

MOUNTAIN PLOVER, BURROWING OWL, AND PRAIRIE DOG OBSERVATIONS
AT EL MALPAIS NATIONAL CONSERVATION AREA, NEW MEXICO IN 2007



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EXECUTIVE SUMMARY

El Malpais National Conservation Area in Cibola County, New Mexico hosts a small population of Mountain Plovers (*Charadrius montanus*) on land administered by the Bureau of Land Management (BLM). Beginning in 2001, Hawks Aloft, Inc., has visited El Malpais annually to document continued presence of plovers. We returned to the site in 2007 to locate Mountain Plovers and Burrowing Owls (*Athene cunicularia*), as well as to monitor colonies of Gunnison's prairie dog (*Cynomys gunnisoni*).

We observed two Mountain Plovers during five visits in 2007, and these observations likely represented two different territories. We observed three Burrowing Owls, likely representing two territories. One of the plover and one of the owl locations were consistent with locations for these species in each of the last three years. Our observations indicate that Mountain Plovers and Burrowing Owls are still present at El Malpais, but that populations are small. Although the Mountain Plovers at El Malpais represent only a small portion of the New Mexico population, their position near the edge of the Mountain Plover breeding range, as well as concern for apparent negative trends in the past, is reason to continue monitoring the persistence of this species at the site.

We monitored six of the seven prairie dog colonies monitored in previous years at El Malpais. Colonies ranged widely in size from about 3 acres to 2,501 acres. The latter colony is of sufficient size to support the federally endangered black-footed ferret (*Mustela nigripes*) or for evaluating the site for future ferret reintroduction. Therefore, BLM should consult U.S. Fish and Wildlife Service 1989 guidelines when proposing any management actions in the North Pasture area along Highway 117.

INTRODUCTION

Mountain Plovers (*Charadrius montanus*) inhabit short-grass prairies and rangeland in the western Great Plains and the Colorado Plateau (Knopf 1996). Prime breeding habitat consists of short grasses and shrub vegetation <8 cm tall with a substantial portion of bare ground (Graul 1975, Knopf and Miller 1994, Knopf 1996, Manning and White 2001). Because grazing helps maintain short vegetation structure, Mountain Plover breeding areas are often associated with prairie dog colonies (Knowles et al. 1982, Dinsmore et al. 2003) and livestock (Knopf and Miller 1994, Knopf 1996).

Mountain Plovers showed a range-wide decline of up to 63% from 1966 to 1993 (Knopf 1994). This decline has 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 listing the Mountain Plover as threatened in 1999 (U.S. Department of Interior 1999); however, they later determined that such listing was not warranted because data suggested that the future of the population was not severely at risk (U.S. Department of Interior 2003). Considerable research has focused on core populations in Wyoming and Colorado, but monitoring the persistence of scattered local populations on the periphery of the breeding range can also improve our understanding of Mountain Plover population dynamics and refine future status assessments. Local populations on the periphery of the breeding range include the Davis Mountains, Texas (Knopf 1996), northern Mexico (Cotera Correa et al. 2006), and west-central New Mexico (Sager 1996).

El Malpais National Conservation Area is located along the western periphery of the Mountain Plover breeding range in west-central New Mexico, and a small population

has been documented at this site. As the managing agency for this area, the Bureau of Land Management (BLM) contracted Hawks Aloft, Inc., to document the persistence of the plover population. We have visited the site annually since 2001, finding at least a few Mountain Plovers each year. Because the site is large and the population is apparently small, our study was designed to document the continued occurrence of birds rather than estimate and monitor population size using standardized survey techniques. During visits to El Malpais, we also have the opportunity of documenting Burrowing Owls (*Athene cunicularia*) and monitoring Gunnison's prairie dogs (*C. gunnisoni*). In this report, we present locations of Mountain Plovers, Burrowing Owls, and prairie dogs observed at El Malpais in 2007. For prairie dogs, we estimate the size of colonies, based on counts of individuals and calculations of area within the outer perimeter of burrows.

