Sierra Forest Legacy
Protecting Sierra Nevada Forests and Communities

DEFENDERS OF WILDLIFE

THE WILDERNESS SOCIETY

October 28, 2016

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Re: Review of Draft California Spotted Owl Conservation Strategy Materials

Dear Diana and Sarah:

We appreciate the opportunity to provide comments on the most recent version of the draft California Spotted Owl Conservation Strategy (Draft Strategy, dated 6/23/16).[1] We believe the Draft Strategy is fundamentally flawed because it does not address significant issues and concerns identified in the California spotted owl assessment (Gutiérrez et al. in press) and in the available published literature. We are unable to identify any meaningful changes to current management direction that would lead to a stable and well-distributed spotted owl population in the Sierra Nevada. To the contrary, some of the proposed changes to current management direction would significantly increase the risk to key habitat structures and habitat conditions associated with spotted owl persistence.

Increasing Risks without Increasing Protections

After decades of skepticism, there is now conclusive evidence that spotted owl abundance is declining across the Sierra Nevada on Forest Service-managed lands and the observed decline is not associated with high-severity fire or drought-related tree mortality (Gutiérrez et al. in press). Despite this, the draft strategy focuses almost entirely on increasing the pace and scale of canopy cover reduction and large tree removal in high quality spotted owl habitat compared to what is allowed under the current management paradigm, a paradigm that has been in place for more than half the timeframe that the observed population decline has occurred.

[1] Draft documents are posted at: http://www.fs.usda.gov/detail/r5/plants-animals/wildlife/?cid=fseprd503343

According to the recently released California spotted owl conservation assessment, a document developed by a team of spotted owl scientists and forest and fire ecologists (Gutiérrez et al. in press, p. 217), "strategies that reduce canopy cover, the complexity of forest structure, or large tree density have the potential to impact spotted owl populations negatively in both the short- and long-term" and "expansion of treatments that simplify forest structure and decrease forest tree canopy cover in owl habitat could exacerbate population declines and increase the probability of extirpation of owls from the region" (Ibid., p. 218) Yet, this is precisely what the Draft Strategy proposes to do – expand treatments, reduce large tree density, and decrease forest tree canopy cover in spotted owl habitat, all without providing adequate measures to minimize the effects of such activities or providing a clear path to population stability.

We agree that, where appropriate, treatments should strive to create heterogeneous forest stands composed of individual trees, tree clumps, and openings, consistent with site condition and topography. However, the Draft Strategy also proposes to significantly increase diameter limits on tree removal, both outside and inside PACs; proposes to reduce canopy cover retention criteria and reduction limits; includes no limits on the pace of treatments within PACs or territories; and arbitrarily increases the ability to retire PACs (see Table 1 for a detailed comparison of current and proposed management). Even the subtle proposed change to the way PACs are designated, i.e., requiring that PAC-acres be contiguous rather than simply being composed of the best available nesting and roosting habitat near the nest stand, could routinely result in less high quality habitat being included in PACs compared to current management direction. The actions promoted by the Draft Strategy are the same as those described by the conservation assessment as likely to adversely affect spotted owl in the short- and long-term and increase the probability of extirpation.

In addition to a significant increase in the ability to remove large trees, one of the more troubling aspects of the Draft Strategy is the canopy cover retention criteria. One of the most important habitat attributes associated with California spotted owl habitat selection is the amount of mature high canopy cover forest at the territory scale (Seamans and Gutiérrez 2007, Tempel et al. 2014, Tempel et al. 2016). The Draft Strategy (Appendix 2, p. 4) proposes that: "at least 60% of each occupied territory should be in moderate to high canopy cover conditions (>40% canopy cover from remotely sensed data; Tempel et al. in review[2])" and to "Maintain and/or promote high canopy cover conditions (>70% from remotely sensed data) over at least 20% of an occupied territory, (Tempel et al. in review)." We have been unable to determine how Tempel et al. (2016) affirms the canopy cover retention thresholds identified in the Draft Strategy. In contrast to the Draft Strategy, Tempel et al. (2016, p. 362) state:

> "our study also indicates that territory occupancy rates are likely to be negatively affected if canopy cover is consistently reduced to 40%, as evidenced by the lowest predicted occupancy rates occurring in the bottom right corners of Figures 3A–3D (i.e. where only 20% of a territory is in the high- and mid-canopy-cover classes, and 60% is in the low-canopy-cover class). Moreover, our post hoc analysis, in which we partitioned canopy cover into 10% classes, showed that forest with 50–69% canopy cover was more strongly and positively correlated with occupancy than forest with 40–49% canopy cover. Finally, we caution that

[2] Tempel et al. in review was recently published and is cited in these comments as Tempel et al. 2016.

