

ENVIRONMENTAL ASSESSMENT
DESIGNATION OF CRITICAL HABITAT
FOR THE
MEXICAN SPOTTED OWL

(Strix occidentalis lucida)

Prepared by

U.S. Fish and Wildlife Service
New Mexico Ecological Services Field Office
Albuquerque, New Mexico

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1.0 Purpose

The purpose of designating critical habitat for the threatened Mexican spotted owl (*Strix occidentalis lucida*) is to utilize provisions of the Endangered Species Act of 1973, as amended (Act), to help achieve the species' conservation. The purpose of the Act is to conserve the ecosystems upon which endangered and threatened species depend. Critical habitat designation identifies those areas that are essential to the survival and recovery of the Mexican spotted owl, and describes those physical and biological features within those areas that require special management considerations to achieve conservation of the species.

1.1 Need for the Action

The need for this action is to comply with section 4 of the Act, which requires that critical habitat be designated for endangered and threatened species unless such designation is not prudent. In the final rule listing the Mexican spotted owl as a threatened (58 FR 14248), we, the Fish and Wildlife Service, found that although considerable knowledge of owl habitat needs had been gathered in recent years, habitat maps in sufficient detail to accurately delineate critical habitat areas were not available. After the listing, we began gathering the data necessary to develop a proposed rule to designate critical habitat. A final rule designating critical habitat for the Mexican spotted owl was published on June 6, 1995 (60 FR 29914). In 1996, the Tenth Circuit Court of Appeals in Catron County Board of Commissioners v. United States Fish and Wildlife Service, 75 F.3d 1429, 1439 (10th Cir. 1996), ruled that the Service had to comply with the National Environmental Policy Act (NEPA) before designating critical habitat for two desert fish, the spikedace and loach minnow. In addition, a federal district court in New Mexico later set aside the final rule designating critical habitat for the owl and forbid the Service from enforcing critical habitat for the owl (Coalition of Arizona-New Mexico Counties for Stable Economic Growth v. U.S. Fish and Wildlife Service, No. 95-1285-M Civil, April 1, 1997). As a result of these court rulings, we removed the critical habitat designation for the owl from the Code of Federal Regulations on March 25, 1998 (63 FR 14378).

On March 13, 2000, the United States District Court for the District of New Mexico, (Southwest Center for Biological Diversity and Silver v. Babbitt and Clark, CIV 99-519 LFG/LCS-ACE), ordered us to propose critical habitat within 4 months of the court order, and to complete and publish a final designation of critical habitat for the Mexican spotted owl by January 15, 2001. On July 21, 2000, we published a proposal to designate critical habitat for the Mexican spotted owl in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands (65 FR 45336). This final rule is in response to that court order. Critical habitat is one of several provisions of the

ESA that aid in protecting the habitat of listed species until populations have recovered and threats have been minimized so that the species can be removed from the list of threatened and endangered species. Critical habitat designation is intended to assist in achieving long-term protection and recovery of Mexican spotted owls and the ecosystems upon which they depend, by subjecting areas designated as critical habitat to section 7(a)(2) of the Act, thereby requiring consultation for Federal actions that may affect these areas in order to avoid destruction or adverse modification of this habitat. Further explanation of critical habitat and its implementation is provided below.

1.2 Background

The Mexican spotted owl (*Strix occidentalis lucida*) is one of three subspecies of spotted owl occurring in the United States; the other two are the northern spotted owl (*S. o. caurina*) and the California spotted owl (*S. o. occidentalis*). The Mexican spotted owl is distinguished from the California and northern subspecies chiefly by geographic distribution and plumage. The Mexican spotted owl is mottled in appearance with irregular white and brown spots on its abdomen, back, and head. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies, giving it a lighter appearance.

The Mexican spotted owl has the largest geographic range of the three subspecies. The range extends north from Aguascalientes, Mexico, through the mountains of Arizona, New Mexico, and western Texas, to the canyons of Utah and Colorado, and the Front Range of central Colorado. Much remains unknown about the species' distribution in Mexico, where much of the owl's range has not been surveyed. The owl occupies a fragmented distribution throughout its United States range, corresponding to the availability of forested mountains and canyons, and in some cases, rocky canyonlands. Although there are no estimates of the owl's historical population size, its historical range and present distribution are thought to be similar.

According to the Recovery Plan for the Mexican Spotted Owl (United States Department of Interior 1995) (Recovery Plan), 91 percent of owls known to exist in the United States between 1990 and 1993 occurred on land administered by the U.S. Forest Service (FS); therefore, the primary administrator of lands supporting owls in the United States is the FS. These numbers are based upon preliminary surveys that were focused on National Forests in the southwest. Nevertheless, most owls have been found within Region 3 of the FS, which includes 11 National Forests in New Mexico and Arizona. FS Regions 2 and 4, including two National Forests in Colorado and three in Utah, support fewer owls. The range of the owl is divided into 11 Recovery Units (RU), 5 in Mexico and 6 in the United States, as identified in the Recovery Plan. The Recovery Plan also identifies recovery criteria and provides distribution, abundance, and density estimates by RU. Of the RUs in the United States, the Upper Gila Mountains RU, located in the central portion of the species' U.S. range in central Arizona and west-central New

Mexico, contains over half of known owl sites. Owls here use a wide variety of habitat types, but are most commonly found inhabiting mature mixed-conifer and ponderosa pine-Gambel oak forests. The Basin and Range-East RU encompasses central and southern New Mexico, and includes numerous parallel mountain ranges separated by alluvial valleys and broad, flat basins. Most breeding spotted owls occur in mature mixed-conifer forest. The Basin and Range-West RU contains mountain ranges separated by non-forested habitat. These “sky island” mountains of southern Arizona and far-western New Mexico contain mid-elevation mixed-conifer forest and lower elevation Madrean pine-oak woodlands that support spotted owls. The Colorado Plateau RU includes northern Arizona, southern Utah, southwestern Colorado, and northwestern New Mexico, with owls generally confined to deeply incised canyon systems and wooded areas of isolated mountain ranges. The Southern Rocky Mountains-New Mexico RU consists of the mountain ranges of northern New Mexico. Owls in this unit typically inhabit mature mixed-conifer forest in steep canyons. The smallest number of spotted owls occurs in the Southern Rocky Mountains-Colorado RU. This unit includes the southern Rocky Mountains in Colorado, where spotted owls are largely confined to steep canyons, generally with significant rock faces and various amounts of mature coniferous forest. The critical habitat units identified in this designation are all within these RUs.

