MOUNTAIN PLOVER (*CHARADRIUS MONTANUS*) SURVEYS FOR THE BUREAU OF LAND MANAGEMENT'S ALBUQUERQUE FIELD OFFICE

ANNUAL REPORT 2003

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EXECUTIVE SUMMARY

Hawks Aloft, Inc. surveyed for Mountain Plovers (*Charadrius montanus*) at El Malpais National Conservation Area (NCA) and Ojo del Espritu Santo in 2003. We detected 11 Mountain Plovers at eight locations at El Malpais NCA. Of these locations, two areas were considered active territories and breeding was confirmed at one of these locations. Migrant status was assumed for one of the locations and we were unable to determine the status at the remaining four locations. Grazing was observed in several of the areas where plovers were detected and one Mountain Plover was detected in the vicinity of an active prairie dog (*Cynomys gunnisoni*) colony. No Mountain Plovers were detected at Ojo del Espritu Santo in 2003.

El Malpais NCA and Ojo del Espritu Santo appear to provide suitable Mountain Plover habitat as short grasses and shrubs in grazed regions dominate prime plover habitat. These areas may provide important stopover and breeding habitat for Mountain Plovers; however, El Malpais NCA contains larger portions of suitable habitat, while habitat at Ojo del Espritu Santo is relatively hilly and fragmented by taller vegetation. Although El Malpais NCA is on the periphery of the Mountain Plover's breeding range, our survey results suggest that New Mexico provides suitable plover habitat and may be important for the conservation of this species.

INTRODUCTION

The Mountain Plover inhabits short-grass prairies and shrub-steppe areas throughout the western Great Plains and the Colorado Plateau (Knopf 1996). Prime breeding habitat consists of short grasses and shrub vegetation typically < 8 cm tall with approximately 30% bare ground (Graul 1975, Knopf and Miller 1994, Knopf 1996, Manning and White 2001). In addition, breeding areas are often associated with prairie dog (*Cynomys* spp) colonies (Knowles et al. 1982, Sager 1996, Manning and White 2001, Dinsmore et al. 2003) and intensively grazed areas (Knopf and Miller 1994, Knopf 1996).

Mountain Plovers have shown range-wide declines of up to 63% from 1966 to 1993 (Knopf 1994). These declines have been attributed to habitat loss, especially in the eastern portion of its range, and to changes in agricultural practices and grazing regimes (Knopf 1994, 1996). Due to these concerns, the U.S. Fish and Wildlife Service proposed to list the Mountain Plover as threatened in 1999 (U.S. Department of Interior 1999). Recently, the U.S. Fish and Wildlife Service determined that listing the Mountain Plover as threatened is not warranted because current data suggest that the future of the population is not severely threatened (U.S. Department of Interior 2003). However, little is known about the population status of Mountain Plovers along the periphery of their range, especially in New Mexico (Sager 1996) and New Mexico may play an important role in their conservation (U.S. Department of Interior 2003).

Hawks Aloft, Inc. has been conducting yearly surveys since 2001 in two areas that encompass the periphery of the plover breeding range, El Malpais National Conservation Area (NCA) in Cibola County and Ojo del Espritu Santo in Sandoval County. In 2003, we continued surveying for Mountain Plovers to (1) identify appropriate habitat, (2) provide

baseline data on distribution and numbers of Mountain Plovers in Sandoval and Cibola counties, (3) determine location of territories and nests, and (4) check historic Mountain Plover locations.

STUDY AREA

Ojo del Espritu Santo

We conducted Mountain Plover surveys in the Ojo del Espritu Santo Land Grant area, located west of U.S. Highway 550 to Cabezon Peak and south of the Rio Puerco, in Sandoval County, New Mexico (Fig. 1). This area consists of rolling hills dominated by blue grama (*Bouteloua gracilis*), cholla (*Opuntia* spp), juniper (*Juniperus* spp), prickly pear (*Opuntia* spp), and winterfat (*Krascheninnikovia lanata*). Domestic cattle also graze this area.

El Malpais National Conservation Area

El Malpais National Conservation Area is located in Cibola County, New Mexico, south of El Malpais National Monument, along the Chain of Craters Road (Fig. 2). This area is dominated by blue grama, winterfat, prickleef dogweed (*Thymophylla acerosa*), rabbitbrush (*Chrysothamnus* spp), and scattered patches of juniper. Height of vegetation varies throughout the study area, containing areas with vegetation > 0.5 m tall and areas with grazed vegetation < 0.1 m tall. The terrain at El Malpais NCA is moderately hilly, containing some flat sections.

