Review: Draft Conservation Strategy for the California Spotted Owl, Version 1.0

Overview

The Draft Conservation Strategy for the California Spotted Owl (Conservation Strategy) provides a comprehensive framework for managing public lands to support the California Spotted Owl (CSO). The Conservation Strategy follows established best practice in setting environmental policy -- management recommendations are based on our current understanding of the science. The Conservation Strategy is supported by two rigorous syntheses of the ecology of the CSO (Gutiérrez et al. 2017) and its predominant forest habitat (Safford and Stevens 2017). Throughout the Conservation Strategy, the linkage between management and its scientific basis is emphasized. While there remain research gaps, both the owl and its habitat rank among the most well-studied birds and forests in the world. Thus the knowledge base exists to design a viable strategy.

Overall, I found the Conservation Strategy to provide a carefully reasoned and well-supported approach to protecting CSO populations. Most of my criticisms suggest ways to improve or expand an already solid document. My major concern pertains to an unstated assumption that is consequently not addressed in the Conservation Strategy.

The Conservation Strategy suggests that the resilience of the CSO and its habitat are intrinsically linked. In other words, management that protects and restores CSO habitat also protects and restores the forest. While these two goals are often aligned, what happens when what is good for the owl conflicts with what is good for the forest? Answering this question is essential because the scope of the Conservation Strategy is expansive. Strategy 1 and Strategy 2 outline a management plan that pertains to a vast area of National Forest and yet is focused, by intention, on one organism. There will be trade-offs.

A major achievement in the Conservation Strategy is the acknowledgement of the dynamic nature of the forests and an explicit recognition that good owl habitat will come and go as ecosystems cycle through phases of disturbance and recovery. Given the certainty of a changing climate, continued air pollution, and species invasions, this dynamism will only increase. Thus balancing between the short-term and long-term perspective becomes ever more fraught. The Conservation Strategy does mention this uncertainty with its adaptive management triggers but what is the response when the triggers conflict? For example, what happens when a CSO population is declining and the risk of a high intensity fire in constituent CSO territories significantly increases? Management responses to the triggers (e.g., create more high cover habitat to promote owl recruitment vs reduce canopy bulk density to limit crown fire potential) might be in opposition. As written, the conservation measures suggest that protecting CSO territories is the priority. Perhaps I am misreading the intent. However the potential for conflicts is real and are likely to increase. Projections for the mid-term future (2050 and beyond) indicate increasing abiotic threats to Sierran forests. It seems that the Conservation Strategy is the appropriate place to discuss approaches for resolving potential conflicts. At the least, the conservation priorities should be clearly stated.

Response to review criteria

1. Content and Scientific Support

The Conservation Strategy provides a thorough recounting of the history and current status of the CSO and its habitat. The two recent syntheses (Gutiérrez et al. 2017, Safford and Stevens 2017) provide a solid scientific foundation. The scholarship is comprehensive and up to date. There is an appropriate recognition of the temporal and spatial aspects of CSO conservation. An earlier static perspective of preserving the owl via

protecting one territory at a time is replaced with a dynamic focus that seeks to maintain habitat through time and space.

The Conservation Strategy is structured around the goal of creating resilient CSO populations and resilient forests. The primary means to this end is to restore yellow pine and mixed conifer forests to their pre-European status. The logic behind this desired condition is that both CSO and its habitat were resilient under these conditions. This argument, supported by many research results, strikes me as a sound reasoning for the short-term. For the long-term when conditions have significantly shifted from the historical, restoration to the past may not guarantee resiliency. The threat posed by the barred owl is a case in point. Its migration into CSO habitat seems inexorable. In the short-term, removal will limit the spread but what is the long-term plan for CSO resilience? There is a practically unlimited source of barred owls with continental-scale drivers of its migration. Perhaps this future focus is a strategy to be devised another day. However it would be helpful to define what is meant by short-term and long-term in the Conservation Strategy. The spatial component is precisely specified (Table XX); specification of the temporal component is just as important. For example, assuming 2% annual exponential growth in diameter (i.e., a high growth rate), it would take 25 years for a 24 inch diameter tree to grow into the preferred 40 in diameter nest tree. For the forest, this is a short-term dynamic but it gets us to 2043 where the average annual air temperature in the southern Sierra Nevada is expected to be 5 °F above historical (Dias et al. In review) -- a much warmer climate. My sense is that despite the mention of a long-term perspective (Goal 3; Objective F), the conservation measures almost exclusively focus on actions with a 10-20 year timeline.

