

PART III. RECOVERY STRATEGY, GOAL, OBJECTIVES, AND RECOVERY CRITERIA

A. Recovery Strategy

This Recovery Plan presents realistic and attainable goals for recovering the owl and its ultimate delisting, involving forest habitat management and vigilant monitoring. Implementing this Recovery Plan involves balancing conflicting risks (see Box III.1). The goals are flexible in that they allow local land managers to make site-specific decisions. Although the Mexican spotted owl was originally listed due to threats from destruction and modification of habitat caused by timber harvest and fires (Listing Factor A), increased predation associated with habitat fragmentation (Listing Factor C), and lack of adequate protective regulations (Listing Factor D), the threats of timber harvest and inadequate regulations have been largely addressed since the time of listing. Currently, the Mexican spotted owl is threatened primarily by habitat degradation and loss of old growth nesting habitats through stand-replacing wildland fire (Listing Factor A). Threats of predation, disease, parasites (Listing Factor C), starvation, accidents, and potential interactions of threat factors with climate change (Listing Factor E) also are considered to be issues. To accomplish the recovery of the Mexican spotted owl, the recovery strategy has six key elements designed to conserve the Mexican spotted owl throughout its range: 1) protecting existing owl sites (PACs); 2) managing for recovery nest/roost habitat to replace that lost to fire and other events and to provide additional sites for an expanding population; 3) managing threats; 4) monitoring population trends and habitat; 5) monitoring plan implementation; and, 6) building partnerships to facilitate recovery.

Success of the plan, however, hinges on the commitment and coordination among the Mexican government, U.S. Federal and state land-management organizations, sovereign Indian nations, and the private sector to ensure that the spirit and intent of the plan is executed as envisioned by the Recovery Team. Although much of the recovery strategy is focused on the U.S. range of the bird, this strategy can and should be implemented in Mexico. At this time, a PACE (Program of Conservation Actions for listed species, similar to a recovery plan) has not been developed for the Mexican spotted owl in Mexico. Under the proposed recovery criteria, the owl could be recovered within 10 years of implementing this revised Recovery Plan. Maintaining and restoring forest health to reduce the threat of stand-replacing wildland fire, while creating a mosaic of suitable Mexican spotted owl habitats and protecting existing populations, will be achieved by land use management, facilitated by section 7 consultations and agreements. The recovery criteria require monitoring. Without careful and rigorous application of monitoring, there would be no objective basis for delisting the owl.

B. Recovery Goal

The ultimate goal of the Recovery Plan is to sustain owl populations to the point that the owl can be removed from the list of endangered and threatened species.

C. Recovery Objectives

Objectives are to support the population of the Mexican spotted owl in the foreseeable future, and to maintain habitat conditions necessary to provide roosting and nesting habitat for the Mexican spotted owl.

D. Objective and Measurable Recovery Criteria

Section 4 of the ESA requires that recovery plans “list objective, measurable criteria which, when met, would result in a determination that the species be removed from the list.” Ultimately, a delisting determination is based on a species no longer meeting the definition of “threatened” under the ESA. Such a determination requires the five-factor analysis we describe in Part II.H, where all threats are evaluated.

The recovery criteria in this plan are not binding, and it is important to note that meeting the recovery criteria provided below does not automatically result in delisting the species. Rather, a delisting decision is under the authority of the FWS Director and must undergo the rulemaking process and analyses. Both anthropogenic and non-anthropogenic threats to the Mexican spotted owl must be considered in a five-factor analysis to be sufficiently acceptable, with adequate regulatory mechanisms in place, to ensure that the species will persist into the foreseeable future. The management recommendations in this plan are believed to be necessary and advisable to achieve this goal, but the best scientific information derived from research, management experiments, and monitoring conducted at the appropriate scale and intensity should be used to test this assumption.

Two recovery criteria must be met before the Mexican spotted owl can be delisted:

- (1) *Owl occupancy rates must show a stable or increasing trend after 10 years of monitoring.* The study design to verify this criterion must have a power of 90% (Type II error rate $\beta = 0.10$) to detect a 25% decline in occupancy rate over the 10-year period with a Type I error rate (α) of 0.10. The monitoring approach recommended in Part V.B and in Appendix E suggests how this might be determined. (Listing Factors A, C, and E).
- (2) *Indicators of habitat conditions (key habitat variables) are stable or improving for 10 years in roosting and nesting habitat* (key habitat variables—see Table C.2 or Table C.3 in Appendix C). Habitat monitoring should be conducted concurrently with owl occupancy monitoring. Trends in all key habitat variables must be shown stable or increasing with a power of 90% (Type II error rate $\beta = 0.10$) to detect a 25% decline over the 10-year period with a Type I error rate (α) of 0.10. (Listing Factors A, C, and E).