A reliable estimate of the numbers of owls throughout its entire range is not currently available. Using information gathered by Region 3 of the FS, Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico in 1990. Based on more up-to-date information, we subsequently modified Fletcher’s calculations and estimated a total of 2,160 owls throughout the United States (USDI 1991). However, these numbers are not considered reliable estimates of current population size for a variety of statistical reasons, and a pilot study (Ganey *et al.* 1999) conducted in 1999 estimated the number of owls for the upper Gila Mountains Recovery Unit (exclusive of tribal lands) as 2,950 (95 percent confidence interval 717-5,183).

Mexican spotted owls nest, roost, forage, and disperse in a diverse array of biotic communities. Nesting habitat is typically in areas with complex forest structure or rocky canyons, and contains uneven-aged, multi-storied mature or old-growth stands that have high canopy closure (Ganey and Balda 1989, USDI 1991). In the northern portion of the range (Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons. Elsewhere, the majority of nests appear to be in Douglas fir (*Pseudotsuga menziesii*) trees (Fletcher and Hollis 1994, Seamans and Gutierrez 1995). A wide variety of tree species is used for roosting; however, Douglas fir is the most commonly used species in mixed conifer forests (Ganey 1988, Fletcher and Hollis 1994, Young *et al.* 1998). Owls generally use a wider variety of forest conditions for foraging than they use for nesting/roosting.

Seasonal movement patterns of Mexican spotted owls are variable. Some individuals are year-round residents within an area, some remain in the same general area but show shifts in habitat

use patterns, and some migrate considerable distances (20-50 kilometers (km)) (12-31 miles (mi)) during the winter, generally migrating to more open habitat at lower elevations (Ganey and Balda 1989b, Willey 1993, Ganey *et al.* 1998). The home-range size of Mexican spotted owls appears to vary considerably among habitats and/or geographic areas (USDI 1995), ranging in size from 261-1,487 ha (647-3,688 ac) for individual birds, and 381-1,551 ha (945-3,846 ac) for pairs (Ganey and Balda 1989b, Ganey *et al.* 1999). Little is known about habitat use by juveniles dispersing soon after fledging. Ganey *et al.* (1998) found dispersing juveniles in a variety of habitats ranging from high-elevation forests to piñon-juniper woodlands and riparian areas surrounded by desert grasslands.

Mexican spotted owls do not nest every year. The owl's reproductive pattern varies somewhat across its range. In Arizona, courtship usually begins in March with pairs roosting together during the day and calling to each other at dusk (Ganey 1988). Eggs are typically laid in late March or early April. Incubation begins shortly after the first egg is laid, and is performed entirely by the female (Ganey 1988). The incubation period is about 30 days (Ganey 1988). During incubation and the first half of the brooding period, the female leaves the nest only to defecate, regurgitate pellets, or receive prey from the male, who does all or most of the hunting (Forsman *et al.* 1984, Ganey 1988). Eggs usually hatch in early May, with nestling owls fledging 4 to 5 weeks later, and then dispersing in mid-September to early October (Ganey 1988).

Little is known about the reproductive output for the spotted owl. It varies both spatially and temporally (White *et al.* 1995), but the subspecies demonstrates an average annual rate of about one young per pair. Based on short-term population and radio tracking studies, and longer-term monitoring studies, the probability of an adult owl surviving from 1 year to the next is 80 to 90 percent. Average annual juvenile survival is considerably lower, at 6 to 29 percent, although it is believed these estimates may be artificially low due to the high likelihood of permanent dispersal from the study area, and the lag of several years before marked juveniles reappear as territory holders and are detected as survivors through recapture efforts (White *et al.* 1995). Little research has been conducted on the causes of mortality, but predation by great horned owls (*Bubo virginianus*), northern goshawks (*Accipiter gentilis*), red-tailed hawks (*Buteo jamaicensis*), and golden eagles (*Aquila chrysaetos*), as well as starvation, and collisions (e.g., with cars, powerlines), may all be contributing factors.

Mexican spotted owls consume a variety of prey throughout their range, but commonly eat small- and medium-sized rodents such as woodrats (*Neotoma* spp.), peromyscid mice (*Peromyscus* spp.), and microtine voles (*Microtus* spp.). Owls also may consume bats, birds, reptiles, and arthropods (Ward and Block 1995). Each prey species uses a unique habitat, so that the differences in the owl's diet across its range likely reflect geographic variation in population densities and habitats of both the prey and the owl (Ward and Block 1995). Deer mice (*P. maniculatus*) are widespread in distribution in comparison to brush mice (*P. boyleyi*), which are

restricted to drier, rockier substrates, with sparse tree cover. Mexican woodrats (N. mexicana) are typically found in areas with considerable shrub or understory tree cover and high log volumes or rocky outcrops. Mexican voles (M. mexicanus) are associated with high herbaceous cover, primarily grasses, whereas long-tailed voles (M. longicaudus) are found in dense herbaceous cover, primarily forbs, with many shrubs and limited tree cover.

Two primary reasons were cited for listing the owl as threatened in 1993: (1) historical alteration of its habitat as the result of timber management practices, specifically the use of even-aged silviculture, and the threat of these practices continuing; and (2) the danger of catastrophic wildfire. The Recovery Plan for the owl outlines management actions that land management agencies and Indian tribes should undertake to remove recognized threats and recover the spotted owl. This critical habitat designation is based on recovery needs and guidelines identified in the Recovery Plan.

