

# Research Note



## An Apparent Case of Long-Distance Breeding Dispersal by a Mexican Spotted Owl in New Mexico

Joseph L. Ganey and Jeffrey S. Jenness

The Mexican spotted owl (*Strix occidentalis lucida*) is widely but patchily distributed throughout the southwestern United States and the Republic of Mexico (Gutiérrez and others 1995, Ward and others 1995). This owl typically occurs in either rocky canyonlands or forested mountain and canyon systems containing mixed-conifer or pine-oak (*Pinus* spp. - *Quercus* spp.) forests, and its distribution mirrors the availability of such areas (Ganey and Dick 1995, Ward and others 1995, USDI FWS 2012). Gene flow is known to occur across this fragmented range (Barrowclough and others 2006), but the mechanisms facilitating gene flow are poorly understood. Natal dispersal between disjunct mountain ranges and populations has been documented for dispersing juvenile Mexican spotted owls (Gutiérrez and others 1996, Arsenault and others 1997, Ganey and others 1998, Willey and van Riper 2000, Duncan and Speich 2002). In contrast, there are no documented records of breeding dispersal (defined as movement of a non-juvenile owl between territories where it had the opportunity to breed, regardless of whether or not breeding occurred on these territories [Daniels and Walters 2000]) by non-juvenile owls. Thus, the potential role of breeding dispersal in gene flow within the range of this owl is unknown.

Here, we report the circumstances surrounding recovery of a banded Mexican spotted owl that may represent the first documented case of long-distance breeding dispersal in this owl. We banded this owl on 9 August 1999, in the southern Black Range, New Mexico (fig.1), in conjunction with a study evaluating methods for monitoring population trend in Mexican spotted owls (Ganey and others 2004). The owl was identified as a female when banded based on vocalizations (Ganey 1990), and as an adult based on appearance of the retrices (Moen and others 1991), indicating

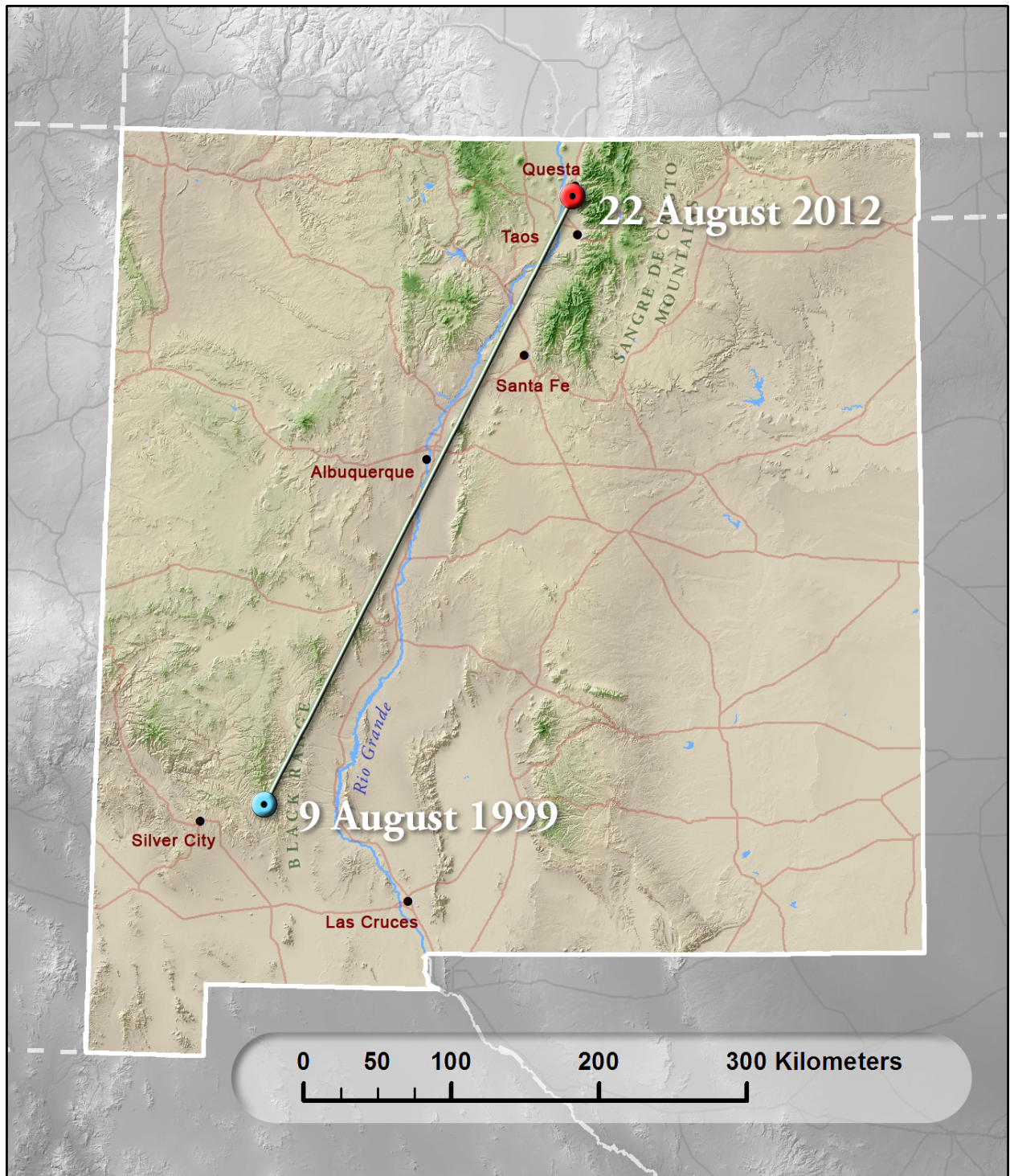
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**Figure 1.** Shaded relief map of New Mexico, USA, showing the locations where a female owl was banded in 1999 and found dead in 2012.