To delist the owl, we recommend both criteria be met. Once the two criteria have been met, we would then review the regulations and known distribution of Mexican spotted owls to determine if the delisting process should proceed. At this time, we cannot describe the future desired distribution of owls across their range. For example, changes in the species’ range may occur due to factors such as climate change which could result in shifts in the owl population to the northern portion of its range. In addition, anthropogenic and non-anthropogenic threats to the Mexican spotted owl must be sufficiently moderated and/or regulated for the foreseeable future,

as evidenced by the best scientific information available. The best scientific information is derived from research, management experiments, and monitoring conducted at the appropriate scale and intensity. An analysis of the five ESA listing factors must be conducted to verify that threat levels are acceptable for likely persistence of owl populations into the future.

We use the existing population and distribution of owls as the baseline for the delisting criteria. This is not an assumption that the existing population is adequate for recovery, but absent information on historical populations it is the only data point that we can use to determine population trend from this point forward. If occupancy monitoring indicates the population is stable or increasing and the habitat trend is stable or increasing, we will accept this as evidence that the population is self-sustaining. In contrast, if occupancy monitoring demonstrates a declining owl population, it will be known that the existing population is not at an adequate level to persist under the stressors the owl is undergoing on the landscape, and continued protection and/or remedial action will be needed.

E. The Delisting Process

Section 4 of the ESA governs the listing, delisting, and reclassification of species, the designation of critical habitat, and recovery planning. A codification of the general and permanent regulations regarding listing, delisting, reclassification, and critical habitat designation are published in the *Code of Federal Regulations* at 50 CFR 424. The process of delisting a species or subspecies is essentially the same as that of listing: a proposed rule describing the justification for the action is published in the *Federal Register*; a public comment period is opened, including public hearings if requested; and, within one year of the proposal, either a final rule delisting the species or a notice withdrawing the proposed rule is published in the *Federal Register*.

The Mexican spotted owl is listed as a threatened species, defined in the ESA as "...likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." According to the ESA, an endangered species is one that "...is in danger of extinction throughout all or a significant portion of its range..." Thus, to delist the Mexican spotted owl, it must be found to be sufficiently secure into the foreseeable future so that it does not meet the definition of a threatened species. In considering whether to delist a species, the same five factors considered in the listing process are evaluated (see Part II.H). While emphasis may be given to those factors leading to the species' listing, all of the factors must be evaluated in making a delisting determination.

Another factor to consider when contemplating delisting is whether a listed entity may be delisted throughout a portion of its range while other portions remain listed. The ESA definition of "species" includes "...subspecies...and any distinct population segment of vertebrate fish or wildlife..." The term "distinct population segment" (DPS) is not defined in either the ESA or its implementing regulations, but rather is described in the Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the Endangered Species Act (DPS Policy; 61 FR 4722). The DPS Policy describes a series of tests for determining whether a vertebrate population qualifies as a DPS.

The Mexican spotted owl is currently listed as a threatened subspecies throughout its range, including Mexico. However, a species may be delisted throughout a part of its range if both the delisted portion and the portion remaining in listed status meet the criteria for a DPS as set forth in the DPS policy. For example, the FWS could determine that both the U.S. and Mexican populations meet the DPS criteria and delist or otherwise reclassify one or the other separately. It is beyond the purview of this Recovery Plan to address the question of whether the U.S. or Mexico populations, or any subdivisions thereof, would qualify as a DPS. Such a determination would be made by the FWS if and when appropriate. This Recovery Plan therefore provides delisting criteria only for the subspecies as a whole.