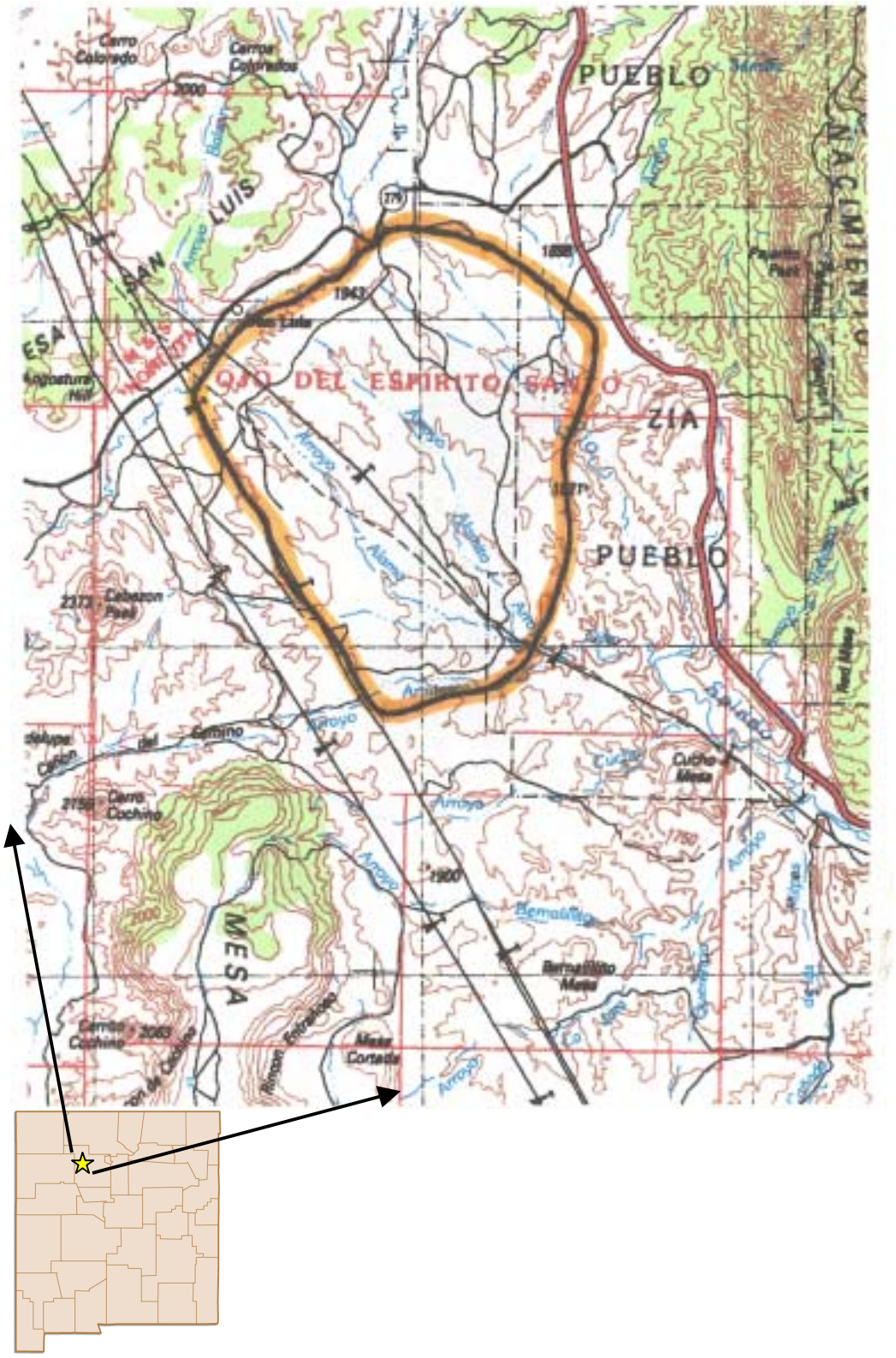

Fig. 1. Ojo del Espritu Santo study area, Sandoval County, NM. Survey boundary is highlighted in orange.

