

## MEMORANDUM

To: Prairie Dog File P.13.g

From: Shilo Comeau

Subject: Population Density Estimates

### Introduction

Black-tailed prairie dogs are a native species that is an integral part of the wildlife community and it is appropriate to maintain a viable population on the refuge. Many wildlife species associate or depend upon prairie dogs during some portion of their life cycle. While some species forage on prairie dogs, others utilize the burrow systems or short grass habitat to fulfill their requirements. Vacant burrows are utilized by cottontail rabbits, small rodents, tiger salamanders, snakes, and many grassland birds (Agnew et al. 1987, Knowles 1994, Kolbe et al. 2002). And while maintaining prairie dog towns is important, restoring upland habitats to native prairie is also important. Many areas that prairie dogs have established in contain exotic crested wheatgrass that eventually dies with repeated grazing by prairie dogs, resulting in bare ground and/or an annual weed community. A native plant community in the prairie dog towns would be composed of short grass species such as blue grama, buffalograss, threadleaf sedge, and western wheatgrass that can withstand repeated short clipping by the prairie dogs. A primary goal in the Refuge's Comprehensive Conservation Plan (2005) is restoring all upland areas to native prairie, including the prairie dog towns. An objective under that goal is to provide a mosaic of short, medium, and tall grassland habitat across the refuge. Monitoring of prairie dog habitats is essential to ensuring that we are providing that short grass habitat, but also that there are medium and tall grass habitats provided in upland areas as well for those wildlife species that require those habitats. Additionally, monitoring densities of prairie dogs is important to insure that we are maintaining a viable population on the refuge.

### Methods

To determine the number of acres present on the Refuge, a track log was recorded along the perimeter of active towns using a Garmin GPS unit while on an ATV. The tracks created on the GPS units were downloaded into Arcview and used to create a shapefile from which the acres were determined (Fig1). To determine population density, prairie dog towns were sampled following the method described by Severson and Plumb (1998). There were five 4 ha plots delineated in four different prairie dog towns. The size of the dog town and topography were used to determine the number of plots and where plots were located (Fig. 2). In larger towns with relatively little difference in topography (i.e., hills), two plots were laid out. In towns that met the size but not the topography requirements, only one plot could be laid out because the observer needed an unobstructed view of the entire plot. Counts were conducted for three consecutive days in late June and mid-July. Prairie dogs were counted 4 times, with 15 minute intervals between counts starting at 6:30AM. In accordance with the method described by Severson and Plumb (1998), the highest number counted over the three day period was used in the formula to calculate densities. The model  $Y = 3.04 + 0.40X$  was used to estimate population density, where Y is the maximum count and X is the density. The inverse of this equation resulted in the estimation of densities for each plot. The number of acres in each town was



converted to hectares and used to estimate a population density for the town sampled. The number of hectares were divided by four to get the number of 4ha in each town, then the density estimates were multiplied by the hectares to get a estimate of the population for that respective town.

## Results

From Arcview it was determined that there were 771 acres of prairie down towns on the refuge, over twenty six distinct towns (Fig. 1). This is an increase of 198 acres on the refuge and a 35% increase from 2006. The largest town was 230 acres which was located northwest of Pool9, and the smallest towns were 2 acres or less (Table 1). The number of towns did not change since 2006, but some small towns were trapped out while a few new towns became established. The estimated population of prairie dogs on the towns that were sampled ranged from 535 to 2,469. The total population estimated on the four towns was 5,113 prairie dogs, a 39% decrease from 2006 (Table 2). The town that had the highest densities of prairie dogs was the one north of Pool 3 and the town with the lowest densities was located in unit 10NW2.





Figure 1. The locations of prairie dogs towns on Lacreck NWR in 2007.



Table 1. The number of acres mapped in each town in 2007.

