

Baja California, as well as north-central and north-eastern Mexico, in Sonora, Chihuahua, Coahuila, Durango, Nuevo Leon, and San Luis Potosi (Russell and Lamm 1978; A. Garza de Leon, *The Bird Galley*, in litt. 1990; L. Stenzel, Point Reyes Bird Observatory, in litt. 1992; Gomez de Silva *et al.* 1996; Knopf and Rupert 1999a; Dieni *et al.* 2003, J. Taylor, pers. comm. 2003).

All information we have reviewed indicates that California is the primary wintering ground for mountain plovers, supporting up to 95 percent of the United States' population of mountain plovers (Morey, in litt. 2003). However, recent isotope studies indicate that there may be a disproportionate number of males in the wintering flocks. Seventy-five percent of the feathers sampled from the Imperial Valley in the winter of 2002 were from males, and sixty-two percent were from males in the winter of 2003. This could indicate a slightly higher female mortality, or perhaps differential migration patterns between male and female plovers (e.g. females wintering farther south into Mexico). More stable isotope work in the next two years may help answer this question (Knopf, pers. comm. 2003).

Mountain plovers are most frequently reported and found in the greatest numbers in two general locations in California—(1) The western Central Valley from Solano and Yolo Counties to Kern County (primarily the western San Joaquin Valley), and (2) the Imperial Valley in Imperial County. Throughout these areas, sightings occur on agricultural fields and noncultivated sites. Research conducted in the San Joaquin Valley concluded that the noncultivated sites are the preferred habitat there, while cultivated sites are the exclusive habitat in the Imperial Valley (Knopf and Rupert 1995, Wunder and Knopf 2003).

From 1961 to 1968 anywhere from 25 to 10,000 mountain plovers were counted in winter on Kern National Wildlife Refuge in the San Joaquin Valley (J. Engler, Service, in litt. 1992). In January 1994, researchers counted 3,346 mountain plovers during a simultaneous 1-day survey of 25 sites throughout California (B. Barnes, National Audubon Society, in litt. 1994). A similar coordinated survey at 31 sites in the Central and Imperial valleys in January 1998 estimated 2,663 mountain plovers (Hunting *et al.* 2001). In December 1999, two skilled observers were unable to find any mountain plovers in the entire San Joaquin Valley after 2 days searching traditionally occupied sites (Dinsmore, in litt. 2000b), which may have been due to degraded habitat conditions following heavy rains

(F. Knopf, pers. comm. 2000). On February 2, 2002, 536 mountain plovers were counted in the entire San Joaquin Valley, which may indicate some recovery of habitat conditions since 1999 (S. Fitton, in litt. 2002). Within the San Joaquin Valley, premigratory flocks of up to 1,100 birds have been seen in Tulare County (Knopf and Rupert 1995). The Carrizo Plain (separated from the San Joaquin Valley by the Tremblor Range) also is recognized as a predictable wintering site, with wintering birds reliably reported from the west side from 1971 to 1998 (S. Fitton, in litt. 1992, www.birdsource.org 2000). Solano and Yolo Counties in the Central Valley near Sacramento also provide wintering habitat for mountain plovers, with about 200 being seen in these counties in recent years (K. Hunting, California Department of Fish and Game, in litt. 1998; C. Conard, Sacramento Audubon, in litt. 2003).

Wunder and Knopf (2003) suggested that many mountain plovers have apparently shifted from the Central Valley as a result of habitat loss to southern California and the Imperial Valley. Recent search efforts and records for the Central Valley classify the mountain plover as rare and local, exceedingly rare, or accidental, within individual counties in the San Joaquin Valley (Edson and Hunting 1999; K. Hunting, California Fish and Game, pers. comm. 2003).

In the Imperial Valley, coordinated surveys occurred in February, November, and December 1999. The maximum effort of 26 observers in 15 parties over 2 days located 3,758 mountain plovers in December (Shuford *et al.* 2000). From January 9–19, 2001, 4,037 mountain plovers were counted by 2 observers in the Imperial Valley (Wunder and Knopf 2003), and 3,421 were counted there from January 29 to February 6, 2002, by 4 observers (S. Myers, AMEC Earth and Environmental, pers. comm., 2002). In the 2002 Christmas Bird Count (CBC) for that area only 12 were counted; surveys were abandoned in January 2003 when the birds could not be found following heavy rains (Knopf, pers. comm. 2003).

The only consistently collected information available to judge a population trend are the CBC data. The CBC data from 1955–1999 from all count circles in California reporting mountain plovers indicated a decline in mountain plovers of about 1 percent annually (J. Sauer, U.S. Geological Survey—Biological Resource Division (USGS—BRD), in litt. 2000; Wunder and Knopf 2003). This equates to a 35 percent decline in the population from 1955 to 1999 (J. Sauer, pers. comm.

2003). The CBC numbers fluctuate greatly from year to year based on observer variability, survey intensity, and the spatial and temporal distribution of mountain plovers (AMEC Earth and Environmental 2003).

Arizona, Texas, Nevada, and Mexico—Wintering mountain plovers also are reported from other areas, but in much lower numbers than are reported from California. From 1914 to the present, up to 340 mountain plovers have been reported during the winter from Cochise, Maricopa, Pima, Pinal, and Yuma Counties in Arizona (D. Shroufe, in litt. 1999). In Texas, up to 146 mountain plovers were reported from Guadalupe, San Patricio, and Williamson Counties (J. Maresh, no affiliation, pers. comm. 1999; G. Lasley, American Birds, pers. comm. 1992). Mountain plovers also have been sighted throughout the year in Aransas, Concho, Kleberg, Nueces, Schleicher, Tom Green, and Val Verde Counties in Texas (P. Horner, in litt. 1997), and at Laguna Atascosa National Wildlife Refuge on the Texas coast (L. Laack, Service, in litt. 1992). About 400 wintering mountain plovers were reported in west Texas in 2003 (T. Fennell, unaffiliated, in litt. 2003). In Nevada, several mountain plovers were collected in the Lahontan Valley in 1940, and a few have been reported in the Fallon CBC circle in the 1990s (Alcorn 1946, www.birdsource.org 2000). In January 1992, researchers counted 148 mountain plovers at the north end of Laguna Figueroa, Baja California, Mexico (L. Stenzel, in litt. 1992). In 1994, mountain plovers were seen on a Mexican prairie dog colony in San Luis Potosi, Mexico (Gomez de Silva *et al.* 1996). In January 2000, 110 mountain plovers were found on black-tailed prairie dog colonies in Chihuahua, Mexico (S. Gillihan, in litt. 2003). Winter surveys for mountain plovers in Mexico completed during the past several years have failed to find any populations that approach the numbers found in California (R. Estelle, pers. comm. 1998).

In summary, with the heightened awareness to wintering mountain plovers during the past decade (including black-footed ferret recovery planning on prairie dog colonies in Mexico), and the mountain plover's winter flocking behavior, we believe it is unlikely that significant numbers of mountain plovers are not being detected. The widespread distribution of the species makes it difficult to obtain comprehensive population counts.