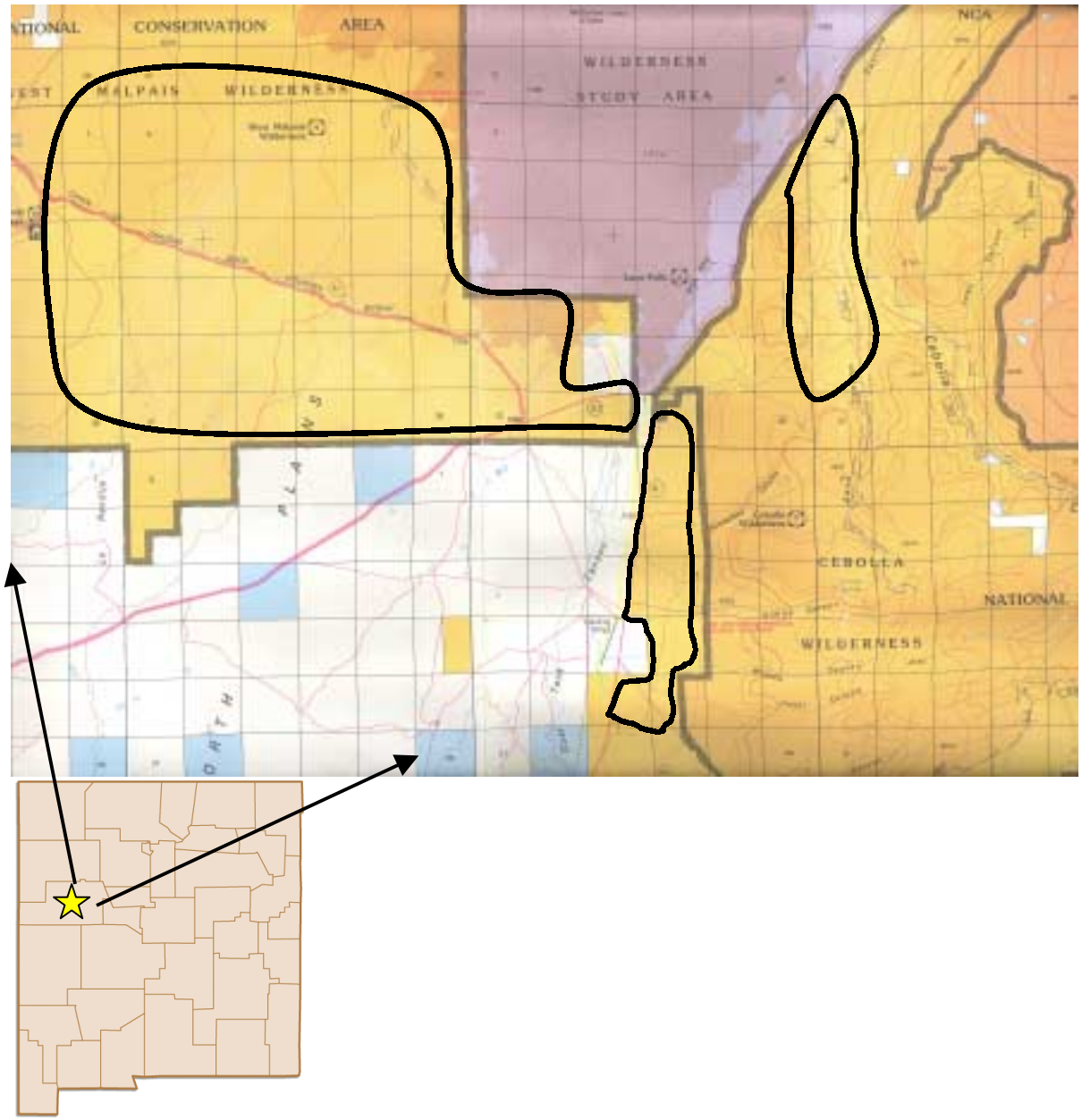

Fig. 2. El Malpais National Conservation Area study area, Cibola County, NM. Black lines indicate survey area boundaries.

METHODS

Mountain Plover surveys followed the protocol established by the U.S. Fish and Wildlife Service (1999) and Williams (1997). Surveys and re-visits were conducted from 19 – 20 April 2003, 7 – 9 May 2003, and again from 4 – 6 June 2003 at El Malpais NCA. Surveys at Ojo del Espritu Santo were conducted on 21 April 2003, 9 – 10 May 2003, and 6 – 7 June 2003. Surveys and re-visits took place four hours after sunrise and again four hours before sunset. Observers drove slowly along established roads, scanning for Mountain Plovers and stopping every 450 to 805 m (0.3 – 0.5 miles). At each stop observers slowly scanned the area twice (360 degrees) searching for plovers. Due to limited accessibility of some areas, walking and bicycling surveys also were conducted. Observers walked through suitable habitat in a zigzag pattern, stopping occasionally to scan for plovers. Bicycling surveys followed the same protocol as driving surveys. When a Mountain Plover was detected the general location of the plover was recorded with a Global Positioning System (Appendix A). All Universal Transverse Mercator (UTM) coordinates were recorded in North American Datum 27 (NAD27). Observers also recorded behavioral observations and searched the area for nests. Each plover location was re-checked in subsequent visits to more precisely determine its status. Historic (2001 and 2002) Mountain Plover locations also were re-visited in 2003 while conducting surveys. At each historic location, observers scanned and searched the area for plovers. All historic locations were checked at least twice from 19 April – 7 June 2003.

Throughout the survey area, observers recorded the presence of prairie dogs and Burrowing Owls (*Athene cunicularia hypugaea*), as these species are often associated with

Mountain Plovers. In addition, we recorded other bird species observed while conducting surveys and re-visits (Appendix B and C).

We report each Mountain Plover location as migrating, breeding, territorial, or unknown status. Mountain Plovers were considered to be migrants if they were observed only once during April. Plovers observed only once after April showing no signs of territoriality (i.e., broken wing display) were considered unknown status. We considered plovers to be territorial if they were observed on multiple occasions or if territorial behavior was observed, but no nest or young were located. We considered plovers to be breeding if a nest or chicks were located. We report Mountain Plover locations and status from 2003 and compare these locations to observations made in 2001 and 2002. Numbers of plovers detected in each year also was compared to annual precipitation in the previous year. In addition, we report Burrowing Owls and prairie dogs that were detected near plover locations.

RESULTS

We surveyed, on average, 84 km during each survey period at Ojo del Espritu Santo; however, we did not detect any Mountain Plovers. At El Malpais NCA we covered approximately 64 km during each survey period. We detected 11 Mountain Plovers at eight locations at El Malpais NCA (Appendices D-E). Of these locations, two areas were considered active territories and breeding was confirmed at one of these locations (Table 1). Migrant status was assumed at one of the locations and we were unable to determine the status at the remaining four locations (Table 1). Two adult Burrowing Owls (with a suspected nest) were observed at one of the unknown status plover locations (Appendix E). A small prairie dog colony also was observed at this location (Appendix E).

Numbers of Mountain Plovers detected at El Malpais NCA decreased from 2001 to 2003 (Fig. 3). More plovers were detected in 2001 than in 2002 and 2003 (Fig. 3), primarily due to the number of migrant plovers detected in 2001. Although the total number of plovers declined, numbers of active territories in 2001 and 2003 remained the same (Table 1 and 2).