STUDY AREA

El Malpais National Conservation Area is located along Highway 117 in Cibola County, New Mexico, approximately 120 km west of Albuquerque and 40 km south of Grants (Fig. 1). The area is adjacent to El Malpais National Monument. El Malpais National Conservation Area was established to protect a landscape rich in ecological, cultural, and geological features. The rugged landscape includes considerable lava flows, scrub grassland, and pinyon-juniper woodland. We concentrated our search for Mountain Plovers in open grassland along either side of the Chain of Craters Road (Fig. 1), beginning at the junction of Highway 117 and continuing west (about 12 km) to where open habitat merges with pinyon-juniper woodland. We also searched along roads branching north and south from this section of the Chain of Craters road. Vegetation

consisted of blue gramma (*Bouteloua gracilis*), winterfat (*Ceratoides lanata*), prickleaf dogweed (*Thymophylla acerosa*), rabbitbrush (*Chrysothamnus* sp.), and scattered patches of juniper (*Juniperus* spp.). Vegetation height varied throughout the area, ranging from heavily grazed patches <0.1 m tall to patches >0.5 m tall. This portion of El Malpais (elevation approximately 7,000 ft) is mostly flat with shallow depressions, a few of which have been used as cattle watering stations.

METHODS

We conducted Mountain Plover searches using many of the guidelines suggested by Williams (1997) and the U.S. Fish and Wildlife Service (1999). We conducted searches from a vehicle, stopping periodically to scan open habitat. We conducted searches during the morning, because horizontal light facilitates the spotting of the white breast of adult plovers (Williams 1997, U.S. Fish and Wildlife Service 1999). Although we stopped periodically to scan for plovers, we did not conduct point counts of a standard duration, as suggested by Williams (1997) and the U.S. Fish and Wildlife Service (1999). We made that modification because plovers occur here infrequently. We considered that increasing the number of stops and shortening the observation time as needed to scan the terrain would allow us to encounter more plovers and better document occurrence. In a similar manner, we searched for Burrowing Owls. For each Mountain Plover or Burrowing Owl encountered, we recorded the location in Universal Transverse Mercator (UTM) coordinates (North American Datum 27). We returned to each plover or owl location to monitor any nesting activity. We report locations of any nests found and the number of young produced.



A prairie dog colony at El Malpais in 2007

We returned to prairie dog colonies found in previous years and monitored them to determine status and size. We considered a colony to be active if at least one prairie dog was observed. We observed each colony at a distance from a vehicle, if possible, for at least 15 minutes. During this time, we attempted to count the minimum number of individuals present, as well as determine the spatial extent of the colony. At the end of this observation period, we circled the colony on foot and collected UTM coordinates for what we perceived were the outermost burrows. We then plotted the coordinates on ArcGIS and calculated the area within each colony's polygon of points. We made an effort to collect as many coordinates as possible along the perimeter, but the number of coordinates depended somewhat on the number of burrows present. For each colony, we report the number of prairie dogs observed, the estimated acreage of each colony, and the

number of locations used to estimate this area. We also present an average area for active colonies (with 95% confidence intervals) and the total observed occupied area for prairie dogs at El Malpais in 2007.

RESULTS

We observed two Mountain Plovers at El Malpais National Conservation Area during five visits from May-July 2007. The first was observed on 11 May near a stock tank in a shallow depression at 768283-3847621 (NAD 27, Zone 12); we have observed at least one plover in this area in each of the last three years. The second was observed later that morning about five kilometers southwest of the first location (764960-3844134, photo of location on cover). We returned to these sites during each subsequent visit but did not relocate any plovers.

We observed three Burrowing Owls, likely representing two territories. One owl occupied a burrow in the same shallow depression where we observed one of the plovers. We have observed at least one owl in this area in each of the last three years. A pair of owls occupied a burrow at a cattle pen to the southwest. We were unable to determine if any of the owls produced young.

We attempted to monitor the same seven prairie dog colonies we monitored in 2006, but we missed one of the colonies (#6) in 2007; what we considered was colony 6 while in the field was later found to be an extension of colony 1. Of the six colonies we monitored, we considered five to be active and one to be of unknown status. We counted a minimum of 896 prairie dogs and estimated total area coverage of 2,705 acres. The average area of colonies (451 acres) was greatly affected by a particularly large colony

(#7) along Highway 117 that measured 2,501 acres, with a minimum count of 866 prairie dogs. We observed a considerable increase in area for this colony from 2006 (1,957 acres) to 2007, although we counted more prairie dogs here in 2006 (1,057). Excluding colony 7, the remaining colonies averaged 41 ± 66 acres, slightly down from 54 ± 62 acres in 2006.

