

Black-Tailed Prairie Dog Population Survey – 2010 Report

Fort Niobrara National Wildlife Refuge

December 23, 2010

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OBJECTIVE: To monitor trends in abundance and distribution of black-tailed prairie dogs on Fort Niobrara National Wildlife Refuge.

METHODS: Annual black-tailed prairie dog population surveys are conducted after young-of-the-year prairie dogs have emerged from their burrows and yearlings have dispersed (mid-June to late August). Areas with active prairie dog burrows/mounds are mapped using a GPS unit and the data off-loaded into ArcGIS documenting current year distribution of prairie dogs. Visual counts of prairie dogs are then conducted in a minimum of 4 grids located within active areas of the main prairie dog town to estimate prairie dog abundance. Grids (30m wide by 150 m long, or .45ha) are located each year to sample a range of population densities (2 grids low-medium density; 2 grids medium-high density) and situated such that good sight lines exist throughout the grid (i.e., avoid areas with hills or depressions, excessively tall vegetation, or looking into the morning sun). Fluorescent orange flags are placed every 15 meters to identify the perimeter and center line of the grid resulting in two count lanes. Prairie dogs within each grid are counted 3 consecutive days. Observations are made from approximately 8:30-11:30 a.m. with two observers each visiting two grids per day. For each grid, an observer is stationed in the bed of a pickup truck approximately 60m from the grid's middle flag line, where the entire grid can be observed with binoculars. After a 15-minute waiting period, the observer counts all prairie dogs within the grid at 5 minute intervals for 45 minutes resulting in 10 counts per day. Various sources suggest the high count represents approximately 85% of the population, with 15% underground; therefore, the high count for each grid is then corrected by multiplying by 1.15. Prairie dog numbers are estimated by multiplying the total number of active prairie dog acres on the refuge by the average density estimate derived from corrected visual counts.

Methods derived from: Severson, Kieth E. and Glenn E. Plumb. 1999. Comparison of methods to estimate population densities of black-tailed prairie dogs. Wildlife Society Bulletin. 26(4):859-866.

RESULTS:

Two prairie dog towns totaling 89.78 acres (HQ Area – 89.54 ac; HU 1 - .24 ac) were mapped in June 2010 on Fort Niobrara which is an increase of 7.44 acres from 2009 (Figure 1). The main prairie dog town surrounding the headquarters area expanded and shifted slightly while the town in the wilderness area was unchanged from 2009.

Population density surveys were conducted July 20-22, 2010 by biological technician M.Dunkle and refuge biologist K.McPeak. Raw and corrected densities of prairie dogs for the 4 sampling grids are listed in Table 1. The density of prairie dogs on Fort Niobrara ranged from 13/acre in low density habitat to 47/acre in high density habitat.

Extrapolating the mean density figure from this survey, the refuge population in 2010 is estimated at 2790 prairie dogs which is a slight increase from 2009 (Table 2).

Figure 1. Location of active prairie dog towns 2009 and 2010.

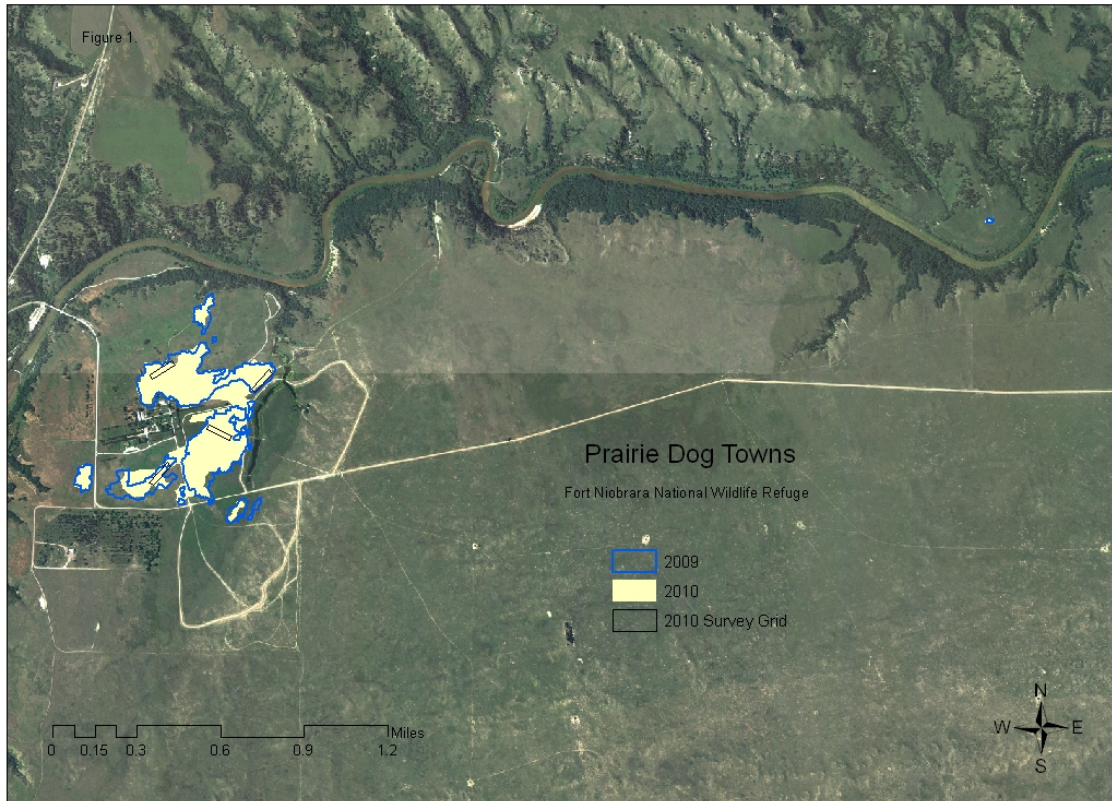


Table 1. Results of 2010 prairie dog density survey.