Plovers at El Malpais NCA did not appear to show signs of site fidelity. Of the historic locations, only one of the locations from 2001 also showed signs of activity in 2003 (Table 2). A single migrant was detected in 2001 and a plover with unknown status was detected in the same location in 2003 (Appendix F).

Numbers of Mountain Plovers detected in 2001 versus 2003 appears to be associated with annual precipitation during the previous year in nearby Torreon Navajo Mission, NM (Western Regional Climate Center) (Fig. 3). However, only one plover was detected in 2002 and precipitation in 2001 was still relatively high.

Table 1. Status of Mountain Plovers detected at El Malpais National Conservation Area, 2003.

Mountain Plover	Status
MP2_03	Migrant
MP3_03	Active territory
MP4_03	Unknown
MP5_03	Unknown
MP6_03	Unknown
MP7_03	Unknown
MP8_03	Active territory
MP9_03	Breeding confirmed

Table 2. Status of Mountain Plovers that were detected in 2001 and 2002, and re-visited in 2003 at El Malpais National Conservation Area.

Mountain Plover	Year		
	2001	2002	2003
MP1_01	Active territory	Not re-visited	Not active
MP2_01	Migrant	Not re-visited	Not active
MP3_01	Migrant	Not re-visited	Not active
MP4_01	Migrant	Not re-visited	Not active
MP5_01	Migrant	Not re-visited	Not active
MP6_01	Active territory	Not re-visited	Not active
MP7_01	Unknown	Not re-visited	Not active
MP1_02	NA[1]	Migrant	Not active
MP2_03	NA[2]	NA[2]	Migrant

[1]Plover first detected in 2002.
[2]Plover first detected in 2003.

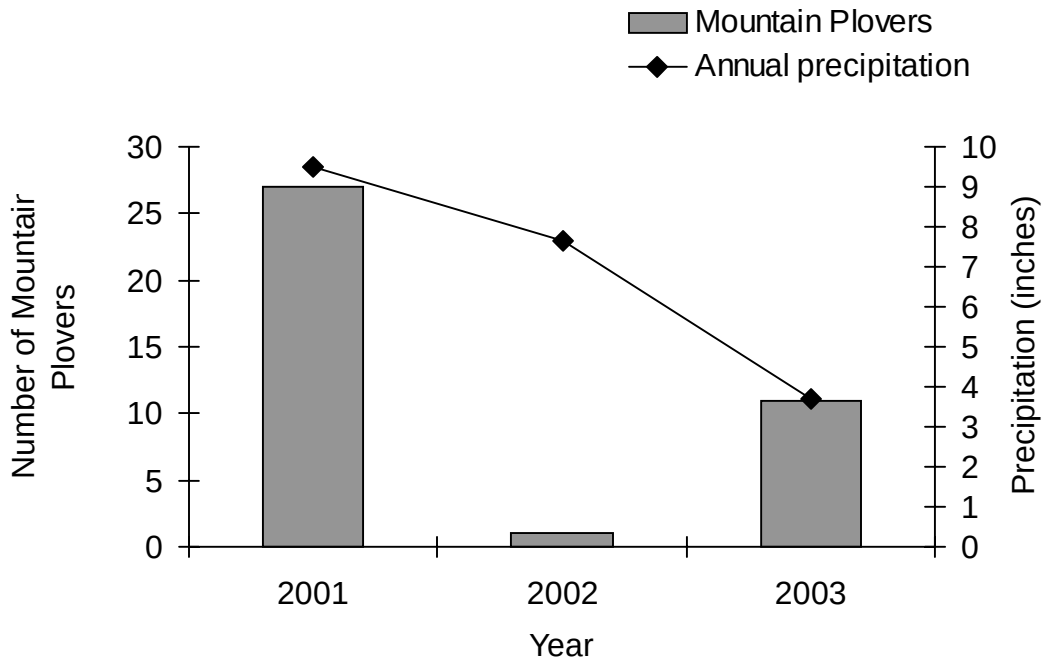

Fig. 3. Number of Mountain Plovers detected at El Malpais National Conservation Area and annual precipitation in the previous year in nearby Torreon Navajo Mission, NM.

DISCUSSION

Relatively few Mountain Plovers were detected at El Malpais NCA and no plovers were detected at Ojo del Espritu Santo. Other studies have located active territories throughout New Mexico; however, the majority of the detections were located in northeastern New Mexico (Sager 1996). A total of ten Mountain Plovers have been observed in Cibola County (1975, 1978, 1980, and 1994), three of which were observed along the Chain of Craters Road in 1995 (Sager 1996). In Sandoval County, breeding activity was confirmed in 1995 near Santo Domingo Pueblo (Sager 1996). Although we could not determine the exact status at many of the Mountain Plover sites, several of the unknown plovers could have been breeding. Thus, the numbers we report likely underestimate the numbers of plovers at El Malpais NCA. Recent estimates of the entire population size range from 5,000 to 11,000 individuals (Wunder and Knopf 2003), where the stronghold of the population exists in Montana, Wyoming, and Colorado. Our surveys, along with Sager's (1996) estimates suggest that New Mexico also may play an important role in the conservation of this species (U.S. Department of Interior 2003).