F. Post-Delisting Monitoring

Section 4(g) of the ESA directs the FWS to implement a system, in cooperation with the states, to monitor effectively for not less than five years the status of a species or subspecies that has been delisted due to recovery. The provisions of the ESA do not apply to the delisted species during this monitoring period. However, the FWS could relist a species through the standard listing process, should monitoring or other information indicate that the species has again become threatened or endangered absent the Act's protection. Once delisting occurs, managers should consider continuing the monitoring suggested in Appendix E for consistency in continuing to assess population trends. Such policy would provide additional assurance that the results of the 10-year monitoring program are reliable assessments of population and habitat trends.

**Box III.1. BALANCING CONFLICTING RISKS:
MECHANICAL TREATMENTS IN OWL HABITAT**

Both this Recovery Plan and the original plan (USDI FWS 1995) rest heavily on the assumption that PACs (i.e., nest and roost habitat) are important to Mexican spotted owls. Available information suggests that these areas provide special habitat features for owls, and that in many cases these PACs may be occupied for long time periods (R. J. Gutiérrez, University of Minnesota, pers. comm.). Consequently, USDI FWS (1995) largely recommended minimizing treatments in PACs (recommended thinning from below, prescribed burning), arguing that we did not understand how best to manage these areas for owls and therefore should leave them alone. This is the strategy that has largely been followed by land management agencies for the past two decades.

This strategy presents a dilemma, however. We know that the risk of stand replacing fire has increased over time. As a result, large areas have experienced such fires in recent years. Further, Mexican spotted owls nest and roost in areas featuring high canopy cover and relatively decadent stands of multi-aged and sized trees. Thus, these areas contain relatively continuous canopies and high loads of surface fuels, large numbers of snags, and multi-storied stands. These are all features that can predispose these areas to experience stand replacing fire under certain weather conditions, especially extended dry periods featuring high winds. Such conditions appear likely to become more common in the southwestern U.S., based on current climate projections (Seager et al. 2007).

Reducing fire risk in southwestern forests frequently involves mechanical thinning treatment, prescribed fire, or both activities in concert. USDI FWS (1995) recommended prescribed fire and thinning from below in PACs. However, little thinning occurred and some fire managers opted to avoid burning because the high fuel loads and seasonal restrictions combined to create an unacceptable risk that fires would escape prescription. Consequently, little fuels reduction has occurred in PACs, most remain in a fire prone condition, and many PACs have undergone significant degradation following these wildland fires.

BOX III.1, Continued

We view this situation as unsustainable in the long term. Although many owls continue to occupy burned areas, at least in the short term (summarized in Appendix B), we do not view the long-term cumulative loss of large areas of owl habitat to stand replacing fire as conducive to recovery. Further, where large numbers of PACs occur in degraded landscapes, it can place the overall landscape at risk from high severity fire. We have always tried to balance protection of owls and their habitat with minimizing impacts to those other resources, including human communities. This requires managing fire risk on the landscape, and in some cases that will require mechanical treatments in PACs. Consequently, we recommend limited treatments in PACs.

We do not view this strategy as risk free, and do not assume that all types and extents of fuels treatments will be neutral or beneficial to owls.

Unfortunately, empirical data on the effects of thinning and other mechanical forest treatments on Mexican spotted owls are nonexistent, and empirical data on effects of forest treatments on other subspecies of spotted owls (summarized in Appendix B) are sparse and difficult to interpret. Understanding how these treatments affect Mexican spotted owls is one of the major questions faced in integrating recovering this owl with plans for restoring southwestern forests. Although this has been clearly noted for years (e.g., USDI FWS 1995, Beier and Maschinski 2003, Ganey et al. 2011), no studies on this topic have been funded to date. Consequently, we can only extrapolate from the sparse data available on this topic resulting from studies of other subspecies of spotted owls. Collectively, these studies suggest that at least some kinds of mechanical forest treatments may negatively affect spotted owls. No clear guidance emerges from these studies relative to types, extents, or spatial arrangement of treatment that might minimize effects to owls. Such information is needed if management is to proceed in owl habitat. Lacking such information, managers should proceed cautiously in terms of treatment intensity and extent. That is, initial treatments should be limited in spatial extent and treatment intensity, and should be aimed at balancing reduced fire risk with maintaining the mature forest structure that seems to be favored by spotted owls. Treatments in owl habitat should be linked to rigorous monitoring of owl response, to allow us to evaluate the effects of different types and extents of treatments in an adaptive management context (see Box C.6 for details on how such monitoring might be structured). **The Recovery Team recommends mechanical treatment in PACs only if such monitoring occurs.**