Table 1. Summary of prairie dog colonies monitored in 2007 at the El Malpais National Conservation Area, New Mexico. We estimate area in acres based on a plot of perimeter coordinates (final column) collected in 2007. "Year Found" refers to the year Hawks Aloft first located the colony. Easting and northing coordinates are in North American Datum 1927.

| Colony # | Year Found | Easting | Northing | Zone | Prairie Dogs | Area (Acres) | # Perimeter Points |
|----------|------------|---------|----------|------|--------------|--------------|--------------------|
| 1 | 2004 | 767333 | 3846941 | 12 | 7 | 12 | 18 |
| 2 | 2004 | 761567 | 3845461 | 12 | 13 | 174 | 45 |
| 3 | 2006 | 765293 | 3845672 | 12 | 2 | 7 | 29 |
| 4 | 2001 | 770104 | 3846513 | 12 | 0 | 3 | 11 |
| 5 | 2006 | 770220 | 3848725 | 12 | 8 | 7 | 27 |
| 6 | 2006 | 768813 | 3848003 | 12 | - | - | - |
| 7 | 2004 | 234033 | 3857162 | 13 | 866 | 2501 | 148 |

DISCUSSION

Recent Mountain Plover population studies (e.g., Wunder et al. 2003, Plumb et al. 2005) have helped revise global population estimates for this species, from previous estimates of fewer than 10,000 plovers to current estimates at or greater than 20,000 (www.birdlifeforums.org/WebX/.2cba5adb). The apparent increase for global estimates is likely the result of an increase in monitoring studies and knowledge more than an actual increase in plover numbers. Core breeding populations in Colorado, Wyoming, and

Montana are considered to account for at least 15,000 plovers. Outlier populations in other states, including New Mexico, contribute less to the global population, but are not insignificant. For example, we consider one population in Taos County, northern New Mexico, to number in the hundreds, based on a distance sampling study we conducted from 2005-2007 (Hawks Aloft 2007).

Our observations in 2007 indicate that Mountain Plovers still occur at El Malpais during the breeding season, and possibly nest at the site; however, our inability to locate more than two birds in five visits indicates that the population is relatively small. Although the Mountain Plovers at El Malpais constitute only a minute portion of the overall Mountain Plover population, and only a small portion of the New Mexico population, this site might still be important. Historic rangewide declines (Knopf 1994), uncertain trends, and relatively low annual survival estimates (Dinsmore et al. 2003) prompted a proposal to list Mountain Plovers as a threatened species. The proposal was withdrawn (U.S. Department of the Interior 2003), but threats could change or increase in the future. El Malpais is located near the western edge of the plover breeding range (Tolle 1976, Knopf 1996). Continued annual observations from this site could indicate an expanding or receding distribution. Also, this site could be used by a greater number of plovers in the future. For example, in California, wintering Mountain Plovers apparently shifted from the Coastal and Central Valleys to the Imperial Valley, partly because of habitat loss in the Central Valley (Wunder and Knopf 2003). A shift in abundance could also occur at El Malpais, where considerable habitat seems to remain. Finally, the migration potential at El Malpais is unclear. We observed 19 apparent migrants in 2001, but have conducted few searches during the migration period in subsequent years. El

Malpais could be used as an important migration stopover site by Mountain Plovers breeding further north.

Prairie dogs were locally numerous at El Malpais in 2006 and 2007. The average area of colonies in El Malpais exceeds or is comparable to other estimates reported for Gunnison's prairie dogs in New Mexico. In northeast New Mexico, Clark et al. (1982) reported an average colony size of 114 acres; like our study, their estimate was based on a limited sample (N=11) and a wide range of values (4-371 acres). In a 2006 Gunnison's prairie dog monitoring study in Taos County, sponsored by the Bureau of Land Management, Taos Field Office, we estimated an average area of about 27 acres for 44 active colonies (Hawks Aloft 2006), less than the average we report here for El Malpais.