The habitat at Ojo del Espritu Santo appears to be less suitable for Mountain Plovers as much of the area contains rolling hills with dense patches of tall cholla and juniper. Moreover, suitable areas at Ojo del Espritu Santo are fairly small and disjunct. El Malpais NCA provides suitable Mountain Plover habitat, consisting of grazed short-grass prairies, interspersed with bare patches, volcanic rock and prairie dog towns. All of the Mountain Plovers we observed were located in relatively flat, grazed areas with very short blue grama grasses and interspersed shrubs. One Mountain Plover also was detected near an active prairie dog colony. Other studies also have detected plovers near prairie dog colonies. For

example, 17% of the Mountain Plovers located in 1995 in New Mexico were associated with prairie dog towns (Sager 1996). In addition, Dinsmore et al. (2003) found that plover numbers mirrored prairie dog numbers. Thus, prairie dog colonies may play an active role in providing suitable Mountain Plover habitat (Dinsmore et al. 2003).

Mountain Plovers also can be influenced by precipitation (Knopf and Rupert 1996) and local habitat conditions. Reduced precipitation can reduce fledgling rates (Knopf and Rupert 1996) and may even reduce numbers of Mountain Plovers observed (U.S. Department of Interior 2003). When comparing numbers detected in 2001 versus 2003, there appears to be a slight association between annual precipitation in the previous year and numbers observed (Fig. 3).

Causes for concern

The U.S. Fish and Wildlife Service withdrew the proposal to list the Mountain Plover as threatened (U.S. Department of Interior 2003) due, in part, to recent studies suggesting that plovers have been able to adapt to human modified landscapes on both the breeding and wintering grounds (Wunder and Knopf 2003, U.S. Department of Interior 2003). Cultivated lands appear to provide suitable nesting habitat (Knopf and Rupert 1999, Shackford et al. 1999) with little change in nesting success (Department of Interior 2003). On the wintering grounds, plovers have shifted from the Coastal and Central Valley to the Imperial Valley of California (Wunder and Knopf 2003). This shift is largely due to habitat loss in the Central Valley and conversion of desert areas to agriculture in the Imperial Valley (Wunder and Knopf 2003). Survival rates during the winter also appear to be relatively high (Knopf and Rupert 1995).

Although Mountain Plovers appear to have adapted to habitat modification, annual survival rates have been estimated at 0.46 – 0.49 for juveniles and 0.68 for adults, which is low relative to other shorebird species (Dinsmore et al. 2003). Thus, reduced survival on breeding grounds and during migration may still warrant concern and intensive studies examining reproductive success and stopover habitat use are needed. Moreover, because a large concentration of Mountain Plovers winter in a restricted area in the Imperial Valley, a reduction in the acreage of alfalfa fields or changes in the timing of tilling may strongly affect overwinter survival of a large number of plovers (Wunder and Knopf 2003).

RECOMMENDATIONS

1. Expand the duration of surveys at El Malpais NCA to encompass more of the plover (Late March – April and late June - July) migration, as this area may be an important stopover site for Mountain Plovers.
2. Conduct distance sampling to obtain population estimates at El Malpais NCA.
3. Concentrate nest-searching efforts in Mountain Plover hotspots at El Malpais NCA.
4. Eliminate survey efforts at Ojo del Espritu Santo and shift efforts towards monitoring at El Malpais NCA.

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LITERATURE CITED

Dinsmore, S. J., G. C. White., and F. L. Knopf. 2003. Annual survival and population estimates of Mountain Plovers in southern Phillips County, Montana. Ecological Applications 13:1013-1026.

Graul, W. D. 1973. Breeding adaptations of the Mountain Plover (*Charadrius montanus*). Ph.D. dissertation, University of Minnesota, St. Paul, MN.

Graul, W. D. 1975. Breeding biology of the Mountain Plover. Wilson Bulletin 87:6-31.

Hawks Aloft. 2001. Mountain Plover Surveys in the North Unit Allotment of the Taos Resource Area, 2001. Hawks Aloft, Inc., Albuquerque, NM.

Knopf, F. L. 1994. Avian assemblages on altered grasslands. Studies in Avian Biology 15:247-257,

Knopf, F. L. 1996. Mountain Plover (*Charadrius montanus*). *In* The Birds of North America, No. 211 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Knopf, F. L., and B. J. Miller. 1994. *Charadrius montanus* – montane, grassland, or bare-ground plover? Auk 111:504-506.

Knopf, F. L., and J. R. Rupert. 1995. Habits and habitats of Mountain Plovers in California. Condor 97:743-751.

Knopf, F. L., and J. R. Rupert. 1996. Productivity and movements of Mountain Plovers breeding in Colorado. Wilson Bulletin 108:28-35.

Knowles, C. J., C. J. Stoner, and S. P. Gieb. 1982. Selective use of black-tailed prairie dog towns by Mountain Plovers. Condor 84:71-74.

Manning, A. E. E., and C. M. White. 2001. Nest site selection by Mountain Plovers (*Charadrius montanus*) in a shrub-steppe habitat. Western North American Naturalist 61:229-235.

Sager, L. 1996. A 1995 survey of Mountain Plovers (*Charadrius montanus*) in New Mexico. Endangered Species Program. New Mexico Department of Game and Fish, Santa Fe, NM.

Shackford, J. S., D. M. Leslie, Jr., and W. D. Harden. 1999. Range-wide use of cultivated fields by Mountain Plovers during the breeding season. Journal of Field Ornithology 70:114-120.

