of why local populations are threatened with extirpation and the entire subspecies may be on a trajectory towards range-wide extinction.

Moreover, because is it known that spotted owls rely on much more than Protected Activity Centers (PACs) for their life needs (nesting, roosting and foraging), it is necessary for the Forest Service to not only protect PACs and HRCAs from logging, but to also protect owl home ranges, including severely burned forest in home ranges. Further, most home-range estimates and studies of foraging habitat selection are from the breeding season only. Some California spotted owls are known to expand their movements during the winter (Bond et al. 2010, Ganey et al. 2014), which represents the most energetically costly and dangerous time for owl survival. Thus, the protection of potentially important habitat should extend to habitat that could be used during the overwinter season as well as the breeding season.

Here, while the scoping notice states that "[h]arvest activities may occur in northern goshawk and California spotted owl PACs that have been rendered unsuitable," the document does not discuss and incorporate that moderate to high severity burn areas can provide not only suitable, but *essential* foraging habitat for owls (Bond et al. 2009, Bond et al. 2013, Ganey et al. 2014). In other words, simply because an area is not preferred *roosting* habitat anymore does not mean it is not extremely valuable to owls as *foraging* habitat. This is not an either or situation and instead this critical foraging habitat should be protected because it too is limiting to owl survival. For example, loss of spotted owl occupancy has been documented in areas where owl *foraging* habitat was logged post-fire (Lee et al. 2012, Clark et al. 2013). Consequently, it is not appropriate to conduct salvage logging or reforestation in owl home ranges or wintering habitat and it is especially problematic to promote logging as a benefit to owls when in fact it is a detriment to owls when it occurs in a way that results in loss of preferred foraging habitat (i.e., the logging of intensely burned areas within an owl's territory and/or the eradication of post-fire shrub growth [such as via herbicides or mastication]). We therefore ask that all spotted owl post-fire foraging habitat not be logged by, at a minimum, protecting the 1.5 km core area around owl sites (Bond et al. 2009). All intensely burned forest, that pre-fire was mature forest, is suitable habitat for owls (and in fact is selected for—see not only Bond et al. 2009 but also Clark 2007, Figure 6.2 showing more use than available of NSF [pre-fire mature forest] and Ganey et al. 2014) and is in fact preferred foraging habitat and must be treated as such. This is especially so in light of the current trajectory of owls in the Sierras—a serious decline on Forest Service and private lands. We note that the Forest Service itself admits that California spotted owl home ranges are 2,500 to 4,700 acres in size, and the 300-acre "PACs alone are not an adequate conservation strategy for maintaining a viable population of owls." 2001 Sierra Nevada Forest Plan Amendment, Final EIS, Vol. 3, Chapter 3, Part 4.4, pp. 75, 85. In addition, impacts from post-fire logging would be disproportionately large in this area, given that it is a critical Area of Concern, due to the fragmented nature of the habitat from past logging, and due to the fact that this area represents the tenuous connection between the Northern spotted owl and the California spotted owl (the only place where gene flow can occur to keep both populations genetically healthy) (Verner et al. 1992, p. 45 and Fig. 3A). In light of the foregoing, an EIS must be prepared under NEPA.

Black-backed woodpecker

With black-backed woodpeckers, new science even more strongly demonstrates the importance of maintaining very high snag basal area post-fire – "As snag basal area increased, home-range sizes exponentially decreased" (Tingley et al. 2014). Tingley et al. 2014 explains that "an average snag basal area > 17 meters squared per hectare may represent a benchmark for minimum habitat needs in postfire stands," and that "[o]ur results, in combination with studies that have shown that black-backed woodpeckers are extremely sensitive to salvage logging (Hutto 2008, Saab et al. 2009), suggest that **currently the best strategy for protecting black-**

backed woodpecker habitat is to maintain large patches of high snag densities (Dudley and Saab 2007, Russell et al. 2007)" (Tingley et al. 2014). Nesting habitat was found to have over twice this "minimum" level of snag basal area, as was foraging habitat actually selected by the black-backeds (Siegel et al. 2013). Moreover, "the strength of the association of Black-backed Woodpeckers with unlogged postfire snag conditions makes it a useful indicator species for wildlife associated with this habitat." (Hanson and North 2008).

In addition, science published very recently – Siegel et al. 2014c – states the importance of protecting not only very high snag basal area but also those "snags with burned-out hollows, forked trunks, or other relatively unusual structures that may create crevices or other opportunities for shelter" for the woodpeckers.

In regard to specific habitat types, the following has been determined re BBWOs and must therefore be incorporated into the Projects:

- **Foraging habitat/Roosting habitat**: "Our past findings (Siegel et al. 2013) show that Black-backed Woodpeckers in burned forests of California preferentially select larger, dead trees in more severely burned areas for foraging; our findings here extend those same habitat selection criteria to another aspect of Black-backed Woodpecker habitat selection: roosting habitat." (Siegel et al. 2014a, 2014c).

