

## **Mexican Spotted Owl (*Strix occidentalis lucida*)**

NMPIF level: Species Conservation Concern, Level 1 (SC1)

NMPIF assessment score: 20

NM stewardship responsibility: High

National PIF status: Watch List

New Mexico BCRs: 16, 34, 35

Primary breeding habitat(s): Mixed Conifer Forest, Ponderosa Pine Forest

Other habitats used: Spruce-Fir Forest, Madrean Pine-Oak Woodland, Montane Riparian, Cliff

### **Summary of Concern**

Although more variable in habitat use than other races of the Spotted Owl, the Mexican Spotted Owl prefers mature forest with a closed canopy and complex vertical structure. It has declined significantly due to habitat loss and is further threatened in New Mexico by timber harvesting, severe stand-replacing fires, and climatic change.

### **Associated Species**

Band-tailed Pigeon (SC2), Dusky Flycatcher, Virginia's Warbler (SC1), Dark-eyed Junco

### **Distribution**

Spotted Owl is widely distributed in appropriate habitat across the northwest Pacific Coast and southern Rocky Mountain states and Mexican highlands. One of three subspecies, the Mexican Spotted Owl is patchily distributed from southern Utah and Colorado south through isolated mountain ranges of Arizona, New Mexico, western Texas and northern Mexico, and through the Sierra Madre Occidental as far south as Michoacan (Gutierrez et al. 1995).

In New Mexico, Spotted Owls occur in summer and winter throughout the state, except for in the eastern plains (BCR 18). They are more abundant in the south. Populations in the Gila National Forest (BCR 34) and Sacramento Mountains (BCR 35) are among the largest for this subspecies.

## Ecology and Habitat Requirements

Mexican Spotted Owls occupy primarily mixed conifer forests dominated by Douglas-fir, true fir and pine, or pine with an oak or other broad-leafed understory component. Favored habitat is often steep forested canyons with cliffs, perennial water, and riparian vegetation (Gutierrez et al. 1995, U.S. Fish and Wildlife Service 1995, Willey 1993). It may also occur in rocky canyons, particularly in the northern portion of its range. The species prefers old growth where available and generally occupies uneven-aged forests with complex vertical structure (Ganey and Balda 1989a).

In mixed conifer, breeding owls select sites with more mature Douglas-fir and pine, canopy closure of 75% or more, and the presence of an oak understory (Seamans and Gutierrez 1995, Peery et al. 1999). In pine-oak habitat, territories may be located on more moderate slopes with 60% or greater canopy cover and are less concentrated in canyon bottoms (Ganey et al. 2000). In the Sacramento Mountains, 75% of nests were located in Douglas-fir, of which 61% were in dwarf mistletoe clumps. Nest trees averaged over 150 years in age (Seamans and Gutierrez 1995). In steep-walled canyons, owls may also nest in cliff crevices (Gutierrez et al. 1995).

Territory sizes in Arizona and New Mexico range from 7-11 square kilometers (Kroel 1991). Owls may forage and roost in a wider range of habitats than are used for nesting, but generally prefer sites with high canopy closure, live-tree basal area, and snag density, and the presence of fallen logs (Ganey and Balda 1989b). Fledglings may depend on oak thickets for roosting and to avoid predator detection (Gutierrez et al. 1995). In winter, lower-elevation pinyon-juniper habitat may be used. The prey base of the species in New Mexico is strongly affected by climatic variation. A recent study shows annual survival and reproduction of Mexican Spotted Owls is positively correlated with previous year's precipitation (Seamans et al. 2002).

Adult Mexican Spotted Owls are highly faithful to breeding sites, and the majority of dispersing birds are juveniles (Arsenault et al. 1997). Dispersal habitat is more variable than breeding habitat. Nearly all isolated patches of mixed conifer or ponderosa pine in New Mexico and the southwest could be reached by dispersing owls (U.S. Fish and Wildlife Service 1995). Dispersers have also established home ranges in pinyon-juniper habitat (Ganey et al. 1998).

## Conservation Status

### Species Assessment

DISTRIBUTION	3
THREATS	4
GLOBAL POPULATION SIZE	5

LOCAL POPULATION TREND	4
IMPORTANCE OF NEW MEXICO TO BREEDING	4
<b>COMBINED SCORE</b>	<b>20</b>

Mexican Spotted Owl is a Species Conservation Concern, Level 1 species for New Mexico, with a NMPIF combined score of 20. Spotted Owl is a national PIF Watch List Species. It receives high vulnerability scores from PIF for its small population size, and from NMPIF for Threats to New Mexico Breeding and Local Population Trend. The Mexican Spotted Owl was federally listed as Threatened by the U.S. Fish and Wildlife Service in 1993.

### **Population Size**

Total population for the state is unknown. In the early 1990s, a minimum of 777-1554 owls were estimated for the southwestern United States (Gutierrez et al. 1995).

### **Population Trend**

Few BBS data exist for Mexican Spotted Owl, and no present monitoring system provides adequate data to determine a long-term trend at the state or regional level. Seamans et al. (1999) reported declines in one New Mexico population of 10% per year from 1991 to 1997.

### **Threats**

Mexican Spotted Owls are threatened by, and have declined as a result of, loss or degradation of suitable old-growth and mature forest habitat. Habitat loss occurs due to commercial timber harvesting and firewood cutting. Today, a greater threat may be loss of mature trees to stand-replacing fires, especially in steep canyon areas. Degradation may occur as a result of forest management practices aimed at maintaining younger and more even-aged stands (Gutierrez et al. 1995). The negative response of prey and owl populations to drought may compound threats posed by habitat alteration (Seamans et al. 1999).