<b>Unit</b>	<b>Acres</b>
10SE-1	24
10SW-1	4
10SW-2	4
10SW-2	1
Pool 6	2
Pool 8	6
HQ-SE	2
10NE1A	2
10NW-2	20
10NW-3	2
10NW-1	51
10NE-2	40
10NE-1	1
9NW-3E	24
9NW-3E	0
PNW-1&2	171
10NW-1	3
LCN-7B	9
LCN-2D	139
Pool 8	3
Pool 3-1	230
5N-1W	13
5N-1E	0
5N-1S	5
5S-1	13
Pool 9	1
<b>Total</b>	<b>770</b>



Table 2. The estimated total density on four prairie dog towns on Lacreek NWR in 2006. There was a new plots established in Unit 10NW-2 (Fig 2 & 3) and LCN-2d was not surveyed for logistical purposes (it was farmed), but there were some prairie dogs in the unit.

<b>Town Name</b>	<b>Density Est/ 4 ha Plot</b>	<b>Prairie Dog Size (Ha)</b>	<b>Total ha in Town/ Four</b>	<b>Population Est. 2007</b>	<b>Population Est. 2006</b>	<b>Percent Change</b>
10NW-2	267	8	2	535	N/A	N/A
P3-1	147	67	17	2469	1890	31%
9NW 1&2	42	69	17	731	5163	-86%
10NW-1	262	21	5	<u>1378</u>	<u>697</u>	98%
<b>Total Est.</b>				<b>5113</b>	<b>8366</b>	39%



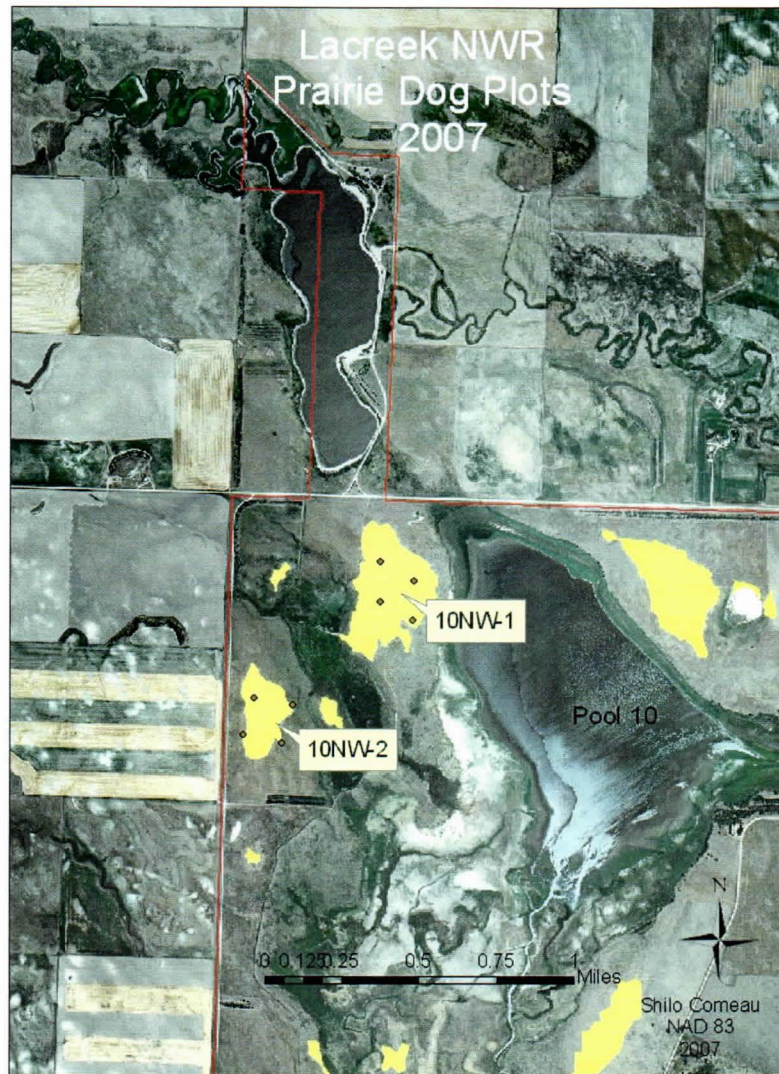


Figure 2. The 4ha plots located west of Pool 10, with the plot in unit 10NW-2 being established this year.