1.3 Critical Habitat

Critical habitat is defined in section 3(5)(A) of the Act as – (i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The term "conservation," as defined in section 3(3) of the Act, means "the use of all methods and procedures which are necessary to bring an endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (i.e., the species is recovered and removed from the list of endangered and threatened species).

Section 4(b)(2) of the Act requires that we base critical habitat designation on the best scientific and commercial data available, taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. We may exclude areas from critical habitat designation if we determine that the benefits of exclusion outweigh the benefits of including the areas as critical habitat, provided the exclusion will not result in the extinction of the species. We are also required to consider those habitat features (primary constituent elements) that provide for the physiological, behavioral, and ecological requirements essential for the conservation of the species and that may require special management considerations or protection. Such physical and biological features, as outlined in 50 CFR 424.12, include, but are not limited to, the following:

- (1) Space for individual and population growth, and for normal behavior;
- (2) Food, water, or other nutritional or physiological requirements;

- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, or rearing of offspring; and
- (5) Habitats that are protected from disturbances or are representative of the historic geographical and ecological distribution of a species.

2.0 Description of Alternatives

The Service considered the No Action Alternative as required by NEPA. The Action Alternative is to designate critical habitat as ordered by the court.

2.1 No Action Alternative

The No Action alternative is defined as a decision to forgo the designation of critical habitat for the Mexican spotted owl. This alternative serves to delineate the existing environment and conditions that are anticipated to result from the listing of the species, without designation of critical habitat. Since the listing of the species as threatened, the Mexican spotted owl has been protected under section 7 of the Act by prohibiting Federal agencies from implementing actions that would jeopardize the continued existence of the species. This protection under the Act is considered the baseline against which we evaluate the action alternatives described below.

2.2 Action Alternatives

The Action Alternatives each would include designation of critical habitat in areas believed to contain the physical and biological features upon which the Mexican spotted owl depends. The Act refers to these essential habitat features as "primary constituent elements." We determined the primary constituent elements for Mexican spotted owl from studies of their habitat requirements and the information provided in the Recovery Plan (USDI 1995 and references therein). Since owl habitat can include both canyon and forested areas, we identified primary constituent elements in both areas. Within restricted habitat (described in the Recovery Plan, Volume I, part III, pages 84-95, including Table III.B.1), mixed conifer, pine-oak, and riparian forest types that currently contain or may attain the habitat attributes believed capable of supporting nesting and roosting owls include:

- high basal area of large diameter trees;
- moderate to high canopy closure;
- wide range of tree sizes suggestive of uneven-age stands;
- multi-layered canopy with large overstory trees of various species;
- high snag basal area;
- high volumes of fallen trees and other woody debris;
- high plant species richness, including hardwoods; and
- adequate levels of residual plant cover to maintain fruits, seeds, and regeneration to

provide for the needs of Mexican spotted owl prey species.

For canyon habitat, the primary constituent elements include the following attributes:

- cooler and often more humid conditions than the surrounding area;
- clumps or stringers of trees and/or canyon wall containing crevices, ledges, or caves;
- high percent of ground litter and woody debris; and
- riparian or woody vegetation (although not at all sites).

The forest habitat attributes listed above usually develop with increasing forest age, but their occurrence may vary by location, past forest management practices or natural disturbance events, forest type, and productivity. These characteristics may also develop in younger stands, especially when the stands contain remnant large trees or patches of large trees from earlier stands. Certain forest management practices may also enhance tree growth and mature stand characteristics where the older, larger trees are allowed to persist.

Canyon habitats used for nesting and roosting are typically characterized by cooler conditions found in steep, narrow canyons, often containing crevices, ledges, and/or caves. These canyons frequently contain small clumps or stringers of ponderosa pine, Douglas fir, white fir, and/or piñon-juniper. Deciduous riparian and upland tree species may also be present. Adjacent uplands are usually vegetated by a variety of plant associations including piñon-juniper woodland, desert scrub vegetation, ponderosa pine-Gambel oak, ponderosa pine, or mixed conifer. Owl habitat may also exhibit a combination of attributes between the forested and canyon types.

2.2.1 Designation as identified in the Final Rule

Our preferred alternative is to finalize the designation of critical habitat as described in the final rule signed on January 16, 2001, and becoming effective 30 days following publication in the Federal Register. In developing this alternative, we reviewed the overall approach to the conservation of the species since the species' listing in 1993 (58 FR 14248); examined the critical habitat units identified in the previous proposed (59 FR 63162) and final critical habitat rules (60 FR 29914); considered new location data and habitat requirements for recovery and definitions described in the Recovery Plan (USDI 1995), and information received during the comment periods for the proposed rule (65 FR 45336; 65 FR 63047). All protected and restricted habitat as described in the Recovery Plan is designated as critical habitat. The critical habitat designation does not include tribal lands; FS lands within Arizona and New Mexico; Fort Carson, Colorado; and low-density areas. However, the critical habitat designation does include FS lands in Utah and Colorado, and other Federal lands in Arizona, New Mexico, Colorado, and Utah, used by currently known populations of Mexican spotted owls. In addition, we included areas where owls could occur based on the presence of the appropriate topography, elevation, and habitat types (protected and restricted habitat areas as defined in the Recovery Plan).

All areas designated as critical habitat for the Mexican spotted owl are within the geographical area occupied or potentially occupied by the Mexican spotted owl, in accordance with section 3(5)(A)(i) of the Act, which provides that areas outside the geographical area occupied by the species may meet the definition of critical habitat upon determination that they are essential for the conservation of the species. It is essential to protect all designated occupied areas as well as potentially occupied areas that will provide habitat for recovery of this species.

The designated critical habitat constitutes our best assessment of areas needed for the conservation of the owl and is based on the best scientific and commercial information available. The areas are essential to the conservation of the species because they either currently support populations of the owl, or because they currently possess the necessary habitat requirements for nesting, roosting, and foraging (see description of primary constituent elements). Existing human-constructed features and structures within designated critical habitat (e.g., buildings, roads, etc.) do not contain Mexican spotted owl habitat and are not considered critical habitat.