> forest with 40–69% canopy cover cannot simply be substituted for forest with >70% canopy cover. The importance of >70% canopy cover forests as nesting and roosting habitat for California Spotted Owls has been well documented (Bias and Gutiérrez 1992, Gutiérrez et al. 1992, Moen and Gutiérrez 1997, Bond et al. 2004). Indeed, few territories contained <20% of high-canopy-cover forest, and as a result our study does not provide a reliable means of assessing the effects of reducing high-canopy-cover forest—and thus nesting and roosting habitat—below this level. In conjunction with declining numbers of large trees (i.e. suitable nest trees) in the Sierra Nevada over the past century (Smith et al. 2005, Lutz et al. 2009), sufficiently large reductions in high-canopy-cover forest are likely to negatively affect owls."

Essentially, the Draft Strategy allows for canopy reduction in territories toward a lowest-end threshold (i.e., 20% mature high canopy cover forest with a territory) below which spotted owl territories rarely exist (Temple et al. 2016), without taking into consideration other studies that have shown that modest reductions in dense canopy habitat increased probability of territory abandonment (Seamans and Gutiérrez 2007), reduced reproduction, survival, and colonization, and increased territory extinction probabilities (Tempel et al. 2014). The Draft Strategy also allows mature forests with >70% canopy cover to be consistently converted to 40% canopy cover, which Tempel et al. (2016) suggest would lead to negative occupancy rates. It should also be noted that 3 of the 4 populations included in Tempel et al. (2016) are in the midst of a 20+ year decline with no sign of stabilizing and the study focused almost entirely on occupancy.

Level of Confidence in the Natural Range of Variation

According to the Draft Strategy (p. 1): "In some instances, NRV values may not be well understood for key attributes." We agree and such a lack of understanding only increases our level of concern with the proposed strategy. The Draft Strategy does not define which key attributes of the Natural Range of Variation (NRV) are or are not well understood, the level of confidence in each NRV metric, the study from which the metric was derived, the scale of the study, and where the study took place. For instance, we have high confidence in fire return interval estimates, since these data are often derived from fire scars on old living trees and many studies have been conducted across the landscape. In contrast, we have very little confidence in fire severity distributions and patch size estimates because our understanding has been based primarily on examination of the earliest forest inventories, inventories made merely to provide a rough sense of the timber potential, and not to estimate the proportion of the area that had been recently burned. Even NRV estimates derived from areas that were not logged and have been allowed to undergo a more natural fire regime are confounded by extremely small and isolated study areas that have little resemblance to the vast majority of the mountain range (e.g., Illilouette Basin).

Although we find much conceptual value in studies that attempt to determine how the forests of the Sierra Nevada functioned before European settlement, it is highly unlikely we will ever truly understand NRV for many forest metrics. The inherent lack of confidence in NRV values is highly problematic for a strategy that proposes to provide species viability by moving the landscape to within such NRV values through the implementation of activities known to

adversely affect the species and be correlated with the ongoing decline. Such a situation only increases the risks associated with the Draft Strategy. The most effective and least risky method to create NRV-like conditions that provide for species viability is to reestablish the primary natural disturbance process that created NRV in the first place, fire. Fire is also likely to be the primary disturbance agent that establishes an unknowable future range of variation.

Restoring Spotted Owl Habitat and Maintaining Species Viability Require a Phased Approach to Mechanical Restoration Treatments

We agree with the foundational premise of the Draft Strategy; if forest conditions and processes were returned to those that existed pre-1850, it is likely that we could focus our California spotted owl viability concerns on barred owls and toxicants. It is not the concept of providing for the conditions that owls evolved with that causes us such serious concern; it is the aggressive logging strategy being proposed to achieve NRV. The idea that a single mechanical treatment focused almost entirely on returning canopy cover and tree density to pre-1850 levels will move treated areas toward NRV is fundamentally flawed.

