The Mexican Spotted Owl (Strix occidentalis lucida) is a threatened subspecies in the United States (USDI 1993). Both the Mexican and California (S. o. occidentalis) Spotted Owl subspecies are distributed as fragmented populations across their respective ranges (USDI 1993, LaHaye et al. 1994). However, it is not known whether these distributional patterns represent metapopulations or are the result of isolation events because no cases of interpopulation (i.e., intermountain) dispersal have been published. A true metapopulation structure would depend on dispersal among populations (Levins 1970, Gutiérrez and Harrison in press).

In the course of extensive banding of juvenile (n = 95), subadult (n = 21), and adult (n = 57) Mexican Spotted Owls in the Tularosa Mountains, New Mexico, we recorded 3 cases of owl movement among mountain ranges. We report herein the circumstances of these movements.

Our study area is in west central New Mexico in the Tularosa Mountains (Fig. 1). We attempted to capture and color mark every Spotted Owl during 1991–1995 in a 323-km² study area (approximately 70% of the Tularosa Mountain range) using the methods of Forsman (1983). In 1994 we established random sample quadrats to estimate owl densities in areas surrounding the Tularosa Mountains.

The following movements were recorded:

1. We banded an adult female owl on 24 May 1994. This bird was paired with an adult male. A female was heard vocalizing from this territory as late as 13 July 1994. This female was found dead near Deming, New Mexico, on 19 January 1995. The bird was autopsied by a veterinarian in Las Cruces, New Mexico, who said probable cause of death was electrocution, which was consistent with circumstances leading to the bird’s discovery (i.e., found below a power pole where an electrical transformer short had occurred). Although the bird was 68 g lighter in weight when recovered than when banded, it was in good condition (i.e., no indication of starvation or poor health).

   The bird was recovered approximately 187 km south southeast of its banding location (Fig. 1). Of particular interest was the fact that the bird probably crossed several mountain ranges before it entered treeless Chihuahuan desert grassland where it was recovered. The nearest suitable owl habitat (e.g., mixed-conifer or pine-oak forest [Pinus ponderosa/Quercus spp.]) was in the Animas Mountains, a straight-line distance of approximately 80 km. The mountain range nearest (approximately 20 km) the bird’s final location was the Florida Mountains. The highest peak in these mountains is a prominent landmark (maximum elevation 2224 m) in the desert, but it contains no suitable owl habitat (Fig. 1).

   We surveyed this bird’s territory in early spring 1995. The male from 1994 was still present at the historical location, but we could not detect a female. However, by June we observed an adult female roosting with this male. Therefore, the female recovered at Deming apparently left her mate, a relatively uncommon event among territorial Spotted Owls (Gutiérrez et al. 1995).

   2. In 1993 we banded a juvenile female owl that we recaptured 56 km west northwest of its natal site in 1994 on Escudilla Mountain, Arizona (Fig. 1). This mountain is part of the San Francisco Mountain Range. This female was paired at the time of capture and had no young.
Fig. 1. Shortest distance and direction between banding location and final location of dispersing Mexican Spotted Owls in New Mexico. Shaded area represents all forested/woodland areas whether or not they are suitable habitat for Spotted Owls. Numbered lines correspond to numbers in text and do not imply actual dispersal route of the bird.
In 1992 we banded a juvenile female owl which we recaptured in 1994 in the Mogollon Mountains, New Mexico, 22 km south of its natal site (Fig. 1). This female was paired at the time of capture and had no young.

Considering that no examples of intermountain movements have been recorded among more extensively studied California Spotted Owl populations (LaHaye et al. 1992, 1994), these observations are notable. For example, between 1987 and 1995, approximately 750 juvenile and adult California Spotted Owls were banded in the San Bernardino, San Jacinto, Palomar, and San Gabriel mountain ranges with no subsequent recoveries in another mountain range (LaHaye et al. 1994).

Our observation of female-only emigration out of the Tularosa Mountains is consistent with the general observation of female-biased dispersal in birds (Greenwood 1980). Further, during our study we relocated a total of 10 dispersing juveniles in subsequent years. Of these, 8 (5 males, 3 females) dispersed within the Tularosa Mountains. The 5 females dispersed an average of 21.8 km (range = 7.75-56.32 km, s = 20.0) while the 5 males dispersed an average of 5.8 km (range = 2.04-12.58, s = 4.0). Thus, these females dispersed farther than males (Mann-Whitney U one-tailed test, z-value = -2.194, P = 0.0158), which also supports the idea of female-biased dispersal in Mexican Spotted Owls.

These intermountain movements also are consistent with a metapopulation structure (Levins et al. 1970, Gutiérrez and Harrison in press). In addition, while Spotted Owls are known to be obligate dispersers (Gutiérrez et al. 1995), the long-distance movement by an adult female does not fit the general model of Spotted Owl dispersal (Gutiérrez et al. 1985) in which juveniles are the more likely long-distance dispersers. However, dispersal carries risks, such as predation, starvation, and accidents while traveling in unfamiliar habitats. Even though the adult we banded accidentally died, it is possible that adult birds, which have greater experience, may have a higher probability of success when crossing desert grasslands or otherwise unsuitable habitats in the Southwest than juveniles, who have little hunting and predator-avoidance experience. Thus, while studies of juvenile Spotted Owl dispersal are essential to the study of metapopulation dynamics (Gutiérrez and Harrison in press), the role of dispersing adults in maintaining metapopulation structure should be considered carefully.

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LITERATURE CITED


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