Some units that were proposed as critical habitat were significantly reduced within Arizona and New Mexico because of the exclusion of FS lands. Nevertheless, the remaining Federal lands (e.g., Bureau of Land Management (BLM), National Park Service, etc.) within the mapped boundaries in Arizona and New Mexico, are designated as critical habitat. The critical habitat designation on Federal lands adjacent to FS lands within Arizona and New Mexico will ensure that “special management considerations or protections” are provided for the Mexican spotted owl on all Federal lands, pursuant to the definition of critical habitat in section 3 of the Act. We did not designate some areas that are known to have widely scattered owl sites, low population densities, and/or marginal habitat quality, which are not considered to be essential to this species’ survival or recovery.

State and private lands are not included in this designation. The overwhelming majority of Mexican spotted owl records are from Federal and tribal lands, indicating that those lands are essential to the species’ recovery. However, we did not include tribal lands or National Forest lands within Arizona and New Mexico in the designation because we determined that the management of the Mexican spotted owl on those lands with appropriate habitat management plans provides substantial protection and that designation of critical habitat would provide little or no additional benefit to the species.

2.2.2 Designation identical to the 1995 Final Rule

The 1995 final rule designating critical habitat for the Mexican spotted owl was based on the proposed critical habitat designation published in 1994 (59 FR 63162). The previous critical habitat designation was based on extensive use and evaluation of owl habitat and territory maps, vegetation maps, aerial photography, and field verification to identify areas for designation as

critical habitat. Several qualitative criteria (including currently suitable habitat, large contiguous blocks of habitat, occupied habitat, range wide distribution, the need for special management or protection, adequacy of existing regulatory mechanisms) were considered when identifying critical habitat areas. The 1995 critical habitat designation was published prior to the completion of the Recovery Plan for the Mexican spotted owl and was based on information that was current at that time. As a result of several court rulings, as discussed in section 1.1 of this document, we removed the critical habitat designation for the owl from the Code of Federal Regulations on March 25, 1998 (63 FR 14378).

Five years have passed since the 1995 critical habitat designation and there have been substantial changes in the information available. Therefore, a designation of critical habitat that included only those areas proposed in 1994 and finalized in 1995, would not conform to the requirement of the Endangered Species Act to consider the best available scientific and commercial information in designation of critical habitat. In addition, there have been substantial changes in policy and court interpretations of critical habitat that require consideration of areas not included in the 1995 designation. For the above reasons, this alternative was not considered to be viable and will not be analyzed further.

2.2.3 Designation of the Entire Historical Range

We considered proposing to designate the entire historical range of the Mexican spotted owl, which would include all areas where owls have been known to occur. In addition to the critical habitat units identified in the proposed rule (65 FR 45336), areas such as Dinosaur National Park in northwest Colorado; Mesa Verde National Park, Ute Mountain Ute Reservation, Southern Ute Reservation, other Forest Service and Bureau of Land Management land in southwest Colorado; and the Guadalupe and Davis Mountains in southwest Texas would be included, as well as State and private lands within the critical habitat boundaries. All areas that are known to have widely scattered owl sites, low population densities, and/or marginal habitat quality, which are not considered to be essential to this species' survival or recovery, would be included in this alternative. Given that the majority of the owl's range occurs on Federal and tribal lands, State and private lands are not considered essential to the recovery of the species and therefore are not designated as critical habitat. Exclusion of State, private, and some tribal lands from the designation will not result in extinction or slow recovery of this species. Additionally, much of these lands do not meet part (5)(A)(i)(I) of the definition of critical habitat stated above; we are, therefore, not designating those lands as critical habitat. As a result, this alternative was removed from further consideration because we concluded that the Proposed Action of designating 1.9 million hectares (ha) (4.6 million acres (ac)) of Federal lands, is sufficient to provide for the survival and recovery of the species within all major segments of the owls historical range.

2.2.4 Designation of Only The Occupied Portions of the Historical Range

We considered only including those areas currently known to be occupied. The Service believes the occupied and potentially occupied areas included in the final designation of critical habitat, signed on January 16, 2001, and becoming effective 30 days following publication in the Federal Register, are needed for the conservation of the Mexican spotted owl and that recovery of the species will require all of these areas. Omission of any critical habitat unit may result in loss of significant genetic and geographic components of the species, unless those lands provide “special management considerations or protections” for the Mexican spotted owl, pursuant to the definition of critical habitat in section 3 of the Act. If “special management considerations or protections” are not provided and lands are excluded from the designation, the value of critical habitat in those areas would be undermined in terms of size, connectivity, and habitat and community diversity. No viable alternative exists if portions of the critical habitat in the Proposed Action are omitted; thus, this alternative was not considered viable.

3.0 Description of the Affected Environment

The geographic area for the Proposed Action includes the portions of canyon and montane forest habitats across a range that extends from southern Utah and the front range of Colorado, through Arizona and New Mexico. We designated approximately 1.9 million hectares (ha) (4.6 million acres (ac)) of critical habitat in Arizona, Colorado, New Mexico, and Utah, on Federal lands that are composed of a combination of protected and restricted habitat within forested and canyon habitat types.

3.1. Physical and Biological Environment

The Mexican spotted owl occupies a broad geographic area, largely restricted to montane forests and canyons. The owl occurs in disjunct localities, corresponding to isolated mountain ranges and canyons (USDI 1995). These forested mountain ranges and canyons encompass a wide array of physical, climatic, and habitat features. The range of the owl is divided into 11 Recovery Units (RU), 5 in Mexico and 6 in the United States, as identified in the Recovery Plan (USDI 1995). Only those RUs within the United States are included in this designation. The Recovery Plan identified these RUs based on the following considerations (in order of importance: 1) physiographic province, 2) biotic regimes, 3) perceived threats, 4) administrative boundaries, and 5) known patterns of owl distribution. The four major physiographic provinces that were used in delineating the RUs in the United States are the Colorado Plateau, Basin and Range, Southern Rocky Mountains, and Upper Gila Mountains.