The logging proposed in the strategy allows high quality habitat to be significantly degraded in the short term while achievement of forest attributes known to be important to owls— such as significant amounts of large trees, large snags, and structural complexity—cannot be realized for many decades. For example, California spotted owls are associated with forest stands characterized by greater than average basal area and higher than average number of trees greater than 24 inches dbh (Draft Strategy, Appendix 1, p. 2). Citing Dolanc et al. (2014), the Draft Strategy states that yellow pine and mixed conifer forest types exhibited similar basal areas under NRV as they do today (Draft Strategy, Appendix 1, p. 10). Dolanc et al. (2014) also found that across the Sierra Nevada, there are far fewer trees greater than 24 inches dbh and far more trees less than 12 inches dbh compared to 1930[3]. Therefore, mechanical treatments that reduce canopy cover and tree density will result in post-treatment forest conditions that can be outside of NRV for basal area and also remain deficient of large trees. In effect, two of the most important forest metrics associated with high quality California spotted owl habitat, canopy cover and basal area, would routinely be reduced to levels that have been found to result in territory abandonment (Seamans and Gutiérrez 2007), reduced fecundity, reduced colonization, reduced survival and increased extinction (Tempel et al. 2014). Due to the missing large tree component, achieving forest conditions that owls historically evolved with will take several centuries to accomplish. Other aspects of historical forests, e.g., the fire disturbance regime and species composition, also cannot be accomplished in the near term. Thus, the Draft Strategy will be unable to stabilize the population as claimed since insufficient protection is provided to essential habitat in the short term.

Restoring the ponderosa pine and mixed conifer forests of the Sierra Nevada and providing a well distributed spotted owl population with the ability to persist over the long-term requires a

[3] As cited in Dolanc et al. (2014), by 1930 "Logging had already removed most old-growth forest from lower elevations of the west slope and all of the Lake Tahoe basin by that time (Beesley 1996)." The authors also note that some of the 1930 data was collected from sites that had recently been logged or burned. This suggests that their large tree estimates are likely lower than what occurred prior to European settlement.

phased approach when relying on mechanical forest restoration treatments. A phased approach is consistent with what is proposed in Gutiérrez et al. (in press, p. 218): "treatments would occur primarily in areas of the landscape dominated by younger forests with high small tree density and be designed to enhance foraging habitat and foster growth rates of large, retained trees to enhance resilience to fire when possible." A phased approach would also focus on restoring natural disturbance regimes and forest metrics that would have few negative effects on species distribution and persistence (e.g., small tree density). Such an approach would also increase forest resilience to fire and drought-related tree mortality. Furthermore, landscapes with fewer trees that are less than 20 inches dbh and restored natural disturbance processes would create forest-wide conditions resilient to wildfire (North et al. 2009, Collins et al. 2011). Returning ecologically beneficial fire to the system has also been shown to significantly increase forest resilience to drought and beetle mortality in the absence of mechanical treatments (van Mantgem et al. 2016, Boisramé et al., 2016). Habitat alteration from these management activities is likely to have little to no negative effect on spotted owl persistence or distribution.

Fire vs. Mechanical Treatments as a Restoration Tool

Mechanical restoration treatments and fire managed for ecological benefits do not have the same ecological effects on treated landscapes (Schwilk et al. 2009); this holds true for spotted owls as well. Mechanical treatments that modify canopy cover have been associated with territory abandonment (Seamans and Gutierrez 2007, Stephens et al. 2014), increased territory size (Gallagher 2010), and reduced colonization and fecundity and increased territory extinction probabilities (Tempel et al. 2014). In contrast, fire effects that modify canopy cover in the absence of logging have been found to have no discernable effect on occupancy (Roberts et al. 2011). We also note that the only spotted owl population known to be stable or increasing is within a National Park (Conner et al. 2013) where logging is not permitted and fire is routinely managed for resource benefits.