One of the prairie dog colonies we monitored is of exceptional size (2,501 acres in 2007), meeting the U.S. Fish and Wildlife Service (1989) criteria for minimum area (200 acres) needed to support the federally endangered black-footed ferret (*Mustela nigripes*), a prairie dog predator, and criteria for possible ferret reintroduction sites (1,000 or more acres). Historically, black-footed ferret ranged through much of the Great Plains, including New Mexico. Now, on the brink of extinction, black-footed ferrets have been reintroduced in some states. We are unaware of current or proposed reintroduction efforts in New Mexico. Nevertheless, the U.S. Fish and Wildlife Service (1989) recommends that any federal action proposed for areas having 1,000 or more acres of Gunnison's prairie dogs should be preceded by a survey for ferrets. Because prairie dog colony #7 greatly exceeds 1,000 acres, BLM should consult U.S. Fish and Wildlife Service (1989) black-footed ferret survey guidelines when proposing any management actions in the North Pasture area along the east side of Highway 117.

We recommend that BLM continue annual surveys at El Malpais to document the continued occurrence of Mountain Plovers, Burrowing Owls, and prairie dogs. Because the Mountain Plover population is apparently small, standardized survey techniques would likely result in limited power for meaningful comparisons among sites and years. Informal surveys during a small number of visits to the site, including visits during the migration season for plovers, might be the most efficient and cost-effective method for documenting the persistence of these species.

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Several rattlesnakes were observed at El Malpais in 2007.



Long-billed Curlew was one of 44 bird species observed at El Malpais.