The other notable gap in terms of content is the complete absence of any mention of the implications of the conservation measures on greenhouse gas emissions and carbon storage. The CSO habitat encompasses carbon-dense forest that play a major role in California's efforts to reduce greenhouse gas emissions. Unfortunately this absence limits the applicability of the Conservation Strategy on non-federal lands where state regulations insist that the carbon implications of any management action be considered. A similar gap exists in terms of the implications of the proposed conservation measures on water supply. For California, water supply from the Sierra Nevada is an essential natural resource that is ignored here.

In terms of scientific support, the Conservation Strategy relies primarily on peer-reviewed research and publically available data. As noted above, the synopsis of CSO ecology and its habitat is comprehensive and current. The summary of future conditions captures the main trends but is less exhaustive and current by comparison. My primary concern, noted in my margin notes, is the occasional reliance on personal communications, unpublished reports, and non-public data. In a few instances, specific recommendations (e.g., the value of 40 in diameter trees) are supported by these sources. By academic standards, these sources are not considered rigorous evidence. Their inclusion poses an odd juxtaposition in a document that boasts otherwise exemplary scholarship.

2. Interpretation and Conclusion

In general, the interpretation of the science was sound and its application reasonable. I am not entirely sure what is meant by conclusions but I take it to mean the conservation measures. My comments regarding specific interpretations and conclusions are embedded in the margin notes.

3. Clarity of Writing

The prose is well-constructed and clear. I have highlighted the few passages where I found the writing confusing. The structure of the document does not share the clarity of its prose.

The overall logic of the document makes sense as it progresses from goals to supporting background/science to management actions to achieve the stated goals. However the plethora of terms that refer to ends and means is overwhelming. There are visions, desired conditions, conservation outcomes, goals and objectives that are achieved via tools, strategies, conservation measures, specific actions, and metrics of success. There is a hierarchy of sorts (e.g., goals with objectives; background on the owl and then its forest habitat; and strategies with specific actions) but the boundaries are blurred so the hierarchy does not help as much as it could in maintaining an orderly flow of information. This lack of order contributes to a lot of repetition. In particular there is a great deal of overlap between Section 4 and Section 5. Whole passages are repeated nearly verbatim. In my margin notes, I have identified what struck me as excessive repetition. A simplified and streamlined revision would improve the clarity of the argument and make the report easier to read.

A thorough edit would be helpful in other regards. There were a bunch of errors in the references. I identified the ones I noted but I did not check them all. Also there are terms that are not referred to consistently (Landfire vs LANDFIRE) and terms used but not defined (e.g., EVEG and GNN).

References cited in review

Dias, D.F., D. R. Cayan, and A. Gershunov. In review. Statistical prediction of minimum and maximum air temperature in California and Western North America. California Fourth Climate Change Assessment. To be published in August 2018.

Gutiérrez, R.J., P.N. Manley, and P.A. Stine (technical editors). 2017. The California spotted owl: current state of knowledge. Gen. Tech. Rep. PSW-GTR-254. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station.

Safford, H.D. and Stevens, J.T. 2017. Natural Range of Variation (NRV) for yellow pine and mixed conifer forests in the Sierra Nevada, southern Cascades, and Modoc and Inyo National Forests, California, USA. General Technical Report PSW-GTR-256. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 229 p.