An important point of agreement among the scientists involved in the spotted owl conservation assessment was that fire can be beneficial to owls (Gutierrez et al. in press). Not only do most scientists agree that ecologically beneficial fire effects would provide for spotted owl persistence and forest resilience, North et al. (2015) found that the majority of the Sierra Nevada-landscape is not accessible or feasible to treat mechanically for many reasons other than sensitive species habitat designations. The authors conclude that landscape resilience to uncharacteristic wildfire requires returning ecologically beneficial fire to the landscape:

> "Our analysis suggests that the current heavy reliance on mechanical fuels reduction is unlikely to effectively contain or suppress wildfire in many areas of the Sierra Nevada. Too much [National Forest] area is unavailable for mechanical treatment and what is available is often too small and scattered to effectively alter landscape-level fire spread and intensity. However, significant increases in treatment pace and scale are possible if mechanical thinning is used to facilitate larger prescribed burns and enable managed wildfire. Wildfire size and intensity are predicted to increase under future projected climate scenarios (Lenihan et al. 2003, Lenihan et al. 2008), suggesting that fire policy and forest restoration might

> benefit if mechanical thinning is more widely used to leverage and complement managed fire."

In essence, providing forest resilience and spotted owl viability are mutually inclusive goals, each requiring the return of ecologically beneficial fire to the landscape.

We appreciate that the Draft Strategy provides for using fire as a restoration tool and speaks positively of the effects of fires managed for resource benefits. We are concerned though that the Draft Strategy does not adequately promote the use of fire as the primary management tool, i.e., without pre-treatment. Increasingly, studies indicate that pretreatment is not necessary. Hessburg et al. (2016, p. 11) note that, "ignited or managed wildfires burning under moderate fire weather conditions can often accomplish ecological objectives without tree cutting, as has been observed in wilderness and roadless areas, and other managed forests where mixed- and high-severity fires naturally dominate." Myer et al. (2015) also found that:

> "Over the past decade, virtually all wildfires managed for resource benefit in the national forests of the southern Sierra Nevada were within the NRV with respect to fire severity proportions and mean and maximum high-severity patch size. These results suggest that resource objective wildfires in the ecoregion have been effective for achieving natural resource benefits in fire-adapted forest landscapes based on the NRV concept."

These studies indicate that there are significant portions of the landscape that would burn within NRV under moderate weather conditions. The conservation strategy must ensure that ecologically beneficial fire use is the primary tool used to increase forest resilience within spotted owl territories. Further, habitat degradation from mechanical treatments in spotted owl territories should only occur when necessary to create strategically-located anchor points that facilitate a landscape fire use program. No other strategy will be able to provide for resilient landscape conditions, arrest the ongoing decline, or provide for species viability within the foreseeable future.

Post-disturbance Landscapes

A potentially significant change to management direction we support is the suggestion in the Draft Strategy that little to no management activity may be warranted in post-disturbance landscapes for which the disturbance was within NRV. However, the Draft Strategy fails to provide territory- and home range-specific management direction for disturbances, and fails to recognize that burned areas can be important owl habitat regardless of whether such areas fall within the USFS' assessment of NRV. Since portions of a disturbance may be within NRV and spotted owls do not select habitat at the landscape scale, additional direction at the territory and home range scales is necessary to ensure conservation of suitable burned forest habitat. We also believe the Draft Strategy allows too much flexibility to this management direction by allowing "management actions that are intended to keep the development of vegetation pattern, structure, composition, and function on the desired trajectory." Based on our experience with post-fire restoration projects, such a caveat has the potential to be used to justify salvage logging accessible post-fire spotted owl foraging habitat in the name of modifying fuels to reduce the

probability of a high severity re-burn. Salvage-logging has been shown to negatively affect spotted owls (Clark et al. 2013, Lee et al. 2013) and there is a considerable amount of conflicting science on the fire hazard of salvaged logged vs. unsalvage-logged post-fire forests. In addition, salvage-logged forests are often replanted as dense conifer plantations and plantations typically provide a structural condition that represents an extreme wildfire hazard for decades (Stephens and Moghaddas 2005).

If the Forest Service desires restored forest conditions and processes, then the agency must be willing to accept the results of disturbance outcomes consistent with those that would have occurred historically. Moreover, if the Forest Service desires owl conservation, then the agency must be willing to accept disturbance outcomes where owls are potentially using burned forest habitat that does not comport with the USFS' NRV goals. This is especially the case considering that several studies did not detect negative effects of fire-related habitat disturbance on spotted owls (Roberts et al. 2011, Lee et al. 2012), but several studies have detected negative effects of salvage logging (Clark et al. 2013, Lee et al. 2013). Post-disturbance management actions in spotted owl territories should be limited to activities designed to protect human life and safety and to create anchor points in strategic locations to help facilitate a landscape-scale prescribed and managed fire program.