Survey Grid	High Count of Prairie Dogs Observed	PDs per Hectare	PDs per Acre	PDs perAcre corrected for 85% factor
West Horse	34	76	31	36
East Horse	45	100	40	47
West Exhibition	27	60	24	28
East Exhibition	12	27	11	13

* Mean PDs per acre corrected = 31

DISCUSSION:

The USFWS moratorium of all black-tailed prairie dog control beginning in March 1999, in combination with drought conditions 2002-2006, resulted in an increase in abundance and distribution of black-tailed prairie dogs on Fort Niobrara NWR. The number of occupied acres and towns increased from approximately 23 acres and 1 town in 1999 to a peak of over 175 acres and 5 towns 2005-2006 (Figure 2). Although population surveys were not conducted in 2005, using results from density grid surveys in 2003 in combination with known areas of active prairie dog habitat, population numbers most likely exceeded 5,000 animals in 2005.

In 2005, to ensure that prairie dogs do not present further safety and health hazards to refuge staff and visiting public in areas of concern (headquarters, corrals) and threaten the integrity of management facilities (water control structures/dikes), limited active management of prairie dogs was resumed accounting for an approximate 15 acre reduction in active prairie dog habitat in the headquarters area and the loss of the town in habitat unit 23. For unknown reasons, the two prairie dog towns in habitat unit 16 have not been active since 2006 further reducing active prairie dog habitat by 5.2 acres. During the years 2008-2009, the remaining two prairie dog towns experienced significant decreases in active acres. Density survey results in 2008 suggest prairie dog numbers were down in the town surrounding the headquarters area which may have resulted in fewer animals needing to disperse and thus the decline of active prairie dog habitat in 2009 (Table 2). Natural mortality factors that may have influenced population numbers include badgers and disease (several dogs observed losing hair).

Continued monitoring of prairie dog abundance and distribution should result in a better understanding of population trends for this species of management concern. If animals are observed exhibiting hair loss or some other abnormality, samples will be collected and the cause determined with assistance from the Wildlife Health Office in Bozeman, MT. Spatial data for prairie dogs are located on the GIS computer in the Fort Niobrara NWR folder (R:\Fort Niobrara NWR\Prairie Dogs).

Figure 2. Location of active prairie dog towns 1999 - 2010.

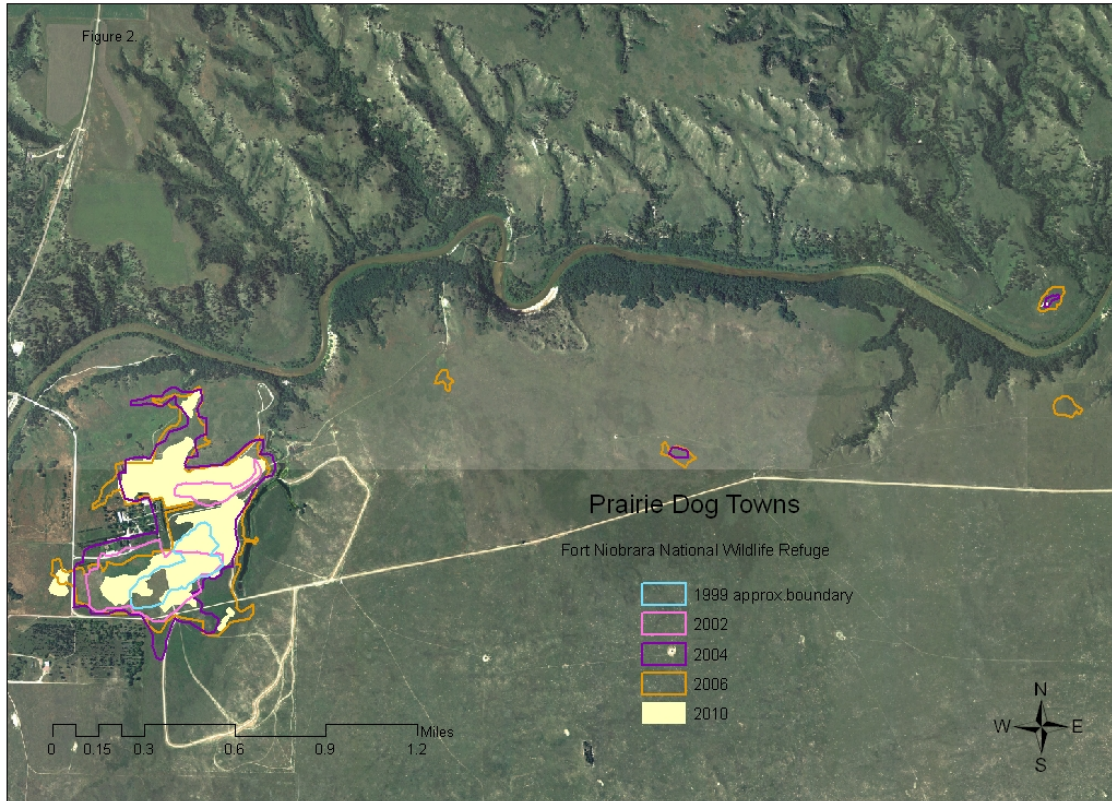


Table 2. Prairie dog population survey results 2002 – 2010.

Year	Total PD Acres	#PD per Acre Corrected		Estimated PD Population
		Range	Mean	
2010	90	13-47	31	2800
2009	82	24-39	32	2600
2008	103	9-16	13	1300
2007	160			
2006	167			
2005	~175 (no survey)			
2004	163			
2003	95	15-46	29	2800
2002	56			

1999	~23			
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