- **Food:** "Black-backed Woodpeckers foraging in burned forests feed primarily on wood-boring beetle larvae (Villard and Beninger 1993, Murphy and Lehnhausen1998, Powell 2000), although some studies have also reported or inferred foraging on bark beetle larvae (Lester 1980, Goggans et al. 1988). Bark beetles and wood-boring beetles share important life-history characteristics (both spend a prolonged portion of their life-cycle as larvae inside dead or dying trees) but also exhibit differences that may be important in their ecological interactions with Black-backed Woodpeckers. Bark beetles are small (generally <6 mm in length), numerous, often able to attack live trees, and generally remain as larvae in bark less than a year before emerging as adults (Powell 2000). In contrast, wood-boring beetles have much larger larvae (up to 50 mm long), are less numerous, and can remain as larvae in dead wood for up to three years (Powell 2000). Additionally, most wood-boring beetles are unable to attack living trees, and concentrate heavily in fire-killed wood . . . ." (Siegel et al. 2014b).

- **Nesting habitat**: "For the 31 nests, the mean number of snags/plot was 13.3 (SD ¼ 7.6, range ¼ 1–29 snags/plot), whereas the mean number of snags on plots at randomly selected trees was 5.0 (SD ¼ 5.2, range ¼ 0–35 snags/plot). In both the Cub Fire and Moonlight Fire sites, black-backed woodpeckers preferred nest trees located in areas with high snag densities (Fig. 3)." (Seavy et al. 2012); "None of the cavities were re-used between years and each appeared to have been freshly excavated in the year of its use." (Seavy et al. 2012); "For the 31 nest trees measured, the mean dbh was 33 cm (SD ¼ 7, range ¼ 18–50)" (Seavy et al. 2012);

Important Factors re BBWOs:

- **Colonization and extinction**: "The average probability of colonization by Black-backed Woodpeckers at a previously unoccupied point in any given year was modeled to be 6.5%, while the average probability that an occupied site would go extinct in any given year was 72%. The probability of extinction had no clear covariate relationships, with moderate support for negative relationships with increased burn severity – extinction occurred less frequently at survey points with greater burn severity. Colonization, however, had very strong relationships to two covariates. Colonization was more likely at early post-fire points and at points with high densities of snags. " (Siegel et al. 2014b)

- **Home Range size**: "[W]e found that home-range size varied by an order of magnitude, from 24.1 to 304.1 ha, as measured by movement-based kernel estimation" (Tingley et al. 2014); "Black-backed Woodpecker home ranges within our 3 fires varied by approximately an order of magnitude, and this variation was explained in large part by a single resource characteristic: mean snag basal area" (Tingley et al. 2014); "However, size appears to vary with habitat type and time since fire (Dudley and Saab 2007, Rota et al. 2014). As populations of wood-boring beetle larvae decrease during the years after fire (McCullough et al. 1998), it is believed that Black-backed Woodpeckers enlarge their home ranges before eventually abandoning individual burned areas altogether (Dudley and Saab 2007, Rota et al. 2014)." (Tingley et al. 2014)

Given that "the best strategy for protecting black-backed woodpecker habitat is to maintain large patches of high snag densities," and given the importance of very high snag density to nest sites, foraging sites, and home range size, it is imperative, and we therefore request, that the Project not log the following – areas that a) consisted of mature conifer forest pre-fire (CWHR 4M and above), and b) burned at moderate to high intensity. Further, we request that no post-fire logging occur during black-backed woodpecker nesting season, consistent with the recommendations of the Forest Service's own black-backed woodpecker Conservation Strategy (Bond et al. 2012).

Additional Information Regarding Wildlife and the Post-Fire Landscape

The lack of specificity and precision as to old forests and complex early seral forest in the Projects will only lead to confusion and likely harm to wildlife. The details are important because the Forest Service is using general language to argue, for example, for logging post-fire early seral areas under the guise of more quickly returning the areas to "old forest." That approach is not scientifically sound as it does not acknowledge that the journey is just as important as the destination in regard to forest succession (e.g., Donato et al. 2012). Old forest derives from early forest in the sense that important components, like snags, downed wood, shrubs, and natural heterogeneity (from natural regeneration) derive, in large part, from complex early seral forest (e.g., Swanson et al. 2011, DellaSala et al. 2014). Put another way, it does not make sense to achieve ecological integrity by destroying complex early seral forest to more quickly achieve old forest – instead, both are damaged ecologically in such an effort. Moreover, the Forest Service's stated approach fails to recognize that complex early seral forest, created by high-severity fire, is even rarer than old forest, is as biodiverse—or more biodiverse—than mature/old forest, and is much more threatened since there are no meaningful protections for this habitat, and associated wildlife, in forest plans or under the 2004 Framework forest plan (DellaSala et al. 2014, Hanson 2014).

