

MOUNTAIN PLOVER, BURROWING OWL, AND PRAIRIE DOG OBSERVATIONS
AT EL MALPAIS NATIONAL CONSERVATION AREA, NEW MEXICO IN 2006



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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*). Beginning in 2001, Hawks Aloft, Inc., has visited El Malpais annually to document continued presence of plovers. We returned to the site in 2006 to locate Mountain Plovers and Burrowing Owls (*Athene cunicularia*), as well as to locate and monitor Gunnison's prairie dog (*Cynomys gunnisoni*) colonies. We observed two Mountain Plovers during each of three visits in 2006, and these observations likely represent one territorial pair. We did not observe any young with these birds. Within the same apparent territory of the plovers, we observed two pairs of Burrowing Owls. We were able to relocate one of the pairs during each of five subsequent visits, and this pair produced at least one young. We located seven active prairie dog colonies at El Malpais, ranging widely in size from about 3 ha to 792 ha (7-1,957 acres). 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 recent concern for apparent negative trends, is reason to continue monitoring the persistence of this species at the site.

INTRODUCTION

Mountain Plovers inhabit short-grass prairies and shrub-steppe areas 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 (*Cynomys* spp.) 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 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 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 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 2006. For plovers and owls, we provide indications of breeding activity and productivity; for prairie dogs, we estimate the size of colonies, based on counts of individuals and calculations of area within the outer perimeter of burrows.

Objectives In Brief:

- Locate Mountain Plovers at El Malpais National Conservation Area
- Locate Burrowing Owls and monitor reproductive success
- Locate prairie dog colonies, determine status, and estimate colony sizes

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 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 at a savannah density. We also searched along roads branching north and south from this section of the Chain of Craters road. Vegetation consisted of blue grama (*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.

We located prairie dog colonies either opportunistically or by returning to colonies we had documented in previous years (Hawks Aloft 2004). 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 area of each colony (in acres and hectares), 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 2006.

RESULTS

We observed six Mountain Plovers at El Malpais National Conservation Area during our visits in 2006, and these observations probably represented a single pair of birds (Fig. 2). On 2 May, we observed two foraging plovers near a stock tank in a shallow depression at 767158-3847170 (NAD 27, Zone 12). This was the same location where we observed an apparent pair in 2005. We subsequently found a pair of plovers on 31 May, about 1,300 m away from the first observation point. On 27 June, we again located a pair in the same general area as the first observation point. We did not observe any young or indications of breeding in the area. We found no other plovers along the Chain of Craters road or peripheral roads.

Burrowing Owls were present in the same area as the Mountain Plovers (Fig. 2). We observed four adult owls on 2 May, but two of the owls were not relocated during five subsequent visits. The other two were observed during each visit at or near an active burrow (767197-3847014). One young was seen outside the burrow on 27 July, and an apparent juvenile owl was observed on 9 August. Heavy rains in late July and early August resulted in flooding over much of the shallow basin encompassing the territory; however, the burrow and the owls did not appear to be directly impacted.

We observed seven active prairie dog colonies at El Malpais National Conservation Area in 2006 (Fig. 3), some of which were documented in previous years (Table 1, next page). We counted a minimum of 1,246 prairie dogs at these colonies and estimated total area coverage of 970 ha (2,396 acres). The average area of colonies ($139 \text{ ha} \pm 216$) was greatly affected by a particularly large colony (7) along Highway 117 that measured 792 ha (1,957 acres), with a minimum count of 1,057 prairie dogs. We first

reported this colony as three separate colonies (5, 6, and 7) in 2004 (Table 1). We merged the colonies in 2006 after considering that there was little, if any, spatial separation. Similarly, we considered there to be enough evidence to merge colonies 2 and 3 from 2004 as a single colony (2) in 2006 (Table 1). Excluding the unusually large colony 7, the average area for the remaining six colonies was 30 ha \pm 25.

Table 1. Summary of prairie dog colonies located or relocated in 2006 at the El Malpais National Conservation Area, New Mexico. We estimate area in hectares (acres in parentheses), based on a series of perimeter coordinates (final column) collected in 2006. "Year Found" refers to the year Hawks Aloft first located a colony.