a minimum age of >2 yrs (Forsman 1981). She was resident on a breeding territory when captured, and successfully fledged young in 1999. Elevation at the banding location was approximately 2,380 m.

This owl was found dead on 22 August, 2012, approximately 8 km south of Questa, New Mexico (fig. 1), approximately 462 km from the banding location. Distance was calculated as the length of the geodesic curve connecting the banding and recovery locations and represents the shortest distance the owl could have traveled over the curved surface of the planet. Distance traveled may have been considerably longer than 462 km, as the actual route traveled is unknown. It is interesting, however, that the straight-line route approximates the course of the Rio Grande River. Also unknown is whether the owl traversed this distance in one movement event or a series of shorter movements separated by periods of residency, and how long it took to complete the movement. Given that 13 yrs intervened between banding and recovering the owl, we cannot rule out the possibility that movement occurred gradually over the course of several to many years.

The recovery location was in the foothills of the Sangre de Cristo Mountains near Lama, New Mexico, at an elevation of approximately 2,500 m, near the border between a 17-yr-old burned area (Hondo fire, 1996) and a hay meadow. The recovery location was adjacent to a forested canyon, and only a few kilometers uphill from the canyon of the Rio Grande River, and downhill from montane mixed conifer forest.

Cause of death was not determined. The carcass was described as being in relatively good shape, and the finder believed the owl had not been dead long (D. Hutchison, personal communication). These observations suggest the owl was at least 15 yrs of age at time of death, was present in the recovery area during the breeding season, a period during which adult Mexican spotted owls typically are resident on breeding territories, and was adjacent to suitable breeding habitat (incised rocky canyons and/or montane mixed-conifer forest) at the time of death.

Although we believe this may be the first documented case of breeding dispersal in Mexican spotted owls, it is not the first documented case of long-distance movement by non-juvenile Mexican spotted owls. Gutiérrez and others (1996) reported a case involving an adult female owl banded in the Tularosa Mountains, New Mexico, during summer 1994. This owl was found dead in Jan 1995 in Chihuahuan desert grassland near Deming, New Mexico, approximately 187 km from the banding location. This case clearly demonstrates long-distance movement, but does not appear to meet the definition of breeding dispersal. Seasonal migration has been documented in Mexican spotted owls, with some radio-marked owls from all populations studied migrating during winter, typically to lower elevation desert or semi-desert habitats (Ganey and Block 2005, USDI FWS 2012). Thus, the observation by Gutiérrez and others (1996) could represent either an unsuccessful dispersal event or seasonal migration, given the time of death and habitat in which it was found.

In contrast, the owl we banded was known to nest successfully near the banding location, and was found dead at a distant location during the breeding season and adjacent to the types of habitats (incised rocky canyons, montane mixed-conifer forest) typically used by breeding Mexican spotted owls (Ganey and Dick 1995). Consequently, this observation appears likely to represent breeding dispersal as typically defined,

even though successful reproduction was not documented at the recovery site. The behavior of this owl suggests that movements of non-juvenile owls as well as juveniles may contribute to gene flow among Mexican spotted owls, at least occasionally.

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