The vegetative communities and structural attributes used by the owl vary across the designated critical habitat. They are composed primarily of warm-temperate and cold-temperate forests,

and, to a lesser extent, woodlands and riparian deciduous forests. The mixed-conifer community appears to be frequently used throughout most portions of the owl's range (Skaggs and Raitt 1988; Ganey and Balda 1989, 1994; Service 1995). Mixed-conifer forests contain several species of overstory trees. The most common are white fir (Abies concolor), Douglas fir (Pseudotsuga menziesii), and ponderosa pine (Pinus ponderosa). Less common species are southwestern white pine (P. strobiformis), limber pine (P. flexilis), aspen (Populus tremuloides), and corkbark fir (Abies lasiocarpa var. arizonica). The understory within mixed-conifer communities provides important roosting sites for Mexican spotted owls. The understory usually contains the same conifer species found in the overstory, with Gambel oak (Quercus gambelii), maples (Acer grandidentatum and A. glabrum), and New Mexico locust (Robinia neomexicana) also present. Montane riparian canyon bottoms used by owls in the mixed-conifer zone may contain box elder (Acer negundo), narrowleaf cottonwood (Populus angustifolia), maples (Acer spp.), and alders (Alnus spp.).

Mexican spotted owls nest, roost, forage, and disperse in a diverse array of biotic communities. Nesting habitat is typically in areas with complex forest structure or rocky canyons, and contains uneven-aged, multi-storied mature or old-growth stands that have high canopy closure (Ganey and Balda 1989, USDI 1991). In the northern portion of the range (southern Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons. Elsewhere, the majority of nests appear to be in Douglas fir trees (Fletcher and Hollis 1994; Seamans and Gutierrez 1995). A wider variety of tree species is used for roosting; however Douglas fir is the most commonly used species (Ganey 1988, Fletcher and Hollis 1994, Young *et al* 1998). Spotted owls generally use a wider variety of forest conditions (mixed conifer, pine-oak, ponderosa pine, piñon-juniper) for foraging than they use for nesting/roosting. Canyon habitats used for nesting and roosting are typically characterized by the cooler conditions found in steep, narrow canyons, often containing crevices, ledges, and/or caves. These canyons frequently contain small clumps or stringers of ponderosa pine, Douglas fir, white fir, and/or piñon-juniper. Deciduous riparian and upland tree species may also be present. Adjacent uplands are usually vegetated by a variety of plant associations including piñon-juniper woodland, desert scrub vegetation, ponderosa pine-Gambel oak, ponderosa pine, or mixed conifer.

Mexican spotted owls consume a variety of prey throughout their range, but commonly eat small- and medium-sized rodents such as woodrats (Neotoma spp.), peromyscid mice (Peromyscus spp.), and microtine voles (Microtus spp.). Owls also may consume bats, birds, reptiles, and arthropods (Ward and Block 1995). Each prey species uses a unique habitat, so that the differences in the owl's diet across its range likely reflect geographic variation in population densities and habitats of both the prey and the owl (Ward and Block 1995). Deer mice (P. maniculatus) are widespread in distribution in comparison to brush mice (P. boyleyi), which are restricted to drier, rockier substrates, with sparse tree cover. Mexican woodrats (N. mexicana) are typically found in areas with considerable shrub or understory tree cover and high log

volumes or rocky outcrops. Mexican voles (*M. mexicanus*) are associated with high herbaceous cover, primarily grasses, whereas long-tailed voles (*M. longicaudus*) are found in dense herbaceous cover, primarily forbs, with many shrubs and limited tree cover.

The Mexican Spotted Owl Recovery Plan provides for three levels of habitat management: protected areas, restricted areas, and other forest and woodland types. Protected habitat includes all known owl sites, all areas within mixed conifer or pine-oak types with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years, and all reserved lands (designated Wilderness or other legally or administratively reserved areas). The Recovery Plan recommends that protected areas, or Protected Activity Centers (PACs), be designated around known owl sites. A PAC would include an area of at least 243 ha (600 ac) that includes the best nesting and roosting habitat in the area. Based on available data, the recommended size for a PAC includes, on average, 75 percent of the foraging area of an owl.

Restricted habitat includes mixed conifer forest, pine-oak forest, and riparian areas outside of protected areas described above (i.e., areas that do not currently contain owls). These areas are essential to the conservation of the species because the Recovery Plan identifies these areas as providing additional owl habitat for future occupancy. All restricted habitat is designated as critical habitat and has or is capable of having one or more of the primary constituent elements.

Other forest and woodland types (ponderosa pine, spruce-fir, piñon-juniper, and aspen) are not expected to provide nesting or roosting habitat for the Mexican spotted owl (except when associated with rock canyons). Thus, these other forest and woodland types are not considered to be critical habitat unless specifically delineated within PACs. Although the Recovery Plan does not provide owl-specific guidelines to managing these areas, these and other habitat types may provide important foraging and dispersal habitat for the owl, particularly if adjacent to protected or restricted areas. Therefore, these areas should be managed for landscape diversity, mimicking natural disturbance patterns, incorporating natural variation in stands, and retaining special features such as snags and large trees (USDI 1995).

3.2 Human Environment

There is a wide diversity of human activities and land uses throughout or adjacent to the areas designated as critical habitat in Arizona, Colorado, New Mexico, and Utah. Uses include timber harvest, personal use commodities (fuelwood, vigas, latillas), livestock grazing, fire management activities, oil and gas leases, sand and gravel extraction, mining, military maneuvers, road development, utility corridors, hydroelectric facilities, geothermal development, and a wider variety of recreational activities.

The designation of critical habitat directly affects only Federal agencies. The Act requires

Federal agencies to ensure that actions they fund, authorize, or carry out do not destroy or adversely modify critical habitat to the extent that the action appreciably diminishes the value of the critical habitat for the survival and recovery of the species. Individuals, organizations, States, local and Tribal governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Although there are many parcels of State and private lands within the critical habitat boundaries, these lands are not considered critical habitat. Given that the majority of the owl's range occurs on Federal and tribal lands, we do not feel that State and private lands are essential to the recovery of the subspecies and should not be designated as critical habitat.