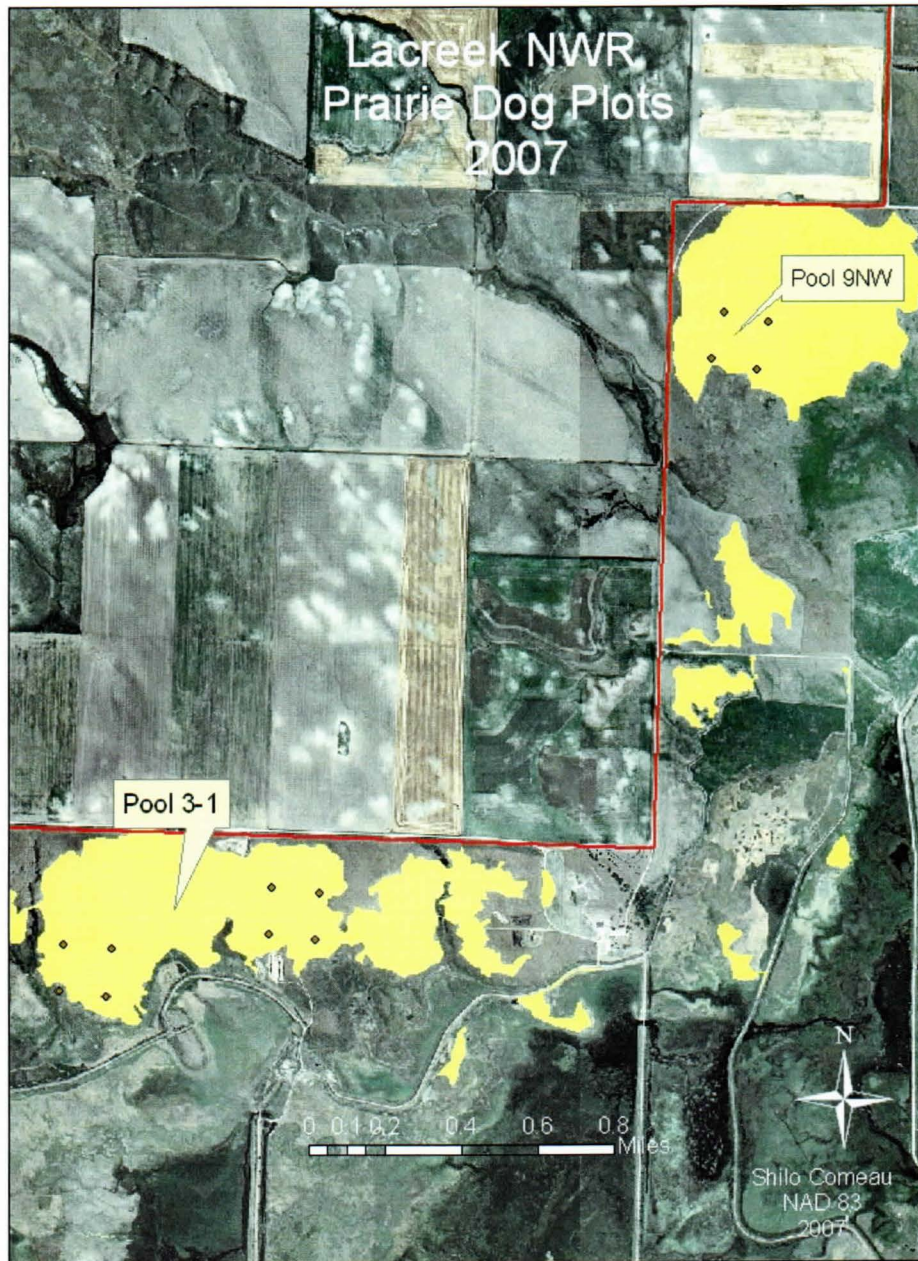


Figure 3. The 4ha plots used for density estimation west of Pool 9 and north of Pool 3.