Similarly, it is essential that the Forest Service use its platform to educate the public about the importance of intensely burned forest to wildlife. Again, we recognize that it is important to protect the public from hazard trees, but it is also essential to educate the public about the ecological role of intensely burned forest—the public can best appreciate something when they are well informed about it, and here it is critical to educate about wildlife and burned forest in light of past attacks by the Forest Service on intense fire.

Unfortunately, there also continues to be a generic argument that severe fire is to blame for loss of old forest. There is no basis for this argument as severe fire is currently in a deficit in the Sierras and is especially lacking on the Sierra Forest. Severe fire is also not an either/or. For many species, whiles severe fire changes their landscape, it can nonetheless continue to provide key habitat, albeit in a different form. Again, California spotted owls have been found, on the Sequoia National Forest after the McNally Fire, to preferentially select the mature conifer forest that burned severely for their foraging needs. Similarly, fishers have been found on the Sequoia National Forest to use severely burned mature conifer forest (Hanson 2013). And, of course, many species, such as the black-backed woodpecker, rely on these severely burned forests for high quality habitat, and are keystone species in that they create cavities for other birds and animals to use down the line (Manley and Tarbill 2012, Tingley et al. 2014, Siegel et al. 2014a, 2014b). In fact, many of the fires that the Forest Service points to as being uncharacteristic are fires that have been found to support great biodiversity, except in or near to areas where salvage logging has occurred – e.g., the Angora, the Storrie, the Moonlight, the McNally. There is strong evidence for this, namely, Bond et al. 2009, 2013; Buchalski et al. 2013; Burnett et al. 2010, 2012; Hanson and North 2008; Hanson 2013; Malison and Baxter 2010; Manley and Tarbill 2012; Seavy et al. 2012; Siegel et al. 2011, 2013, 2014a, 2014b, 2014c.

Also neglected is the fact that conifer forests of the Region rely on fire of all severities to maintain ecosystem integrity and wildlife diversity, but currently, these forests are in an extreme fire deficit of all severities. (See, e.g., Beaty and Taylor 2001, Bekker and Taylor 2001, Bekker and Taylor 2010, Miller et al. 2012, Odion and Hanson 2013, Mallek et al. 2013, Hanson and Odion 2014, Odion et al. 2014, Baker 2014.) This fire deficit means that, generally speaking, when fires do occur, they are restorative events because they return fire and its ecological value to the landscape, providing, for example, essential (and very rare) wildlife habitat as already described above. And, contrary to assumptions, large, high-severity fire patches are not homogenous—rather, they can contain stand level heterogeneity because they vary in size and importantly, contain within them high levels of variation in regard to post-fire vegetation and snags.

In addition, Siegel et al. (2011) explains that not only black-backed woodpeckers, but many other species, are utilizing complex early seral forest left unlogged: "Many more species occur at high burn severity sites starting several years post-fire, however, and these include the majority of ground and shrub nesters as well as many cavity nesters. Secondary cavity nesters, such as swallows, bluebirds, and wrens, are particularly associated with severe burns, but only after nest cavities have been created, presumably by the pioneering cavity-excavating species such as the

Black-backed Woodpecker. Consequently, fires that create preferred conditions for Black-backed Woodpeckers in the early post-fire years will likely result in increased nesting sites for secondary cavity nesters in successive years." Similarly, Burnett et al. (2012) found that "while some snag associated species (e.g. black-backed woodpecker) decline five or six years after a fire [and move on to find more recent fire areas], [species] associated with understory plant communities take [the woodpeckers'] place resulting in similar avian diversity three and eleven years after fire (e.g. Moonlight and Storrie)." Burnett et al. (2012) also noted that "there is a five year lag before dense shrub habitats form that maximize densities of species such as Fox Sparrow, Dusky Flycatcher, and MacGillivray's Warbler. These species have shown substantial increases in abundance in the Moonlight fire each year since 2009 but shrub nesting species are still more abundant in the eleven year post-burn Storrie fire. This suggests early successional shrub habitats in burned areas provide high quality habitat for shrub dependent species well beyond a decade after fire." And Manley and Tarbill (2012) found, in the post-fire area of the Angora fire, that woodpeckers play a keystone role that can only be accomplished when post-fire habitat is maintained, not logged:

> Although woodpecker species differed in their influence on recovery of birds and small mammals, all three species observed in our study played an important role in supporting the cavity-dependent community through habitat creation for nesting, resting, denning, and roosting. The Black-backed Woodpecker was a significant contributor to the establishment of bird and small mammal species and communities in areas with high burn intensities, and it appeared to have a more narrow range of suitable habitat conditions for nest site selection compared to the Hairy Woodpecker. Thus, the habitat requirements of the Black-backed Woodpecker serve as a useful threshold for managing burned sites for wildlife recovery.