U.S. Department of Interior. 1999. Endangered and threatened wildlife and plants: proposed threatened status for the Mountain Plover. Federal Register 64:7587-7601.

U.S. Department of Interior. 2003. Endangered and threatened wildlife and plants: withdrawal of the proposed rule to list the Mountain Plover as threatened. Federal Register 68:53083-53101.

U.S. Fish and Wildlife Service. 1999. Mountain Plover survey guidelines. Endangered Species Program. U.S. Fish and Wildlife Service.

Western Regional Climate Center. 2003. New Mexico Climate Summaries. Desert Research Institute. http://www.wrcc.dri.edu.

Williams, S. O., III. 1997. Suggested protocol for surveying Mountain Plovers in New Mexico. New Mexico Department of Game and Fish, Santa Fe, NM.

Wunder, M. B., and F. L. Knopf. 2003. The Imperial Valley of California is critical to wintering Mountain Plovers. Journal of Field Ornithology 74:74-80.

Appendix A. Locations of Mountain Plovers at El Malpais National Conservation Area, 2003.

Mountain Plover	Zone	Easting	Northing	Quad
MP2_03	12S	763987	3843258	York Ranch
MP3_03	12S	767239	3847144	York Ranch
MP4_03	12S	761548	3845473	La Rendija
MP5_03	12S	768897	3845228	York Ranch
MP6_03	12S	770118	3846050	York Ranch
MP7_03	12S	770267	3844662	York Ranch
MP8_03	12S	769173	3846628	York Ranch
MP9_03	12S	769997	3844912	York Ranch

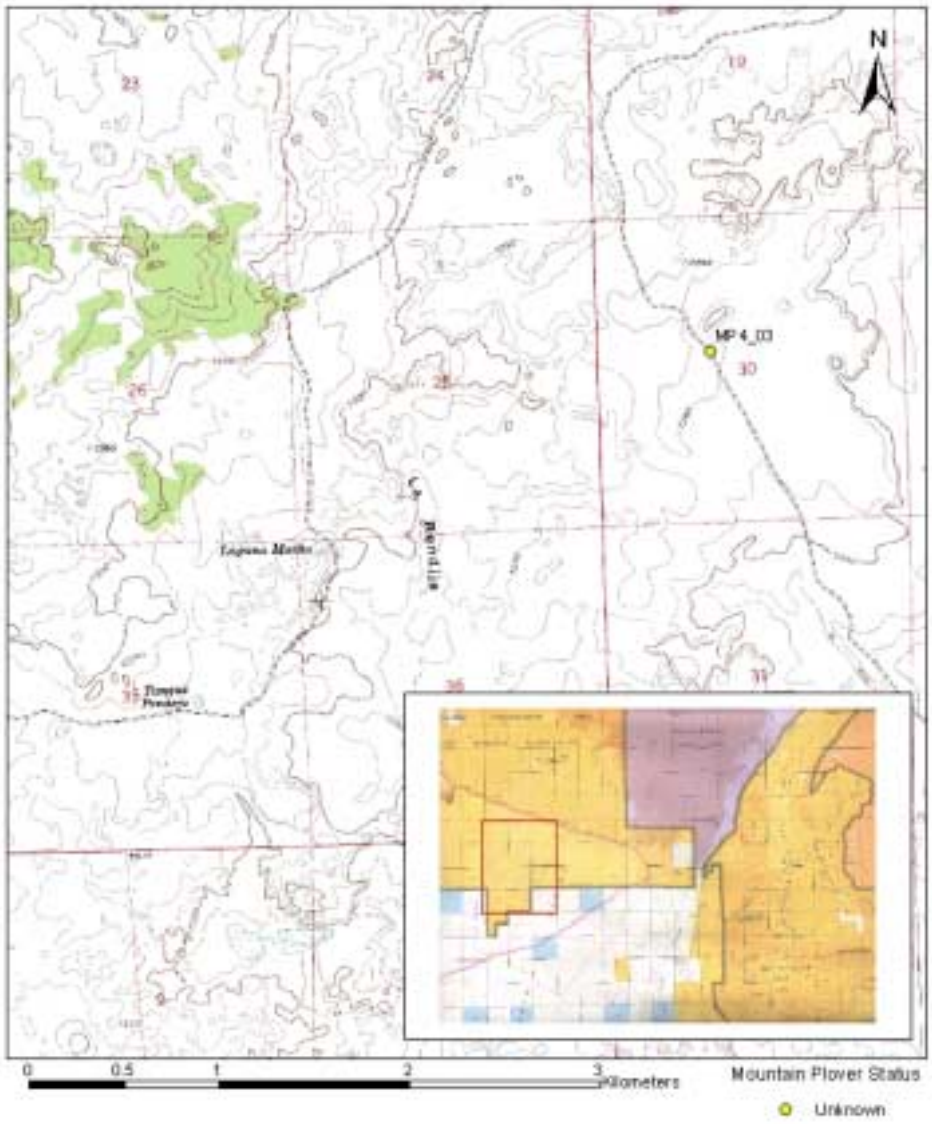
Appendix B. Species detected in the El Malpais National Conservation Area.