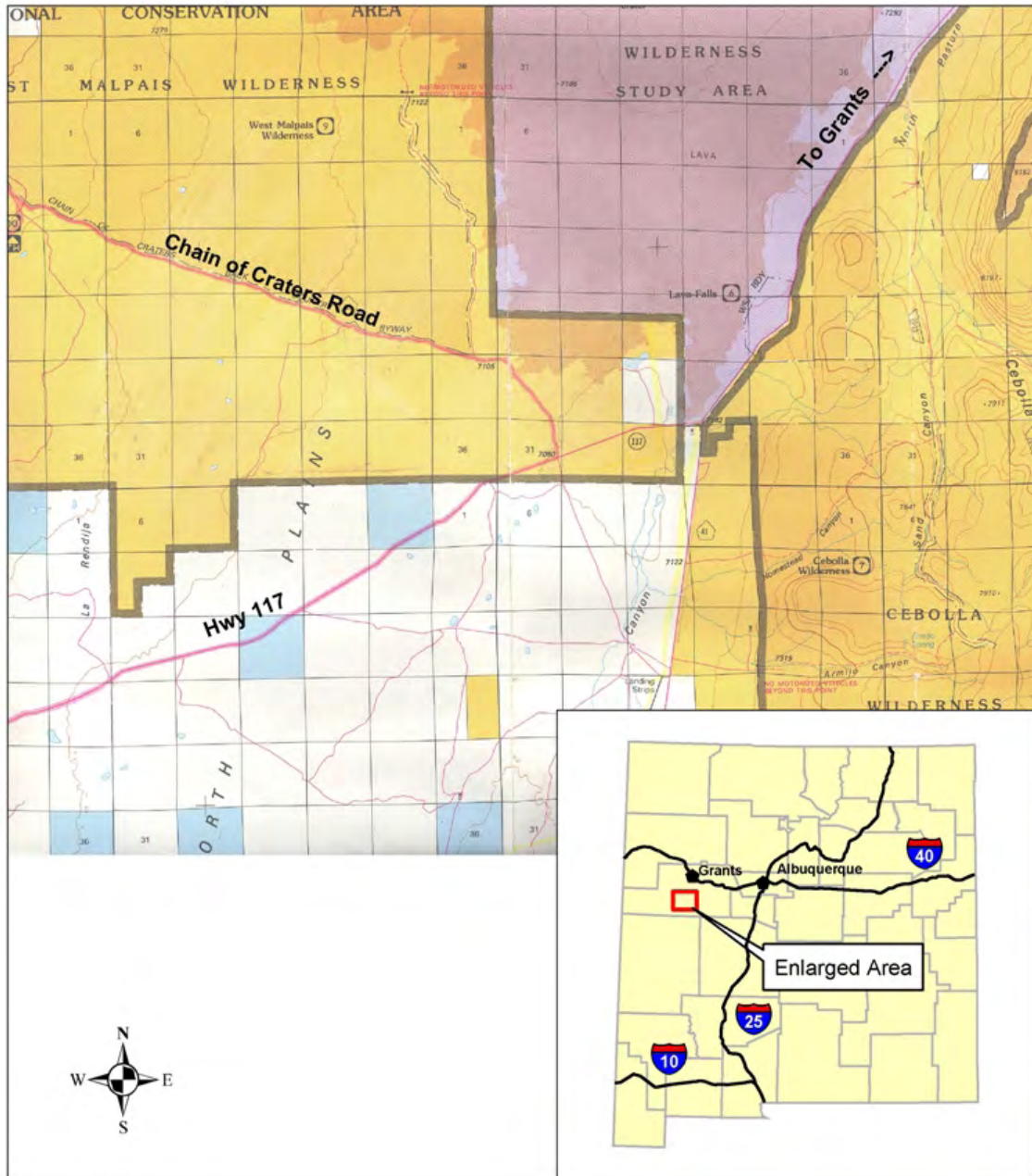


Figure 1. Location of El Malpais National Conservation Area study site, Cibola County, New Mexico. We searched for Mountain Plovers, Burrowing Owls, and prairie dogs on Bureau of Land Management land (in yellow) along the Chain of Craters Road and locally along Highway 117.

