



THE INSTITUTE FOR BIRD POPULATIONS

P.O. Box 1346

Point Reyes Station, CA 94956-1346

(415) 663-1436 • FAX (415) 663-9482 • www.birdpop.org

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TO: USFS Pacific Southwest Region

FROM: Rodney Siegel, Ph.D.
The Institute for Bird Populations

RE: Peer review of the *Draft Conservation Strategy for the California Spotted Owl, Version 1.0.*

Thank you for the opportunity to coordinate peer review of the *Draft Conservation Strategy for the California Spotted Owl, Version 1.0.* I recruited four expert reviewers, including two Spotted Owl biologists, and two other scientists who could be described, respectively, as a fire ecologist and a forest ecologist, to provide reviews. All four are prominent scientists with many years of experience and extensive publication records relevant to the California Spotted Owl (CSO) and/or its habitat within the area under the purview of the draft strategy. None of the reviewers was involved in developing the draft strategy.

I provided each reviewer with an electronic copy of the version of the draft strategy you provided to me, along with the attached Instructions for Reviewers. As requested, each of the reviewers returned to me a memo (see 4 attached files) summarizing their responses to the draft strategy. Three of the reviewers made additional comments in Track Changes directly on the draft strategy (see 3 additional attached files). All of the reviewers chose to identify themselves in their review memo and/or marked up strategy document, but I have removed that information from the attached files.

The reviewers raised diverse issues and I think made some astute points. However I was tasked with coordinating and compiling reviews, rather than reviewing the document myself, so I will refrain from providing my opinions about the aptness of the specific suggestions and criticisms made by the reviewers. Instead I will briefly summarize some of the main themes and issues that are reflected in reviewer responses. Please note, however, that my summary here is not a comprehensive list of the points made by the reviewers in their individual response documents, and also that I have herein paraphrased reviewer comments – authors of the draft strategy should refer to the attached documents for a complete and accurate understanding of reviewer responses.

In summarizing their own responses, all four reviewers commented that the draft strategy is generally well-written and well-reasoned, with an appropriately comprehensive review of literature on most topics. The reviewers were generally approving of the overall goals of the draft strategy, and variously expressed appreciation of the authors having taken an

ecological approach to CSO conservation and incorporated dynamic ecological processes into their thinking and planning. All indicated in various ways that they found the conservation measures to be generally well thought out, comprehensive, and sufficiently detailed and understandable.

Nevertheless, each of the reviewers had specific questions and concerns about aspects of the draft strategy, including:

Need for more quantitative objectives and restoration goals, particularly with regard to NRV – Reviewers 1, 3, and 4 all raised concerns that objectives and restoration goals, particularly with regard to departure from or progress towards the Natural Range of Variation (NRV), are stated largely in qualitative terms, making it difficult to monitor change over time.

Maintenance of an adequate system of PACs – Reviewer 1 suggested the draft strategy needs to more directly specify the target number of PACs, their spatial distribution, and how connectivity is to be maintained among them. Reviewer 4 was concerned about PACs being retired after only 3 consecutive years of non-occupancy, noting that recolonization probability is still around 0.2 *after* three years of non-occupancy. Reviewer 4 expressed concern that the draft strategy provides a clear avenue for retiring PACs, but not necessarily for adding new ones, and also questioned why protecting only 5%-9% of the strategy area in PACs would be an undue burden on forest management activities.

Guidance on potential conflicts between CSO conservation and forest restoration – Reviewer 3 expressed concern that conflicts will likely arise between CSO conservation and forest restoration, and suggested the draft strategy is lacking in guidance for how to resolve them. Although framed in a different way, Reviewer 4 also raised questions about how to reconcile the desire to increase forest resilience with the desire to retain big trees, when they conflict.

Concerns about temporal horizons – Reviewer 1 asked whether the draft strategy can restore habitat quickly enough to save the CSO, given the long time frames required to develop important habitat attributes where they don't currently occur. Reviewer 3 suggested that the temporal horizon of the strategy is not well specified (including the meaning of 'long-term' and 'short-term'), and that, in any case, most of the objectives seem fairly short-term.

Coordination of management activities across spatial scales – Reviewer 4 raised the question of how to reconcile managing towards NRV at the largest spatial scales, while decision-making about managing habitat of individual owls occurs at the local scale: "... how do you coordinate these kinds of fluid management activities across all FS lands within the CA owl range?"

Robustness of monitoring and adaptive management – Reviewer 1 asked whether a separate document would explain the Region's adaptive monitoring strategy, and suggested the draft strategy is lacking in detail on this topic. Reviewer 1 also noted the challenges in implementing effective adaptive management, and provided a list of

attributes any such strategy should include. Multiple reviewers asked whether a specific habitat monitoring framework would be forthcoming, or suggested that one is needed.

Broader environmental effects – Reviewer 3 suggested that the draft strategy needs an exploration of the implications of the conservation measures on gas emission, carbon storage, and water supply, especially if it is to be relevant for private lands, where carbon implications have to be explicitly considered.

Confusing framework of terms – Reviewer 3 suggested that the quantity of terms related to ends and means (e.g., visions, desired conditions, conservation outcomes, goals and objectives, strategies, measures, and metrics) introduces unneeded complexity to the document.

Geographic purview – Reviewer 2 found the draft strategy to be unclear or inconsistent as to whether the southern Cascades portion of CSO range in California was under the purview of the strategy, and suggested that if it is, additional citations (many provided by the reviewer) should be added.

One or more key terms needing definition – Reviewer 4 noted that some key terms lack adequate definition, e.g. ‘diverse habitat’, ‘resistant habitat’, and ‘resilient habitat’. This reviewer also interpreted the text in several places as suggesting that CSOs benefit from diverse or heterogeneous habitat, and questioned this assertion.

Reliance on unpublished findings – Reviewer 3 expressed concern about the occasional reliance on personal communication and unpublished data.

I believe that considering these and other concerns raised in the attached reviews will greatly strengthen the strategy.

Lastly, new science pertinent to conserving CSOs and managing their habitat continues to be produced at a rapid pace. Two synthesis papers published in recent months (Lee 2018 and Wan et al. 2018) – understandably too late to have been cited in this version of the draft strategy – assimilate a great deal of information for assessing risks posed by fire and other possible threats to CSOs and, to varying degrees, arrive at conclusions that may challenge aspects of the approach taken by the draft strategy. I urge the authors to ensure that the final version of the strategy engages with the findings in these papers.

Encl.

- Instructions for reviewers.doc
- Reviewer 1 Memo.doc
- Reviewer 2 Memo.pdf
- Reviewer 2 Markup.doc
- Reviewer 3 Memo.doc
- Reviewer 3 Markup.doc
- Reviewer 4 Memo.doc
- Reviewer 4 Markup.doc

Literature cited in this memo

Lee, D. E. 2018. Spotted Owls and forest fire: a systematic review and meta-analysis of the evidence. *Ecosphere* 9(7):e02354.

Wan, H. Y., J. L. Ganey, C. D. Vojta, and S. A. Cushman. 2018. Managing emerging threats to spotted owls. *Journal of Wildlife Management* 82:682-697.