Broad Numerical NRV Ranges and Management Flexibility

In addition to the clearly flawed strategy of promoting logging that will degrade habitat quality, the Draft Strategy promotes management flexibility and discretion without providing adequate guidance on habitat protection. For instance, the strategy relies on broad numerical ranges to characterize NRV, yet significant portions of the broad NRV ranges would result in habitat conditions not selected for by California spotted owls (Verner et al. 1992). The Draft Strategy also provides many exceptions to the inadequate retention levels of essential habitat that are proposed in the strategy. This means decisions likely to have large effects on habitat quality and owl persistence are left to be made at the project level. For instance, where to manage within extremely broad NRV ranges (e.g., 3-30 large tree per acre), when nesting and roosting habitat is at risk of drought-related mortality, which PACs should receive mechanical treatments, and when treatments should go beyond NRV to meet the Future Range of Variation, are all deferred to the project level.

Deference to the project level presents a major threat to this species because there are competing objectives like the generation of revenue from logging timber that strongly influence project level decisions. We have extensive experience engaging in project level planning and review. We frequently find that timber targets and revenue generation are significant drivers in the design of logging projects, and these often run at cross-purposes with spotted owl conservation. Based on our experience working at the project level in the Sierra Nevada, forest managers almost always manage toward the extractive-end of numerical ranges provided in standards and guidelines. We have no reason to believe that management would be any different under the Draft Strategy. Broad numerical ranges and management discretion of the type and magnitude included in the Draft Strategy would also result in inconsistent implementation of the strategy across the region. The inability to predict how the implementation of the Draft Strategy would unfold results an inherent inability to accurately determine the effects the strategy would have on

the species distribution and population abundance (i.e., species viability), unless it is assumed that the most extractive potential allowed under the Draft Strategy would occur. These actions and approaches are likely to be harmful because the Draft Strategy does not provide for the amount of habitat required to maintain viability.

In contrast, the interim recommendations developed by owl scientists and other scientists in May 2015 (Pacific Southwest Research Station 2015)[4] address both the need to assure that sufficient habitat is provided while allowing management flexibility. These recommendations were commissioned by the Forest Service in response to the population declines observed in the demographic studies. The recommendations designate 500-1400 acres[5] of owl habitat for each territory in which management should "maintain or improve habitat conditions for the spotted owl in the short-term (1-5 years)" with "key features of desired conditions (i.e., multi-layered structure, diversity of diameter classes, moderate to high tree canopy cover) retained or enhanced as a result of forest management actions." (Ibid., p. 17) The interim recommendations recognize that mechanical treatment may be necessary and find that, "In instances where mechanical thinning in designated habitat is warranted, we recommend that silvicultural prescriptions be informed by and follow to the degree possible the concepts in GTR-220 and 237, and parameters described for non-designated habitat (below) while being consistent with the objective of short-term habitat improvement for the spotted owl." (Ibid.) The greatest management flexibility is provided in areas outside designated habitat with an emphasis on increasing forest heterogeneity and improving resilience (Ibid., p. 18-19). These recommendations were based on the findings in the conservation assessment and reduce the risks from logging by providing recommendations for the amount and quality of habitat needed to reduce territory abandonment and provide for persistence. The recommendations also encourage actions that reduce fire risk to owls and their habitat while increasing resilience at the landscape scale.

Providing a Quantitative Risk Assessment and Effects Analysis Demonstrating Viability

The synthesis chapter of the conservation assessment suggests that, "conservation planning efforts would benefit from a quantitative risk assessment, which would require close coordination among wildlife ecologists, forest and fire ecologists, and remote-sensing scientists, as well as the development of an integrated model that links fire behavior, forest conditions, and spotted owl habitat/demography at the appropriate spatial and temporal scales." (Gutiérrez et al. in press, p. 220) As best we can determine, the conservation measures in the Draft Strategy are not based on findings of a quantitative risk assessment or a comprehensive analysis. Before further development of the Draft Strategy, a risk assessment, as recommended in the conservation assessment, should be completed to inform the development of conservation measures and demonstrate the proposed measures will provide for species viability.