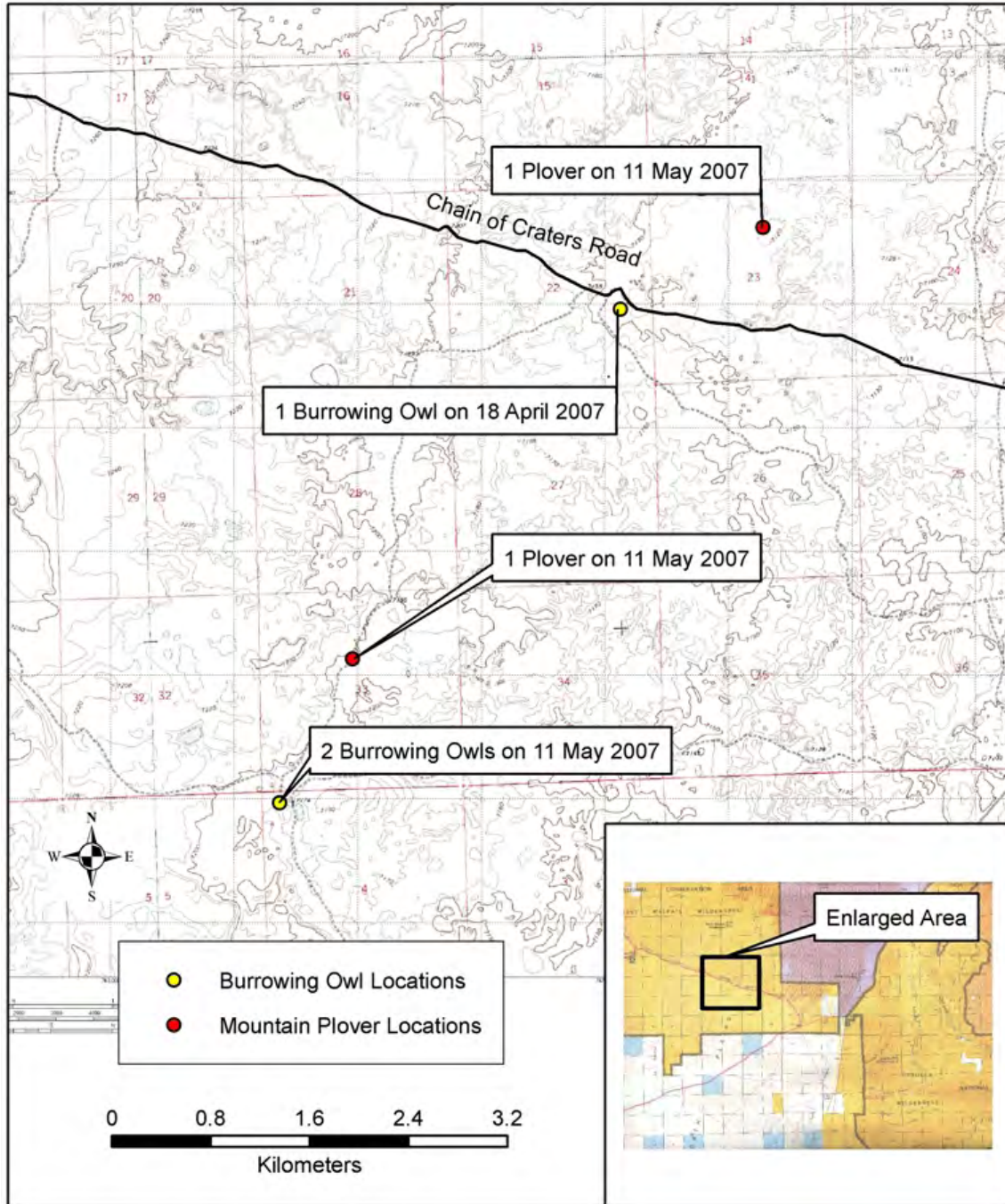


Figure 2. Locations of Mountain Plovers and Burrowing Owls observed during surveys at El Malpais National Conservation Area, New Mexico in 2007. Area shown is an enlarged portion of the following New Mexico USGS Quad Maps: York Ranch, La Rendija, Cerro Brillante, and Ice Caves SE.