Colony #	Year Found	Easting	Northing	Zone	Prairie Dogs	Area Ha (Acres)	# Perimeter Points
1	2004 ^a	767333	3846941	12	10	3 (7)	14
2	2004 ^b	761567	3845461	12	85	72 (177)	29
3	2006	765293	3845672	12	22	19 (47)	21
4	2001 ^c	770104	3846513	12	7	10 (24)	16
5	2006	770220	3848725	12	4	8 (22)	17
6	2006	768813	3848003	12	61	66 (162)	30
7	2004 ^d	234033	3857162	13	1057	792 (1957)	17

^a appeared as colony 1 in Hawks Aloft (2004)

^b appeared as colonies 2 and 3 in Hawks Aloft (2004), merged here in 2006

^c found in 2001 but not assigned a colony number until 2006

^d appeared as colonies 5, 6, and 7 in Hawks Aloft (2004), merged here in 2006

DISCUSSION

Our observations in 2006 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 indicates that the population is relatively small. Recent population studies in Colorado (Wunder et al. 2003) and Wyoming (Plumb et al. 2005) have helped

revise global population estimates for Mountain Plovers, and this population might be between 11,000 and 14,000 birds (Plumb et al. 2005). Small populations occur in New Mexico, mostly in the northern part of the state (Sager 1996, Hawks Aloft 2005).

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. Rangewide declines (Knopf 1994) 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 have 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 very few in subsequent years. El Malpais could be used as a migration stopover site by Mountain Plovers breeding further north.

Prairie dogs were numerous at El Malpais compared to 2004 when we last monitored colonies. Although we reported the same number of colonies in 2006 (N=7) as in 2004, there were indications of spatial increases and population increases in the last two years. For example, we counted a minimum 139 prairie dogs in colonies 5-7 in 2004;

we counted a minimum of 1,057 prairie dogs in that area in 2006 and found that the space between the three colonies had a high enough density of active burrows to merge the colonies as one (Table 1). The average area of colonies in El Malpais 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 46 ha; like our study, their estimate was based on a limited sample (N=11) and a wide range of values (1.6 ha – 150 ha). In a concurrent 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 11 ha for 44 active colonies in 2006.

We recommend that the Bureau of Land Management 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 method for documenting the persistence of these species.

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One of 22 prairie dogs observed at colony 3 in El Malpais on 2 May 2006.



Burrowing Owl observed at El Malpais on 2 May 2006.