Conforming to the Format and Language of the 2012 Planning Rule

The 2012 Planning Rule requires the development of plan components, including desired conditions, objectives, standards, guidelines, and suitability of lands. Such plan components are

[4] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd504726.pdf

[5] The amount of designated habitat is scaled to home range size which varies geographically throughout the species range.

"used to guide future project and activity decision making." (36 CFR 219.7(e)) The planning rule provides a specific definition for each plan component type and the Forest Service Handbook implementing the planning rule identifies essential characteristics for each plan component type. Together, the plan components create a hierarchical planning scheme, with each component type providing specific and differing levels of influence over plan implementation and individual projects implemented under the forest plan. Predefining the intent, purpose, and level of influence plan component types would have on plan implementation and management decisions implemented under plan increases clarity and transparency of the plan components. This provides for an easier transition from plan development to plan implementation and is the purpose of having a planning rule and planning directives.

As currently organized and written, many of the conservation strategy components would not easily be converted into forest plan components. For example, none of the objectives provided in the conservation strategy meet the planning rule definition of an objective and the detailed components are a mish-mash of component types scatted between three separate pieces of the Draft Strategy (i.e., Framework, Appendix 2, and Appendix 3). As such, it is unclear how the conservation strategy components would be modified to conform to the 2012 planning rule or the level of effect the conservation strategy components are intended to have at the forest or project levels.

We ask that the conservation strategy and its components be re-organize and re-written to conform to the Forest Service's own pre-existing planning structure, the 2012 planning rule and implementing policies. Such a re-tooling would significantly increase the purpose and clarity of each of the components for managers and stakeholders during plan development and implementation. This will save us all time and energy over the long-term. The Fisher Conservation Strategy did not consistently follow the definitions in the planning rule. As a result, there is confusion about implementing this strategy at the project level and its translation into the draft forest plans for the Sierra and Sequoia National Forests. The current level of confusion is a prime example for why it is in the best interest of all parties to design a strategy document that conforms to the 2012 planning rule.

Thank you for the opportunity to provide comments on the Draft Strategy documents from June 2016. We look forward to reviewing the next version of the Draft Strategy. Please contact Ben Solvesky (ben@sierraforestlegacy.org; phone number 928-221-6102), if you have questions about these comments.

Sincerely,

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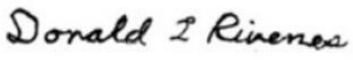

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Table 1. Comparison of California spotted owl management under the 2004 Forest Plan Amendment[6] and the June 23, 2016 draft conservation strategy materials[7].

	Current Management Direction (2004 Amendment)	Draft Strategy Direction (6/23/2016)	Concerns
PAC Designation	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.	PACs are established to include: (1) approximately 300 acres of contiguous, but not homogenous, habitat; (2) the known or suspected nest stand; (3) the highest quality nesting and roosting habitat near the known or suspected nest stand; (4) the next best available habitat if high quality nesting and roosting habitat is not currently present over at least 250 acres. PACs should be configured to include the most mesic, higher productivity sites available contiguous or adjacent to the known or suspected nest stand. PACs may also include other areas of nesting and roosting habitat (and other forest conditions), even if such areas are outside NRV. (Draft Strategy, Appendix 2, p. 1)	Currently, many PACs are not composed of contiguous high quality nesting and roosting habitat. A requirement that PAC acres be contiguous will likely result in an increase in non-nesting and roosting habitat being designated as PAC. Therefore, such a change would reduce the amount of protected high quality nesting and roosting habitat.
Undisturbed PAC Retirement	PACs are maintained regardless of California spotted owl occupancy status.	If a PAC is surveyed according to protocol and the results indicate that owls are no longer occupying the PAC (regardless of cause), the PAC should be retired. Survey results indicating non-occupancy should be based on at least 3 years of surveys within the PAC in accordance with the survey protocol. (Draft Strategy, Appendix 2, p. 2)	The proposed change to allow retirement after 3 years of non-occupancy is arbitrary. Such a measure should consider recolonization probabilities, habitat quality, past reproductive attempts and success, habitat potential, and cause of abandonment.