It is therefore imperative that Projects such as this one conserve the ecological integrity of post-fire, complex early seral habitat, especially the key characteristics, such as high snag density, extensive shrub cover, downed wood, and natural conifer regeneration.

New literature continues to demonstrate our points. In Hanson 2014, "Conservation concerns for Sierra Nevada birds associated with high-severity fire," the analysis found that all of the native Sierra Nevada birds positively associated, in the published scientific literature, with post-fire habitat created by high-intensity fire, and which have statistically significant population trends (Breeding Bird Survey), are experiencing persistent and ongoing declines. These declines of high-intensity fire associates are affecting all nesting guilds, including cavity nesters, canopy nesters, and shrub/ground nesters, the latter of which comprised the largest number of declining species. The study identified post-fire logging, and subsequent removal/eradication of native shrubs (through mechanical means and spraying of toxic herbicides) and artificial conifer plantation establishment, as well as ongoing fire suppression and mechanical thinning designed to further suppress fire, as serious threats and recommended a major change in current management direction to conserve these species and their habitat.

In DellaSala et al. 2014. "Complex early seral forests of the Sierra Nevada: what are they and how can they be managed for ecological integrity?" the authors synthesized and summarized the existing scientific literature, and recommended that "Complex Early Seral Forest" (CESF) be recognized as an ecologically distinct forest habitat type, and that CESF should be mapped and monitored, and protected from post-fire logging. The authors also found that the Black-backed Woodpecker should be designated as a Species of Conservation Concern under the revised forest plans, due to its extreme rarity and vulnerability to further fire suppression and post-fire logging operations. Additionally, the authors recommended an expansion of mixed-intensity managed wildland fire to restore CESF on the landscape, given that the current science shows CESF to be in a substantial deficit relative to historical levels. This study provides important guidance for the Forest Service as to CESF.

The scoping notice also proposes site preparation and subsequent planting within the Projects. Natural regeneration is critical to allowing for heterogeneity and post-fire wildlife habitat. Siegel et al. (2011) concluded that native fire-following shrubs are vitally important to biodiversity in complex early seral forest (CESF) created by high-intensity fire: "Many more species occur at high burn severity sites starting several years post-fire, however, and these include the majority of ground and shrub nesters as well as many cavity nesters. Secondary cavity nesters, such as swallows, bluebirds, and wrens, are particularly associated with severe burns, but only after nest cavities have been created, presumably by the pioneering cavity-excavating species such as the Black-backed Woodpecker. Consequently, fires that create preferred conditions for Black-backed Woodpeckers in the early post-fire years will likely result in increased nesting sites for secondary cavity nesters in successive years." Similarly, Burnett et al have found that shrub dominated landscapes are critically important wildlife habitat: "while some snag associated species (e.g. black-backed woodpecker) decline five or six years after a fire [and move on to find more recent fire areas], [species] associated with understory plant communities take [the woodpeckers'] place resulting in similar avian diversity three and eleven years after fire (e.g. Moonlight and Storrie)." (Burnett et al. 2012). Burnett et al. (2012) also noted that "there is a five year lag before dense shrub habitats form that maximize densities of species such as Fox Sparrow, Dusky Flycatcher, and MacGillivray's Warbler. These species have shown substantial increases in abundance in the Moonlight fire each year since 2009 but shrub nesting species are still more abundant in the eleven year post-burn Storrie fire. This suggests early successional shrub habitats in burned areas provide high quality habitat for shrub dependent species well beyond a decade after fire." (Burnett et al. 2012). Moreover, natural conifer regeneration is generally substantial following high-severity fire—even in large patches—and native shrub cover does not inhibit natural conifer regeneration (Shatford et al. 2007, Crotteau et al. 2013), while post-fire logging kills most of the existing natural conifer regeneration (Donato et al. 2006), therefore the Forest Service's stated rationale does not have a sound scientific basis. Only one study has found relatively little natural post-fire conifer regeneration in high-severity fire areas—a study conducted by the Forest Service (Collins and Roller 2013)—but the authors failed to mention that the bulk of the areas studied had been clearcut prior to the fires (i.e., seed source had been removed before the fires even occurred) or were natural non-conifer, e.g., black oak, as our on-the-ground surveys of their plot locations revealed.

Conclusion

We request that you withdraw the Projects as currently proposed and instead issue a document that incorporates and explains the importance of post-fire wildlife habitat, educates the public about it, and seeks to protect it.

Sincerely,

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