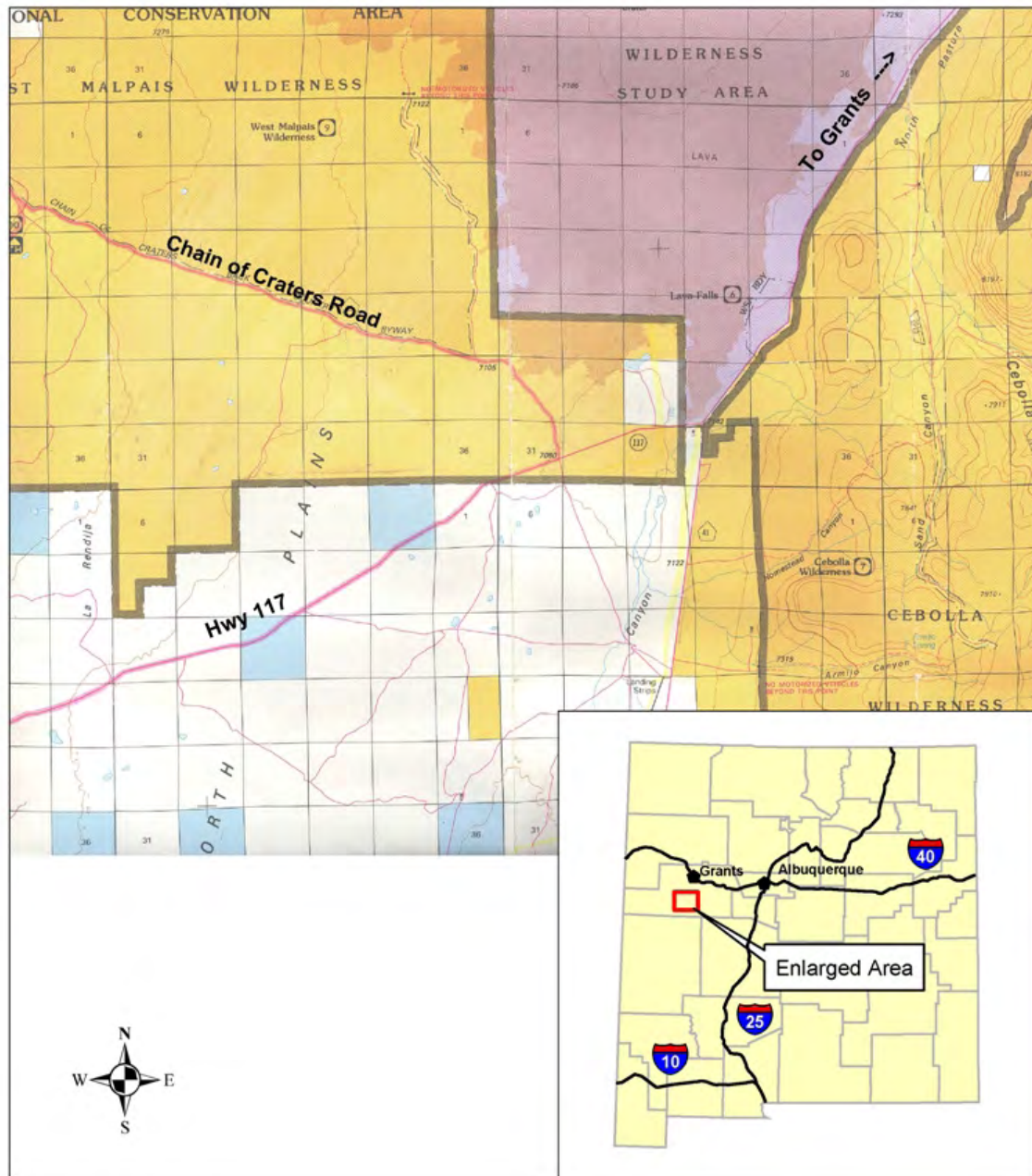


Figure 1. Location of El Malpais National Conservation Area study site, Cibola County, New Mexico. We searched for Mountain Plovers, Burrowing Owls, and prairie dogs on Bureau of Land Management land (in yellow) along the Chain of Craters Road and locally along Highway 117.

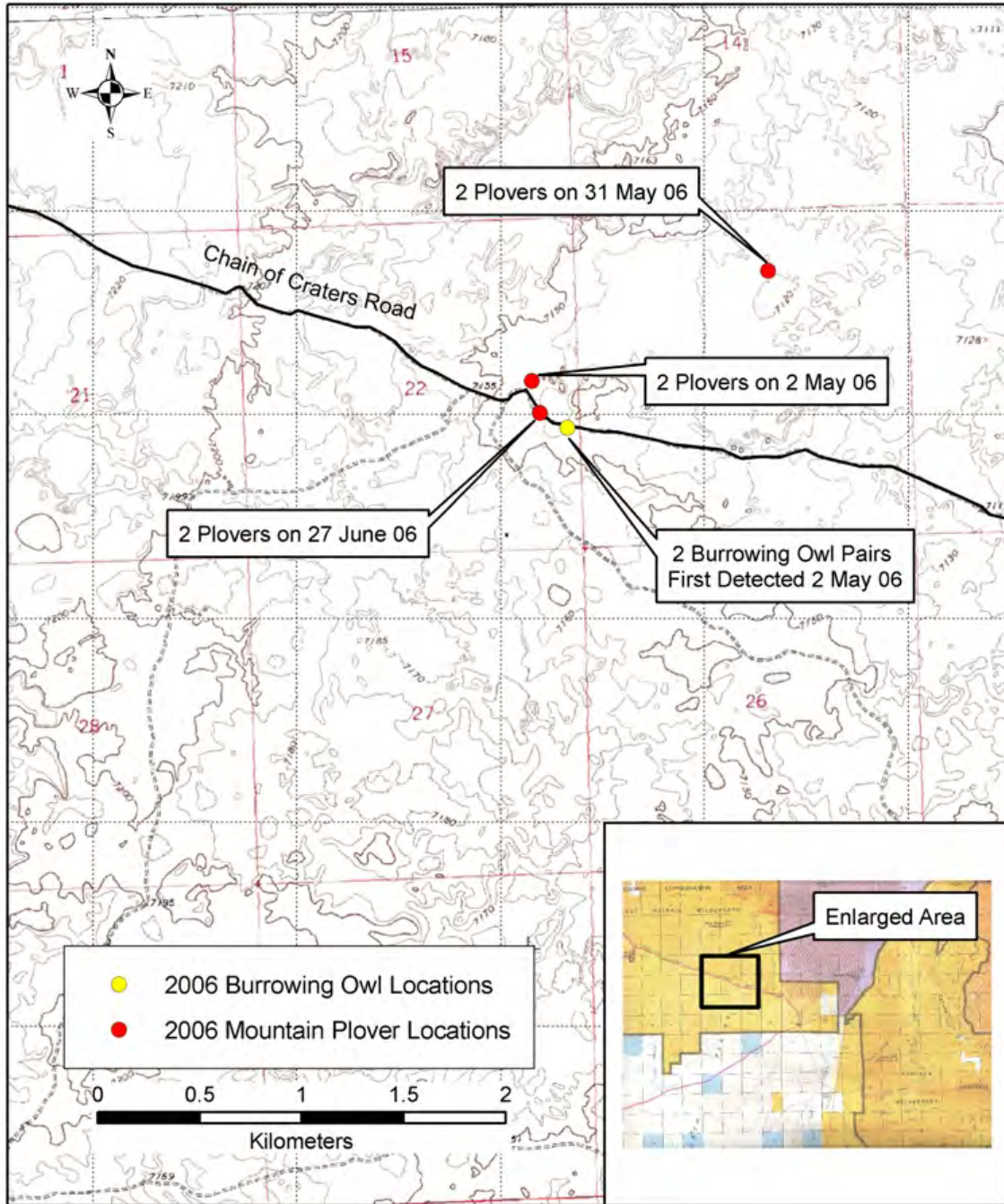


Figure 2. Locations of Mountain Plovers and Burrowing Owls observed during surveys at El Malpais National Conservation Area, New Mexico in 2006. Area shown is an enlarged portion of the following New Mexico USGS Quad Maps: York Ranch, La Rendija, Cerro Brillante, and Ice Caves SE.