3.3 Tribal lands

Several tribes are located within the geographical area occupied by the Mexican spotted owl. Each tribe is a sovereign entity, with its own government and community. There is a unique and distinctive political relationship between the United States and Native American governments, as defined by treaties, statutes, court decisions, and the Constitution, that differentiate Native American governments from other interests and constituencies, and that relationship extends to all Federal governments.

In our 1994 critical habitat proposal for the owl, we identified lands of the White Mountain Apache, Jicarilla Apache, Mescalero Apache, San Carlos Apache, Southern Ute, Ute Mountain Ute, and Navajo Nation Tribes as containing habitat that may be appropriate for designation of critical habitat. The Proposed Action included lands of the Mescalero Apache, San Carlos Apache, and Navajo Nation that are currently known to support owls. However, after reevaluating the available data, we no longer feel that designating these areas is appropriate. As provided under section 4(b)(2) of the Act, we solicited information on the possible economic and other impacts of critical habitat designation, and continued to work with the tribes in developing voluntary measures adequate to conserve Mexican spotted owls on tribal lands. During the second comment period, the Mescalero Apache and Navajo Nation completed management plans for the Mexican Spotted Owl. The San Carlos Apache Reservation management plan is substantially complete and is expected to be completed in March of 2001. We reviewed a draft of their plan and found it to be consistent with the Recovery Plan. We determined that adequate special management is being provided for the Mexican spotted owl on the Navajo Nation and Mescalero Apache lands and, therefore, they were not included in the designation since they do not meet the definition of critical habitat. In the case of the San Carlos Apache Reservation we found, in accordance with section 4(b)(2) of the Act, that the benefits of excluding their lands outweighed the benefits of including them in the designation. We reviewed each of these plans and determined that the management of the Mexican spotted owl will provide substantial

protection for the relevant habitat areas, and that designation of critical habitat will provide little or no additional benefit to the species, particularly since all the areas are presently occupied by the owl. More importantly, designation of critical habitat would be expected to adversely impact our working relationship with the tribes and we believe that Federal regulation through critical habitat designation would be viewed as an unwarranted and unwanted intrusion into tribal natural resource programs. Our working relationship with the tribes has been extremely beneficial in implementing natural resource programs of mutual interest.

During our review of the Navajo Nation management plan for the Mexican spotted owl, we concluded that there is a unique land ownership of Navajo National Monument and Canyon de Chelly, wherein the land is owned by the Navajo Nation, but under the management authority and administration of the National Park Service. Although other lands owned by the Navajo Nation were excluded from critical habitat, critical habitat was designated on Navajo National Monument and Canyon de Chelly, because the National Park Service retains management authority over these lands, and any management that may have the potential to adversely affect the owl or its critical habitat would stem from their actions.

Since our previous critical habitat designation, we learned that the Southern Ute Reservation has not supported spotted owls historically, and our assessment revealed that the Reservation does not support habitat essential to the species' conservation. Thus, lands of the Southern Ute Reservation do not meet part (5)(A)(i)(I) of the definition of critical habitat stated above; we are, therefore, not designating those lands as critical habitat.

Lands of the Ute Mountain Ute Tribe are not being designated due to the low population density and isolation from other occupied areas in Colorado, New Mexico, and Utah. The owls on these lands in southwestern Colorado are not believed to be essential for the survival or recovery of the species. Thus, these lands do not meet part (5)(A)(i)(I) of the definition of critical habitat stated above; we are, therefore, not designating those lands as critical habitat.

4.0 Environmental Consequences

This section reviews the expected environmental consequences of designating critical habitat for the Mexican spotted owl under the proposed action and the environmental consequences of the No Action Alternative. Regardless of which alternative is chosen, in accordance with section 7(a)(2) of the Act, Federal agencies are required to review actions they authorize, fund, or carry out to determine the effects of Proposed Actions on federally listed species. If the Federal agency determines that its action may affect a listed species, it must enter into consultation with the Fish and Wildlife Service. The consultation results in a biological opinion from the Service as to whether the Proposed Action is likely to jeopardize the continued existence of the species, which is prohibited under the Act.

A similar process would be required if critical habitat is designated. Federal agencies would have to review their action for the effects on critical habitat, and would enter into section 7 consultation with us on actions they determine may affect critical habitat. That consultation would result in a biological opinion as to whether the Proposed Action is likely to destroy or adversely modify designated critical habitat, which is also prohibited under the Act.

Activities that would destroy or adversely modify critical habitat are defined as those actions that "appreciably diminish the value of critical habitat for both the survival and recovery" of the species (50 CFR 401.02). Activities that would jeopardize the continued existence of a species are defined as those actions that "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery" of the listed species (50 CFR 402.02). Given the similarity of these definitions, activities that would likely destroy or adversely modify critical habitat would also likely jeopardize the species when the action area is occupied by Mexican spotted owl. Therefore, implementation of the Proposed Action would result in no environmental consequences when compared to the No Action Alternative in occupied areas.

Potential environmental consequences that may result from implementation of the No Action and Proposed Actions are discussed below. All impacts are expected to be indirect, as critical habitat designation does not in itself directly result in any alteration of the environment. Designation of critical habitat may in some cases provide some benefits to a species by alerting Federal agencies to situations when section 7 consultation is required. This may be particularly true in cases where the action would not result in direct mortality, injury or harm to individuals of a listed species (e.g., an action occurring within a critical habitat area when a species is not present). Another potential benefit is that critical habitat may help to focus Federal, State, and private conservation and management efforts. In areas which do not currently contain Mexican spotted owls, critical habitat designation may have some effect in that it will require Federal agencies to consult with us pursuant to section 7 of the Act, to insure their actions do not destroy or adversely modify critical habitat. In the case of the owl, however, we are already consulting with Federal agencies on activities that may affect the owl within the Recovery Units. Since the proposed critical habitat units all occur within the Recovery Units, we do not anticipate any additional impact due to designating potentially occupied habitat within the Recovery Units. Federal agencies have been required to ensure that their actions do not jeopardize the continued existence of the Mexican spotted owl since its listing in 1993. The prohibition against adverse modification of critical habitat is not expected to impose any additional restrictions to those that currently exist in areas of designated critical habitat.

