

# Scientific evaluation of the status of the Northern Spotted Owl

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## **Executive summary**

This report consists of a critical review and synthesis of recent information on the status of the Northern Spotted Owl. The report has been prepared to support the US Fish and Wildlife Service in their 5-year status review process, as set out in the Endangered Species Act. This report does not make recommendations on listing status, or on management, and is solely focused on identifying the best available science, and the most appropriate interpretations of that science. The focus is on new information developed since the time of listing (1990).

The review process was comprehensive and critical, and involved a core panel of 8 scientific experts, plus 9 other contributing scientists. Four public meetings were held to discuss and analyze results and their interpretation. Over 1100 documents were read, critiqued, and discussed. Outside input was solicited, and external peer review was also obtained. Some new analyses were commissioned, and additional information was collected at our request. The final report represents a synthesis of all the available information, including a full discussion of points where data are conflicting, or where there is uncertainty in interpretations. In general the panel members, having discussed and argued over issues, came to a consensus; on those few areas where there was not complete consensus, the report makes clear the diversity of opinion, and the reasons for it.

Central to understanding the status of the subspecies is an evaluation of its taxonomic status. The panel is unanimous in finding that the Northern Spotted Owl is a distinct subspecies, well differentiated from other subspecies of Spotted Owls.

The panel did not identify any genetic issues that were currently significant threats to Northern Spotted Owls, with the possible exception that the small Canadian population may be at such low levels that inbreeding, hybridization, and other effects could occur.

The use of habitat and of prey varies through the range of the subspecies. These two factors interact with each other and also with other factors such as weather, harvest history, habitat heterogeneity etc, to affect local habitat associations. While the general conclusion still holds that Northern Spotted Owls typically need some late-successional habitat, other habitat components are also important (at least in some parts of the range).

The available data on habitat distribution and trends are somewhat limited. Development of new habitat is predicted under some models. However our ability to evaluate habitat trends is hampered by the lack of an adequate baseline. Given these caveats, the best available data suggest that timber harvest has decreased greatly since the time of listing, and that a major cause of habitat loss on federal lands is fire. In the future, Sudden Oak Death may become a threat to habitat in parts of the subspecies' range.

Barred Owls are an invasive species, that may have competitive effects on Northern Spotted Owls (as was recognized at the time of listing). Opinion on the panel was divided on the effects of Barred Owls. While all panelists thought this was a major threat, some panelists felt that the scientific case for the effects of Barred Owls remained inconclusive; other panelists were more certain on this issue.

The demography of the Northern Spotted Owl has been recently summarized in a meta-analysis (Anthony et al 2004), which is the most appropriate source for information on trends. Although the overall population, and some individual populations show signs of decline, we cannot determine whether these rates are lower than predicted under the Northwest Forest Plan (since there is no baseline prediction under that plan). However the decline of all four Washington state study populations was not predicted, and may indicate that conditions in that state are less suitable for Northern Spotted Owls. Several reasons for this pattern are plausible (including harvest history, Barred Owls, weather).

There is currently little information on predation on Spotted Owls, and no empirical support for the hypothesis, advanced at the time of listing, that fragmentation of forest after harvest increases predation risk.

West Nile Virus is a potential threat, but of uncertain magnitude and effect.

In general, conservation strategies for the Northern Spotted Owl are based on sound scientific principles and findings, which have not substantially altered since the time of listing (1990), the Final Draft Recovery Plan (1992) and adoption of the Northwest Forest Plan (1994). Nevertheless we identify several aspects of conservation and forest management that may increase both short and medium term risks to the species. These are typically due to failures of implementation.

A full evaluation of the uncertainties of the data, the conclusions that can be drawn from them, and of the perceived threats to the subspecies, are shown in the summary of individual panelist responses to a questionnaire.

Major threats to Northern Spotted Owls at this time include: the effects of past and current harvest; loss of habitat to fire; Barred Owls. Other threats are also present. Of threats identified at the time of listing, only one (predation linked to fragmentation) does not now appear well supported.

The review concludes with a discussion of the information that would be needed for a more definitive status review in the future. We note that if current monitoring efforts are not maintained, scientists in the future may be less able than we were to assess status. We also identify key information, currently unavailable, that could greatly affect our ability to understand and conserve Northern Spotted Owls.