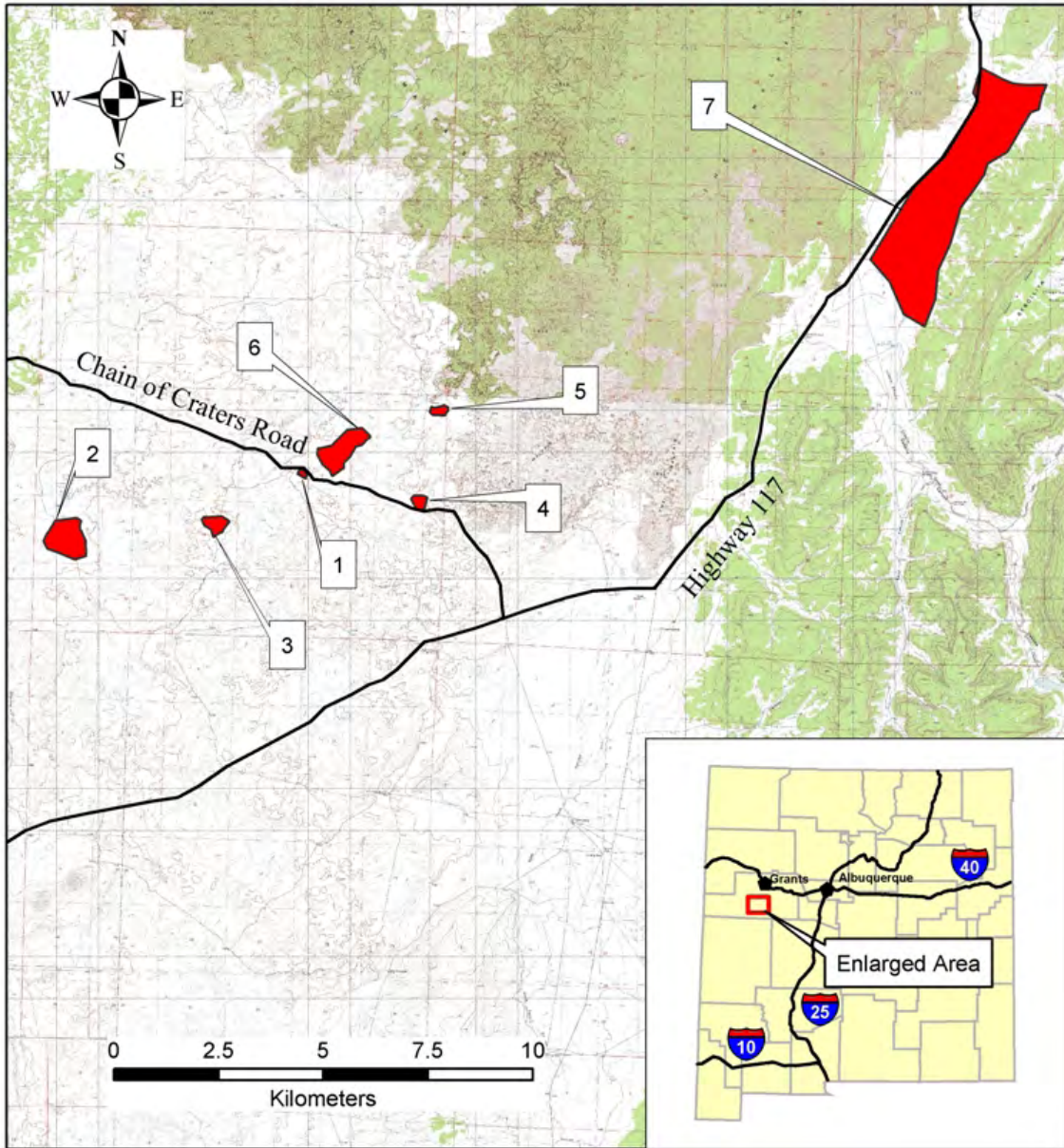


Figure 3. Locations of prairie dog colonies monitored at El Malpais National Conservation Area, New Mexico in 2006. We indicate estimated spatial coverage of colonies in red.