As required by NEPA, this document is in part intended to disclose the programmatic goals and objectives of the Act. These objectives include the protection of natural communities and ecosystems, the minimization of fragmentation and the promotion of the natural patterns and

connectivity of wildlife habitats, the promotion of native species and the avoidance of the introduction of non-native species, the protection of rare and ecologically important species and unique or sensitive environments, the maintenance of naturally occurring ecosystem processes and genetic and structural diversity, and the restoration of ecosystems, communities and the recovery of species.

4.1 Effects on the Mexican Spotted Owl

The No Action Alternative would have no significant impacts to Mexican spotted owls in areas presently occupied by the species because the protections resulting from their listing in 1993 and the associated requirements of section 7 of the Act are already in place and are duplicative of protections associated with critical habitat designation.

Implementation of the Proposed Action would provide protection under section 7 of the Act to areas potentially occupied by the Mexican spotted owl, thus preserving recovery options for the species. Designation of critical habitat would result in the requirement that any such activities be reviewed for their effects on critical habitat and that review may result in measures to minimize adverse effects. Implementation of the no action alternative would forego the opportunity to provide such benefits.

Benefits to Mexican spotted owl that may accrue from designation of critical habitat would be the requirement under section 7 of the Act that Federal agencies review their actions to assess their effects on critical habitat. Federal actions that could possibly adversely affect Mexican spotted owl habitat are further discussed in section 4.4 below. Designation of critical habitat would result in the requirement that all Federal actions be reviewed for their effects on critical habitat and that review may result in measures to minimize adverse effects.

4.2 Effect on Fish, Wildlife and Plants

The No Action alternative would have no significant impacts to fish, wildlife or plants beyond those protections already in place as a result of listing of Mexican spotted owls in 1993 and associated requirements of section 7 of the Act.

The objectives of designating critical habitat include the protection of natural communities and ecosystems, the minimization of fragmentation and the maintenance and restoration of the natural landscape patterns and connectivity of wildlife habitats, the promotion of native species and the avoidance of the introduction of non-native species, the protection of rare and ecologically important species and unique or sensitive environments, the maintenance of naturally occurring ecosystem processes and genetic and structural diversity, and the restoration of ecosystems, communities and the recovery of species.

In areas currently occupied by the Mexican spotted owl, fish, wildlife, and plants may indirectly benefit as a result of ecosystem protections provided through the conservation of the owl and the associated requirements of section 7 of the Act. Designation of critical habitat under the Proposed Action in areas not currently occupied by the owl could provide similar ecological benefits to fish, wildlife, and plants.

4.3 Recreational Impacts

The No Action alternative would have no impacts upon the continued use of the critical habitat area for camping, hunting, and fishing beyond any impacts that resulted from the 1993 listing of the Mexican spotted owl.

Implementation of the Proposed Action would help protect native ecosystems in Arizona, Colorado, New Mexico, and Utah. The designated critical habitat is mostly composed of Federal lands (e.g., National Forests, Bureau of Land Management, National Park Service, and National Recreation Areas) that are managed, in part, for recreation. Neither alternative would impact the continued recreational use of these areas.

4.4 Agricultural, Including Timber, Fuelwood, and Grazing Impacts

The No Action alternative would have no impacts upon agricultural activities including timber harvesting and grazing beyond those already resulting from the listing of the 1993 listing of Mexican spotted owls and the associated requirements of section 7 of the Act.

The implementation of the Proposed Action could potentially affect Federal activities or private or other non-Federal activities. Under the Act, critical habitat may not be adversely modified by a Federal agency action; critical habitat does not impose any restrictions on non-Federal persons unless they are conducting activities funded or otherwise sponsored or permitted by a Federal agency. The activities that could be affected are those that require a Federal action (permit, authorization, or funding) and that involve such activities as removing or destroying Mexican spotted owl habitat (as defined in the primary constituent elements discussion), whether by mechanical or other means (e.g., timber harvest, right-of-way access, road construction, development, etc.), including indirect effects that appreciably decrease habitat value or quality. Federal activities that could be impacted are those that affect protected or restricted habitat by the Forest Service, Bureau of Indian Affairs, Bureau of Land Management, Department of Defense, Department of Energy, National Park Service, Federal Highway Administration, or Federal Emergency Management Agency; vegetative management projects (including timber harvest, timber salvage, and tree density control activities such as thinning, insect and disease suppression activities, snag removal, and certain fire/ecosystem projects such as prescribed natural and management ignited fire); livestock grazing in riparian habitat; land acquisition and disposal; oil

and gas development; mining and mineral exploration; military maneuvers; road development, maintenance, and repair; utility construction and repair; construction of campgrounds and other recreational developments; and access easements.

Actions not likely to destroy or adversely modify critical habitat include “personal use” commodity production such as fuelwood, latilla and viga, Christmas tree cutting, and most recreational activities including hiking, camping, fishing, hunting, cross-country skiing, off-road vehicle use, and various activities associated with nature appreciation. The Service does not expect any restrictions to those activities as a result of critical habitat designation.

4.5 Socioeconomic Impacts

The No Action alternative would have no impacts to the economic vitality of existing businesses within the area, business districts, the local economy, tax revenues, public expenditures, or municipalities beyond those impacts already resulting from the 1993 listing of the Mexican spotted owl and the associated requirements of section 7 of the Act.

The Proposed Action may have some socioeconomic impacts compared to the No Action alternative if section 7 consultation on Federal actions in areas potentially occupied by the Mexican spotted owl result in curtailment of those programs listed above (e.g., vegetative management projects, livestock grazing, land acquisition and disposal; oil and gas development; mining and mineral exploration, etc.) or other economic activity. Conversely, conservation of natural ecosystems may provide economic benefits in attracting nature enthusiasts, such as bird watchers, to the area.