## Discussion:

Control of prairie dogs occurred on the refuge until 1999 when a moratorium of all control on Service lands was issued by the regional director. In 2005 control of prairie dogs was allowed again on Service lands, but only with an approved management plan. A prairie dog management plan for Lacreek NWR was included in the CCP, which was approved and signed by the Regional Director in February of 2006. During the time of the moratorium, acres of prairie dog towns expanded 343% from 1997 to 2004, and the number of individual towns increased from 3 to 10. The continued increase in acres the past two years seems to be due to the lack of forage in the center of the towns. The centers of the largest towns are bareground or weeds, so expansion continues outside the previous year's boundary even though overall density is decreasing i.e., there was a substantial decrease in density on 9 NW-1 which is the largest town on the refuge. The establishment of these towns in crested wheat grass fields that do not respond well to constant grazing by prairie dogs. As a result, there is little or no forage available which then forces dogs into areas where herbaceous material is available. Their expansion into some areas could potentially interrupt restoration efforts on the refuge. Furthermore, many of the towns are expanding onto to private range and hayland, and official complaints have begun to surface. In addition to the expansion of established towns, there continues to be colonization of new areas. However this growth was curbed by near normal precipitation conditions this spring, especially in areas where native grass was present.

## Recommendations:

This technique be used again to estimate densities and gather trend data. If two people are available to conduct the survey it should be completed in June and July, but if only one person is available for data collection the early July is the best choice when young of the year are visible and heat is less of a factor. Finally, resorting native grasses that are tolerant to repeated grazing would like reduce or eliminate expansion. Restoring these native grasses in the upland areas of the refuge is outlined in the CCP.

## References Cited:

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11/30/2007 11:56 AM

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cc Shilo Comeau/R6/FWS/DOI@FWS  
bcc

Subject: Prairie dog update

History:  This message has been forwarded.

Hello,

FYI

Shilo just completed her 2007 black tailed prairie dog monitoring report. I thought it would be a good time to give you an update. We completed control activities in 2006/07 using a variety of techniques, including zinc treated oats, phostoxin, 110 connibears, and live trapping. The 110 connibears were effective at stopping new towns from establishing where we did not want them, if they were small in size. We did this in several locations where a prescribed burn was completed and a new town sprang up. The amount of labor was tolerable at a smaller scale. We plan to continue to use this technique in the future.

Shilo experimented with live trapping for use in feeding black footed ferrets. She was successful at catching some, but the cost:benefit ratio was pretty high. Likely would need to get more traps to make it work at a larger scale. We plan to work on it more in 2008 and see if the efficiency of the operation can be improved.

We also treated a number of new towns and existing towns with zinc treated oats and then a follow up treatment of phostoxin tablets. As evidenced in Shilo's surveys (see attached), the densities in these towns decreased as a result. Although hard to measure, the large scale dispersal of prairie dogs off the refuge that was observed in 2006 declined in 2007. We did have several of the larger towns continue to expand acreage, although the densities dropped. What we believe is happening, is that most of these towns are established in solid crested wheatgrass. Crested wheatgrass does not survive repeated burrowing and clipping by the prairie dogs, and dies off after 4 or 5 years. Bare dirt remains, with tumbleweeds (Kocia and Russian thistle) filling the void. Normally, a town that has been treated would be expected to have prairie dogs moving back in towards the center of the town towards the most preferred sites. In this case, no forage remains, so they continue to expand outwards, even though the numbers are dropping. Several towns that have established in areas with native vegetation such as western wheatgrass, have not had the vegetation denuded. The native vegetation is much more tolerant of the burrowing and clipping, and does not completely die out. We suspected this early on, but it has really become apparent in the last year. We began interseeding some of the towns with buffalo grass, blue grama, and western wheatgrass in 2005. We bought a tracked bobcat with a grass drill attachment that I hope will allow us to drill grass in the rough conditions of an existing town. Our truax grass drill would be beat to death.

Several of the towns mentioned above have "spilled" over onto adjacent private lands. I plan to treat one more year with zinc oats and followup with phostoxin to address. We will also get very aggressive at seeding sites that look like scorced earth in hopes that the prairie dogs will reoccupy the center of these towns and check the amount of expansion.



Prairie dog density memo 07.doc

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