

White-tailed Prairie Dog 2012 Monitoring Pinedale Anticline Project Area



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Survey Objectives

1. Monitor long-term trends in occupancy rates via mapping of prairie dog towns
2. Monitor long-term trends in active burrow density/prairie-dog numbers

Monitoring Matrix

- **Sensitive Species (WTPD)**
- Criteria:
 - Occurrence of species and change in numbers of each species
- Changes to Monitor:
 - 3-year change in presence/absence of species, and in numbers of individuals of each species, compared to reference areas.
- Specific Change Requiring Mitigation:
 - 3 consecutive years of decline in presence/absence of a species, or an average of 15% decline in numbers of individuals each year over 3 years.

Objectives for 2012

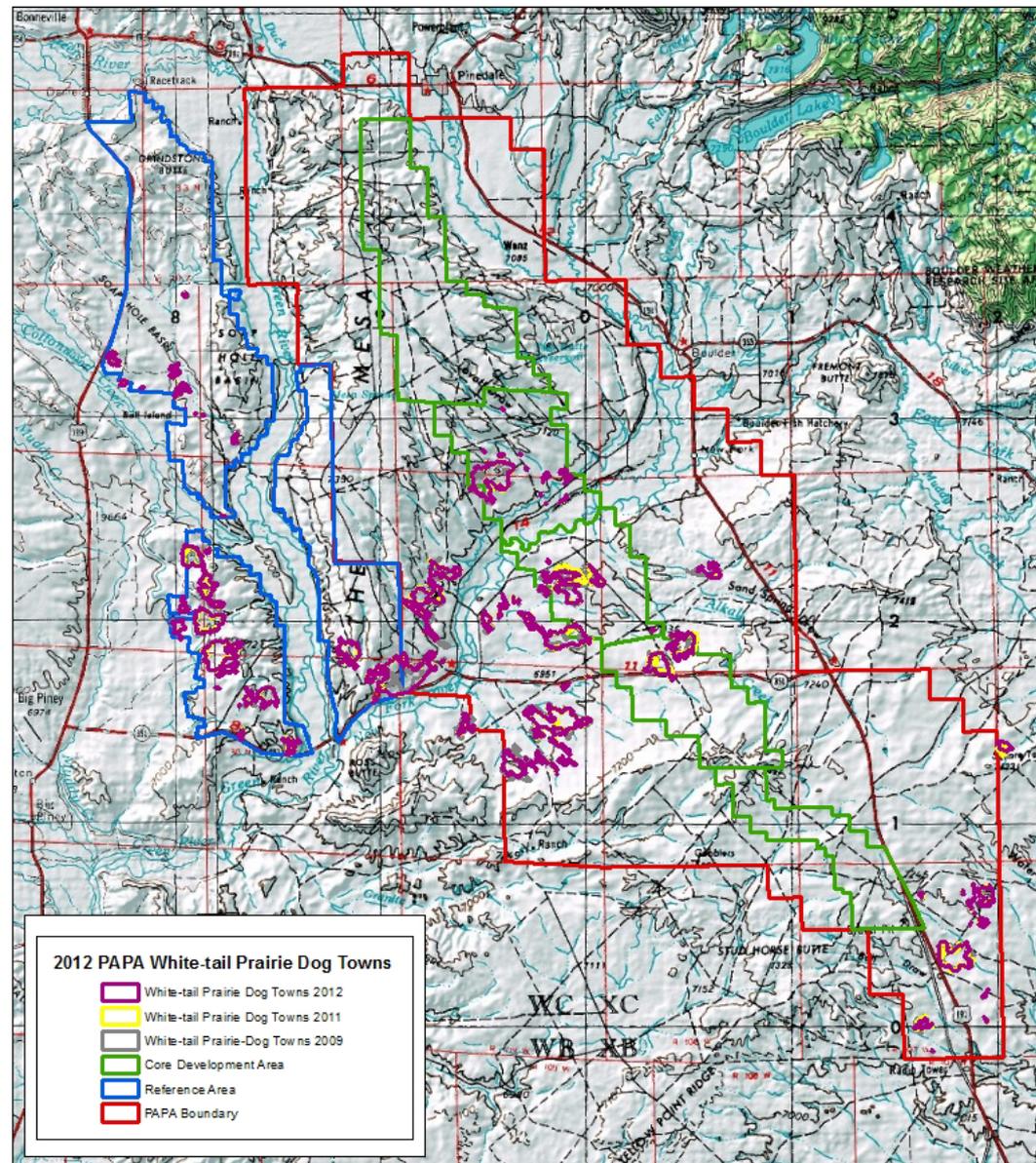
- Compare year-to-year changes in prairie dog occupancy based on the acreage of towns within each area (PAPA and Reference).
- Estimate prairie dog abundance based on the number of active prairie dog burrows within each area and compare to prior year (2011) results.