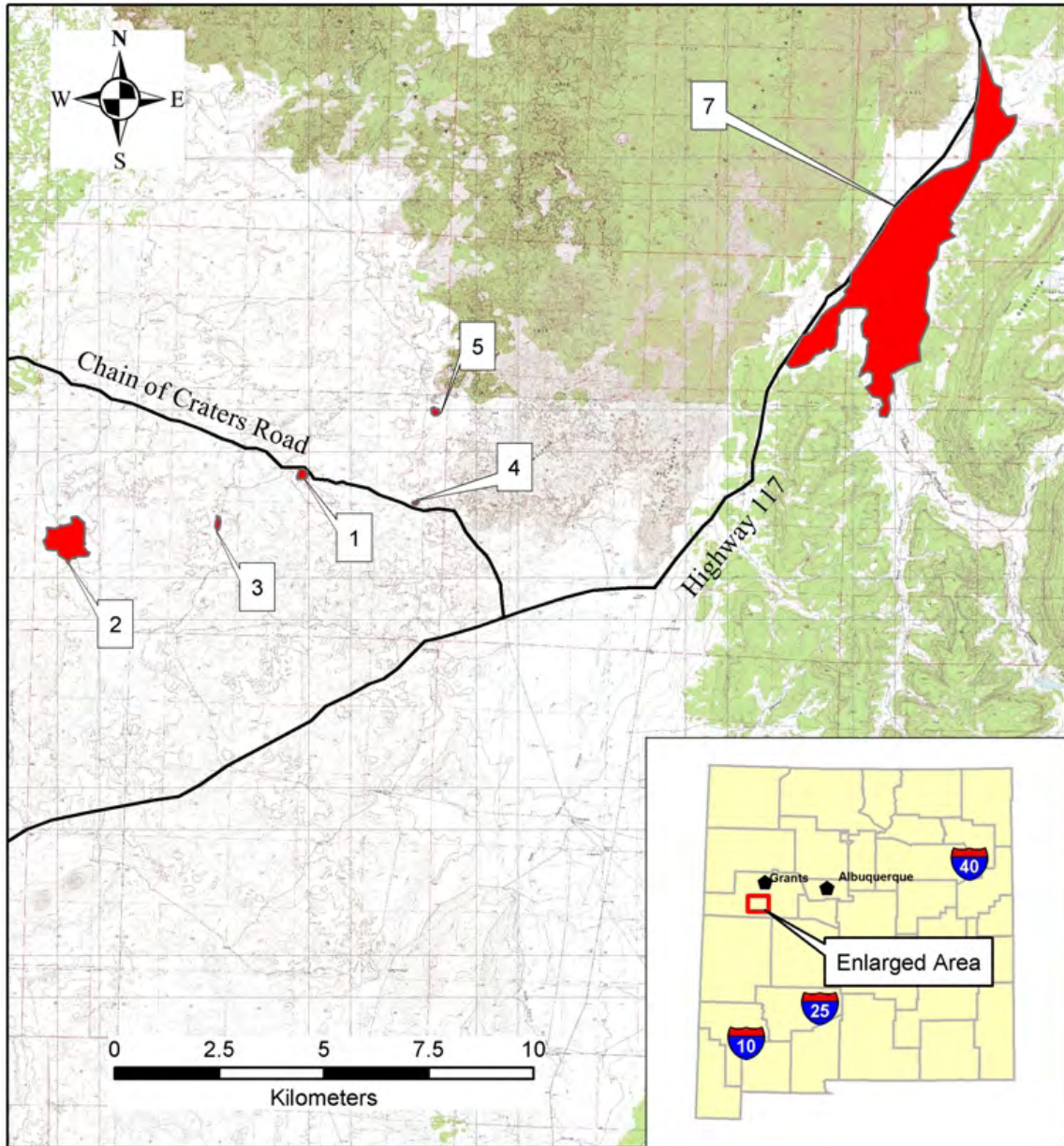


Figure 3. Locations of prairie dog colonies monitored at El Malpais National Conservation Area, New Mexico in 2007. Colony 6 was not monitored in 2007. We indicate estimated spatial coverage of colonies in red.

Appendix 1. List of 44 bird species observed opportunistically while monitoring Mountain Plovers, Burrowing Owls, and prairie dogs at El Malpais National Conservation Area, New Mexico in 2007.

| Common Name | Scientific Name |
|-------------------------------|-----------------------------------|
| Turkey Vulture | <i>Cathartes aura</i> |
| Cooper's Hawk | <i>Accipiter cooperii</i> |
| Red-tailed Hawk | <i>Buteo jamaicensis</i> |
| Ferruginous Hawk | <i>Buteo regalis</i> |
| Golden Eagle | <i>Aquila chrysaetos</i> |
| American Kestrel | <i>Falco sparverius</i> |
| Prairie Falcon | <i>Falco mexicanus</i> |
| Killdeer | <i>Charadrius vociferus</i> |
| Mountain Plover | <i>Charadrius montanus</i> |
| Long-billed Curlew | <i>Numenius americanus</i> |
| Mourning Dove | <i>Zenaida macroura</i> |
| Burrowing Owl | <i>Athene cunicularia</i> |
| Broad-tailed Hummingbird | <i>Selasphorus platycercus</i> |
| Say's Phoebe | <i>Sayornis saya</i> |
| Ash-throated Flycatcher | <i>Myiarchus cinerascens</i> |
| Cassin's Kingbird | <i>Tyrannus vociferans</i> |
| Western Kingbird | <i>Tyrannus verticalis</i> |
| Loggerhead Shrike | <i>Lanius ludovicianus</i> |
| Plumbeous Vireo | <i>Vireo plumbeus</i> |
| Western Scrub-Jay | <i>Aphelocoma californica</i> |
| Pinyon Jay | <i>Gymnorhinus cyanocephalus</i> |
| Common Raven | <i>Corvus corax</i> |
| Horned Lark | <i>Eremophila alpestris</i> |
| Northern Rough-winged Swallow | <i>Stelgidopteryx serripennis</i> |
| Cliff Swallow | <i>Petrochelidon pyrrhonota</i> |
| Mountain Chickadee | <i>Poecile gambeli</i> |
| Juniper Titmouse | <i>Baeolophus ridgwayi</i> |
| Bushtit | <i>Psaltriparus minimus</i> |
| Rock Wren | <i>Salpinctes obsoletus</i> |
| Canyon Wren | <i>Catherpes mexicanus</i> |
| Bewick's Wren | <i>Thryomanes bewickii</i> |
| Mountain Bluebird | <i>Sialia currucoides</i> |
| Northern Mockingbird | <i>Mimus polyglottos</i> |
| Sage Thrasher | <i>Oreoscoptes montanus</i> |
| Green-tailed Towhee | <i>Pipilo chlorurus</i> |
| Spotted Towhee | <i>Pipilo maculatus</i> |
| Cassin's Sparrow | <i>Aimophila cassinii</i> |
| Chipping Sparrow | <i>Spizella passerina</i> |
| Brewer's Sparrow | <i>Spizella breweri</i> |
| Vesper Sparrow | <i>Pooecetes gramineus</i> |
| Lark Sparrow | <i>Chondestes grammacus</i> |

| Common Name | Scientific Name |
|--------------------|--------------------------------|
| Lark Bunting | <i>Calamospiza melanocorys</i> |
| Eastern Meadowlark | <i>Sturnella magna</i> |
| Western Meadowlark | <i>Sturnella neglecta</i> |