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific and commercial information available and consider the economic and other relevant impacts of designating a particular area as critical habitat. We based this designation on the best available scientific information, including recommendations in the species' recovery plan. We utilized the economic analysis and our analysis of other relevant impacts, and considered all comments and information submitted during the public hearing and comment period, to make a final critical habitat designation.

4.6 Direct and Indirect Effects

Designation of critical habitat in occupied areas is not anticipated to result in direct effects on the components, structures, and functioning of canyon and forested habitats, or the aesthetic, historic, economic, social, and health resources of the area, beyond those effects resulting from the 1993 listing of Mexican spotted owl and associated requirements of section 7 of the Act. However, at this time, the best available information leads us to conclude that there will be direct

impacts beyond those already associated with the species listing, in potentially occupied areas designated as critical habitat. For example, designation of critical habitat in areas potentially occupied by the owl could provide similar ecological benefits to fish, wildlife, and plants. Furthermore, a designation of critical habitat will provide some educational benefit by formally identifying on a range-wide basis those areas essential to the conservation of the species, and thus, the areas likely to be the focus of our recovery efforts for the Mexican spotted owl.

Indirect effects of the designation that are reasonably foreseeable include focusing conservation activities by identifying areas that are essential to the conservation of the species, regardless of whether they are currently occupied by the listed species, thus alerting the public and land managing agencies to the importance of an area to conservation. Similarly, critical habitat designation may alert Federal agencies to situations requiring section 7 consultation. Therefore, the possibility exists that private entities could be impacted if Federal actions are modified by the designation of critical habitat. While we are unable to reliably estimate those impacts, they are not expected to be significant.

4.7 Cumulative Impact

Designation of critical habitat for the Mexican spotted owl in presently occupied areas will have no incremental impact when added to other past, present, and reasonably foreseeable future actions within the canyon and forested habitats. In potentially occupied areas there may be some impact on Federal activities. However, we expect this impact to be relatively small because in addition to the Mexican spotted owl, the subject of the Proposed Action, several listed and candidate species may occur in the action area. Some of these include the Gila trout, spikedace, loach minnow, southwestern willow flycatcher, cactus ferruginous pygmy-owl, and the threatened bald eagle. Federal agencies are required to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of the listed species, or destroy or adversely modify designated critical habitat in accordance with section 7(a)(2) of the Act. Activities that adversely modify critical habitat are defined as those actions that “appreciably diminish the value of critical habitat for both the survival and recovery” of the species (50 CFR 401.02). Activities that jeopardize a species are defined as those actions that “reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery” of the listed species (50 CFR 402.02). According to these definitions, activities that destroy or adversely modify critical habitat would ordinarily jeopardize the species. Therefore, designation of critical habitat has very rarely resulted in greater protection than that afforded under section 7 by the listing of a species. Section 7 consultations apply only to actions with Federal involvement (i.e., activities authorized, funded, or conducted by Federal agencies), and do not impact activities strictly under State or private authority.

In practice, the designation of critical habitat for the Mexican spotted owl will likely provide

little or no additional benefits to the species in presently occupied areas because there are functioning program activities already alerting Federal agencies and the public of endangered species concerns. However, there may be some benefits in potentially occupied habitat.

5.0 Council on Environmental Quality Analysis of Significance

Under CEQ 40 CFR Part 1508.27, the determination of “significantly” requires consideration of both context and intensity.

5.1 Context: Based upon our responses from agencies and the public, although long-term, any effects will not be national, only regional and mostly local in context; and any that occur are expected to be small.

5.2 Intensity: Intensity is defined by CEQ as referring to the severity of impact. The following ten points identified by CEQ were considered in evaluating intensity.

1. Both beneficial and adverse impacts may occur as a result of this designation; most are expected to be beneficial to the environment and any adverse societal impacts are expected to be small.
2. This designation will not have a discernable impact on human safety. For example, some commenters questioned whether this designation would cause delays in the Forest Service’s ability to reduce the risk of catastrophic wildfire in a timely manner. The designation of critical habitat likely will not require any additional restrictions for section 7 consultations, including projects designed to reduce the risk of wildfire (e.g., prescribed burns, mechanical thinning, etc.).
3. Although several areas designated as critical habitat are in proximity to historic and cultural sites, parklands, farmland, wetlands, scenic rivers and ecologically critical areas, no major adverse impacts will occur to these areas; in fact, the ecologically critical areas are expected to only benefit from this designation.
4. There is a perception by some segments of the public that critical habitat designation will severely limit property rights; however, critical habitat designation has no effect on private actions on private land that do not involve Federal approval or action. Therefore, we conclude that this misperception will be clarified by the Final Rule and will result in this designation not being highly controversial.
5. The Service has designated critical habitat for other species in the recent past and we are familiar with the associated effects. Therefore, we do not anticipate any effects to the human environment and we are highly certain this action does not involve any unique or unknown risks.

6. This designation of critical habitat is not expected to set any precedents for future actions with significant effects or represent a decision in principle about a future consideration because critical habitat has been designated before for other species, as required by law, often in close proximity to or within the same lands involved in this designation.
7. This designation of critical habitat will be additive (cumulative) to critical habitat that has been, and will be, designated for other species. However, it is the Service's conclusion that the beneficial and adverse impacts of any and all critical habitat designations are small, and therefore insignificant, due to the existing impacts, both beneficial and adverse, already resulting from the listing of the species involved.
8. This designation will have no adverse effects to National Register of Historic Places or other cultural sites and it could possibly benefit historic sites near forested areas due to focusing conservation efforts on reducing the risk of catastrophic wildfire.
9. All impacts from this designation of critical habitat are certain to be totally beneficial to endangered and threatened species, particularly the Mexican spotted owl.
10. This designation of critical habitat will not violate any Federal, state, or local laws or requirements imposed for the protection of the environment.

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