Forests that have been selectively logged in the past may be reoccupied within 40-100 years if residual elements such as snags, large trees with cavities, and woody debris are maintained (Gutierrez et al. 1995). Impacts of prescribed burning and forest thinning on Mexican Spotted Owls are unclear. These actions reduce fuel loads and can lessen the potential for catastrophic fires. However Ganey et al. (1999) note there may be some conflict between the owl's strong preference for closed-canopy habitat and current efforts to restore more open conditions in ponderosa pine forests.

Further information on threats can be found in the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995) available online at:

[http://mso.fws.gov/recovery\\_plan.htm](http://mso.fws.gov/recovery_plan.htm).

### **Management Issues and Recommendations**

Management for Mexican Spotted Owls in New Mexico should follow the recommendations of the Recovery Plan (U.S. Fish and Wildlife Service 1995) and focus on protection and enhancement of habitat in all known and potential population areas.

### **NMPIF Recommendations**

- Maintain large stands of mature and old-growth ponderosa pine and mixed conifer forest, particularly in areas with steep slopes.
- Protect and restrict activity in 243-hectare (600-acre) areas around known nest sites, or around roost sites if nest sites are unknown (U.S. Fish and Wildlife Service 1995, Peery et al. 1999). Carry out only limited wood cutting activities around previously occupied sites.
- Manage timber harvesting and firewood cutting to maintain an uneven-aged forest structure.
- Limit oak removal in areas of known occurrence, maintaining a closed canopy understory (especially important for fledged young).
- Maintain a 105-m buffer zone around nests for helicopter overflights in the Lincoln National Forest (Delaney et al. 1999).
- Restore riparian habitats and restrict human use of appropriate riparian areas.

### **Species Conservation Objectives**

#### **PIF Objectives**

The PIF North American Landbird Conservation Plan designates Spotted Owl as an Immediate Management species, and sets an objective of increasing the species population by 50% in the next 30 years.

#### **NMPIF Objectives**

- Maintain or increase current populations in the Southern Rocky Mountains, especially in the Jemez Mountains.
- Maintain or increase current populations in the Guadalupe, Sacramento, Zuni, Chuska, Magdalena, San Mateo, Black Range, Pinos Altos, and Mogollon mountains, as well as other ranges where the species currently exists.

### Sources of Information

Arsenault, D. P., A. Hodgson, and P. B. Stacey. 1997. Dispersal movements of juvenile Mexican Spotted Owls (*Strix occidentalis lucida*) in New Mexico. *In* Biology and conservation of owls of the northern hemisphere. J. R. Duncan, D. H. Johnson, and T. H. Nichols, eds. USDA Forest Service GTR NC-190. St. Paul, MN, pp. 47-57.

Delaney, D. K., T. G. Grubb, P. Beier, L. L. Pater, and M. H. Reiser. 1999. Effects of helicopter noise on Mexican Spotted Owls. *J. Wildl. Manage.* 63:60-76.

Ganey, J. L., and R. P. Balda. 1989a. Distribution and habitat use of Mexican Spotted Owls in Arizona. *Condor* 91:355-361.

Ganey, J. L., and R. P. Balda. 1989b. Home range characteristics of Spotted Owls in northern Arizona. *J. Wildl. Manage.* 53:1159-1165.

Ganey, J. L., W. M. Block, J. K. Dwyer, B. E. Strohmeyer, and J. S. Jenness. 1998. Dispersal movements and survival rates of juvenile Mexican Spotted Owls in northern Arizona. *Wilson. Bull.* 110:206-217.

Ganey, J. L., W. M. Block, J. S. Jenness, and R. A. Wilson. 1999. Mexican Spotted Owl home range and habitat use in pine-oak forest: implications for forest management. *Forest Science* 45:127-135.

Ganey, J. L., Block, W. M., and King, R. M. 2000. Roost sites of radio-marked Mexican Spotted Owls in Arizona and New Mexico: sources of variability and descriptive characteristics. *Journal of Raptor Research* 34:270-278.

Gutierrez, R. J., A. B. Franklin, and W. S. Lahaye. 1995. Spotted Owl (*Strix occidentalis*). *In* Birds of North America, No. 179 (A Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Kroel, K. W. 1991. Home range and habitat use characteristics of the Mexican Spotted Owl in the southern Sacramento Mountains, New Mexico. M.S. Thesis, New Mexico State University. Branson BC 2999 K74 1991.

Peery, M. Z., R. J. Gutierrez, and M. E. Seamans. 1999. Habitat composition and configuration around Mexican Spotted Owl nest and roost sites in the Tularosa Mountains, New Mexico. *Journal of Wildlife Management* 63:36-43.

Seamans, M. E., and R. J. Gutierrez. 1995. Breeding habitat of the Mexican Spotted Owl in the Tularosa Mountains, New Mexico. *Condor* 97:944-952.

Seamans, M. E., R. J. Gutierrez, C. A. May, and M. Z. Perry. 1999. Demography of two Mexican Spotted Owl populations. *Conservation Biology* 13:744-754.

Seamans, M. E., R. J. Gutierrez, and C. A. May. 2002. Mexican Spotted Owl population dynamics: the influence of climatic variation on survival and reproduction. *Auk* 119:321-334.

Willey, D. W. 1993. Movement and habitat utilization by Mexican Spotted Owls within the canyonlands of Utah. Ph.D. Diss. Northern Arizona University, Flagstaff, AZ.

U.S. Fish and Wildlife Service. 1995. Recovery plan for the Mexican Spotted Owl. Albuquerque, NM.