Common name	Scientific name
Turkey Vulture	*Cathartes aura*
American Kestrel	*Falco sparverius*
Mountain Plover	*Charadrius montanus*
Killdeer	*Charadrius vociferus*
Mourning Dove	*Zenaida macroura*
Burrowing Owl	*Athene cunicularia hypugaea*
Common Nighthawk	*Chordeiles minor*
Northern Flicker	*Colaptes auratus*
Loggerhead Shrike	*Lanius ludovicianus*
Pinyon Jay	*Gymnorhinus cyanocephalus*
Common Raven	*Corvus corax*
Horned Lark	*Eremophila alpestris*
Violet-green Swallow	*Tachycineta thalassina*
Juniper Titmouse	*Baeolophus ridgwayi*
Bushtit	*Psaltriparus minimus*
Mountain Bluebird	*Sialia currucoides*
Western Bluebird	*Sialia mexicana*
Spotted Towhee	*Pipilo erythrophthalmus*
Black-throated Sparrow	*Amphispiza bilineata*
Brewer's Sparrow	*Spizella breweri*
Chipping Sparrow	*Spizella passerina*
Vesper Sparrow	*Pooecetes gramineus*
Western Meadowlark	*Sturnella neglecta*
Eastern Meadowlark	*Sturnella magna*

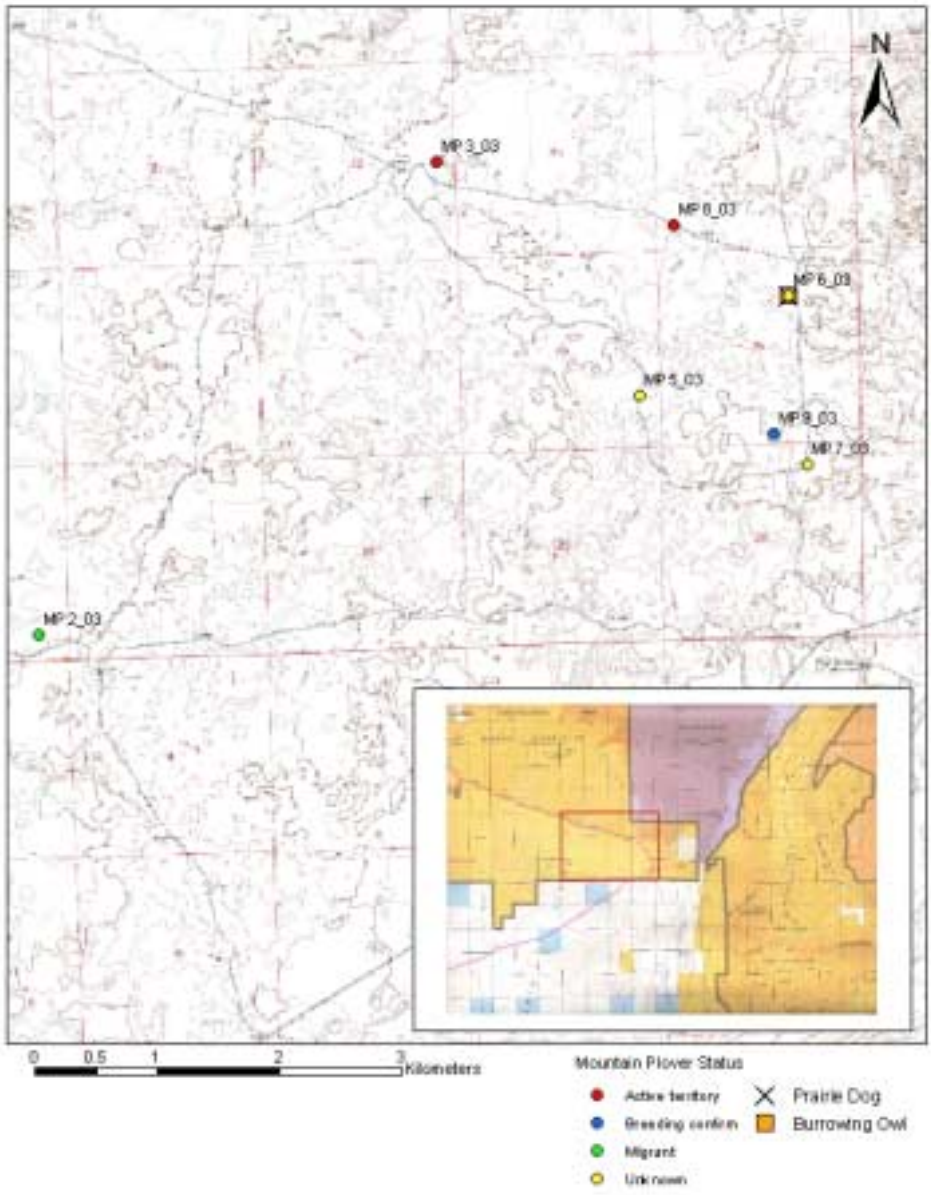
Appendix C. Species detected in Ojo del Espritu Santo survey area.