[6] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_046095.pdf
[7] http://www.fs.usda.gov/detail/r5/plants-animals/wildlife/?cid=fseprd503343

	Current Management Direction (2004 Amendment)	Draft Strategy Direction (6/23/2016)	Concerns
Post-Disturbance PAC Retirement	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.	PAC boundaries should be modified to exclude the degraded area and augmented with other areas of higher-quality habitat, or that have the potential to become nesting/roosting habitat, that are adjacent or very close to the PAC. To determine whether a natural disturbance's impacts on a PAC are so significant as to warrant PAC removal, consider whether: (1) Greater than 50% of the PAC exhibited greater than 90% basal area mortality (Jones et al. in Press); OR (2) Less than 100 (?) acres of suitable nesting and roosting habitat remains within the PAC. (Draft Strategy, Appendix 2, p. 2)	"Suitable nesting and roosting habitat" should be defined in the Draft Strategy. It should also be clear that PACs should not be retired as long as the PAC remains occupied. Specific measures to minimize effects of salvage logging in occupied territories, outside of PACs, should also be developed.
Tree Diameter Removal Limits	30" limit.	(1) 35" limit for all live conifer trees within PACs; (2) 35" limit for shade-intolerant trees outside of PAC; (3) 45" limit for shade-tolerant trees outside of PACs. (Draft Strategy, Appendix 2, p. 8)	Spotted owls are strongly associated with large trees and snags. There is a relative deficit of trees >24" across the landscape (Dolanc et al. 2014). Larger trees do not pose a fire or drought resiliency risk.
Canopy Cover Retention in HRCAs (includes PAC)	(1) Retain 50% canopy cover in Home Range Core Area, exceptions for equipment operability and fuels allow 40% cover; (2) No retention criteria in PACs or HRCAs in Defense Zone, an area within 0.25 miles of community structures. Avoid treatments in highest quality habitat (CWHR 4M, 4D, 5M, 5D, 6).	(1) Retain 70% canopy cover over at least 20% of an occupied territory; (2) Retain >40% canopy cover over 60% of an occupied territory; (3) Forest-wide, canopy cover should be 17-49%. (Draft Strategy, Appendix 2, p. 4 and p. 7) .	It is unclear how the Draft Strategy canopy cover retention targets were developed based on Tempel et al. (2016). Tempel et al. found that "few territories contained <20% of high-canopy-cover forest" and "forest with 40–69% canopy cover cannot simply be substituted for forest with >70% canopy cover." The proposed measure would allow canopy cover to be reduced to a bare minimum threshold below which loss of occupancy is almost assured. Provides no measures to avoid highest quality habitat.
Canopy Cover Reduction in Mature Forest (CWHR 4M, 4D, 5M, 5D, 6)	(1) Avoid reducing pre-existing canopy cover by more than 30%; (2) Where existing vegetative conditions are at or near 40% canopy cover, projects are to be designed to remove the material necessary to meet fire and fuels objectives.	No limits imposed.	The current measure, while inadequate, reduces the ability to manage toward a minimum threshold.

	Current Management Direction (2004 Amendment)	Draft Strategy Direction (6/23/2016)	Concerns
Pace and scale of Habitat Alteration	No more than 5% of PAC-acres treated per year and 10% per decade.	No limits imposed.	Limits on the pace and scale of habitat alternation within PACs, as well as territories, is necessary to reverse the ongoing decline.
Salvage Logging	Outside of WUI Defense Zones, salvage harvests are prohibited in PACs 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.	(1) When a post-disturbance landscape is within NRV and the trajectory for habitat development is expected to remain within NRV or move towards FRV, limited or no active management may be warranted. In such instances, only engage in management actions that are intended to keep the development of vegetation pattern, structure, composition, and function on the desired trajectory; (2) When a post-disturbance landscape is outside NRV and the trajectory for habitat development is for conditions to remain outside NRV, active restoration may be warranted to move the landscape toward NRV (or FRV) and provide for long-term resilience. Examples of restoration activities are provided, but specifics will be determined at the project level.	It is unclear under what circumstances post-disturbance habitat that is within NRV would be expected to move outside of NRV and therefore require salvage logging. This measure is also limited to the landscape-scale. CSO select habitat at the home range, territory, and activity center scales, not the landscape scale and portions of disturbances can be within NRV while other portions might be considered outside of NRV. Therefore, the proposed measure should be re-worded to apply to the scales at which CSO select habitat. This is especially necessary given that severely burned forest, regardless of whether it is considered to be within NRV, can be suitable as foraging habitat for CSO, and therefore necessary to protect.