Common name	Scientific name
American Kestrel	*Falco sparverius*
Scaled Quail	*Callipepla squamata*
Killdeer	*Charadrius vociferus*
Mourning Dove	*Zenaida macroura*
Say's Phoebe	*Sayornis saya*
Ash-throated Flycatcher	*Myiarchus tyrannulus*
Cassin's Kingbird	*Tyrannus vociferans*
Loggerhead Shrike	*Lanius ludovicianus*
Pinyon Jay	*Gymnorhinus cyanocephalus*
Common Raven	*Corvus corax*
Horned Lark	*Eremophila alpestris*
Violet-green Swallow	*Tachycineta thalassina*
Juniper Titmouse	*Baeolophus ridgwayi*
Bushtit	*Psaltriparus minimus*
Bewick's Wren	*Thryomanes bewickii*
Cactus Wren	*Campylorhynchus brunneicapillus*
Townsend's Solitaire	*Myadestes townsendi*
Mountain Bluebird	*Sialia currucoides*
Northern Mockingbird	*Mimus polyglottos*
Sage Thrasher	*Oreoscoptes montanus*
Canyon Towhee	*Pipilo fuscus*
Vesper Sparrow	*Pooecetes gramineus*
Lark Sparrow	*Chondestes grammacus*
White-crowned Sparrow	*Zonotrichia leucophrys*
Western Meadowlark	*Sturnella neglecta*
Brown-headed Cowbird	*Molothrus ater*
Brewer's Blackbird	*Euphagus cyanocephalus*
House Finch	*Carpodacus mexicanus*

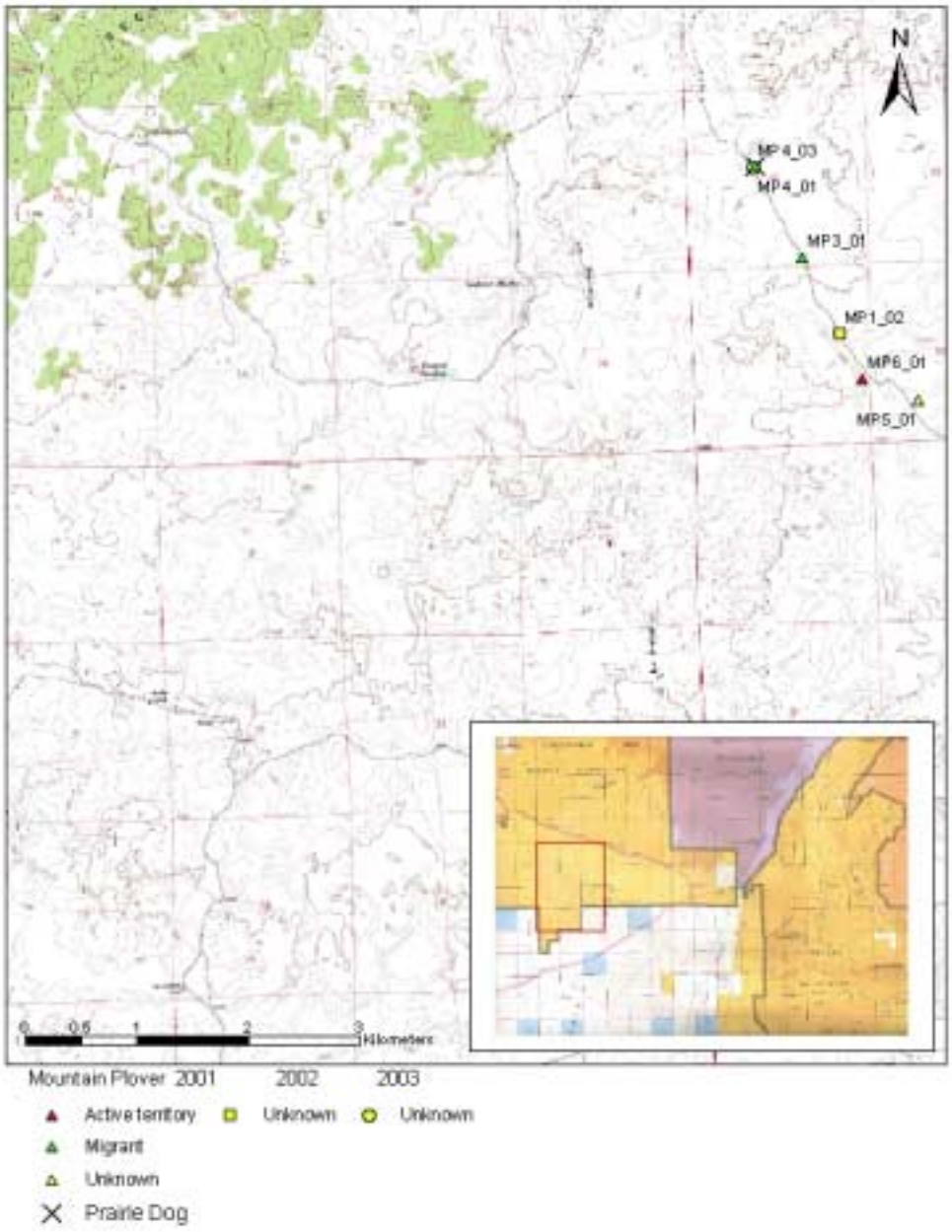
Appendix D. Locations and status of Mountain Plovers detected at El Malpais National Conservation Area located in the La Rendija 7.5' USGS quad, 2003.



Appendix E. Locations and status of Mountain Plovers, prairie dogs, and Burrowing Owls detected at El Malpais National Conservation Area located in the York Ranch 7.5' USGS quad, 2003.



Appendix F. Locations and status of Mountain Plovers and prairie dogs located in 2001, 2002, and 2003 in the La Rendija 7.5' USGS quad.



Appendix G. Locations and status of Mountain Plovers, prairie dogs, and Burrowing Owls located in 2001, and 2003 in the York Ranch 7.5' USGS quad.