Methods

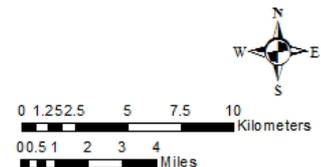
- Mapping of Towns
 - All towns mapped in 2011 were revisited and mapped
 - New towns identified while in the field were also mapped
- Burrow Density
 - Transects were walked in all accessible towns to count burrows and estimate active burrow density

2012 Towns

Towns were mapped based on methods of Biggins et al. (1993)



Data Source: USGS Topo. 1:100,000
Projection: Transverse Mercator
Datum: North American 1983
Created By: T. Rintz
Date: 10/10/2012



Acreage of Towns

Table 2. Change in acreage of mapped white-tailed prairie dog towns between 2009 and 2012.

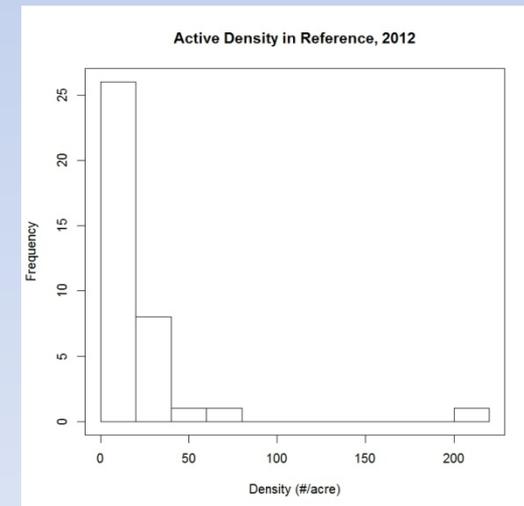
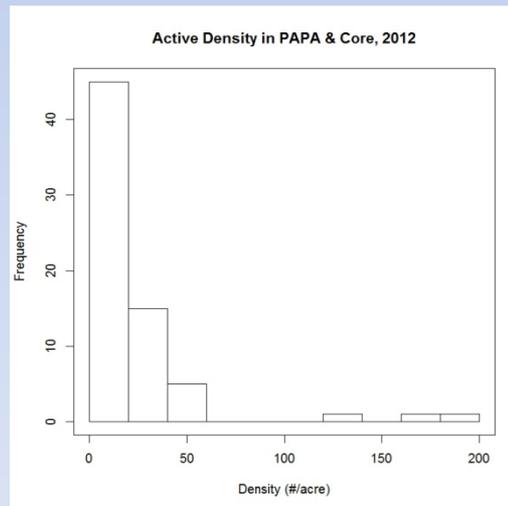
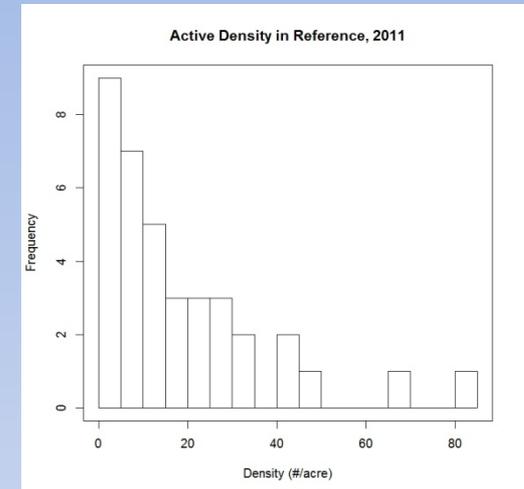
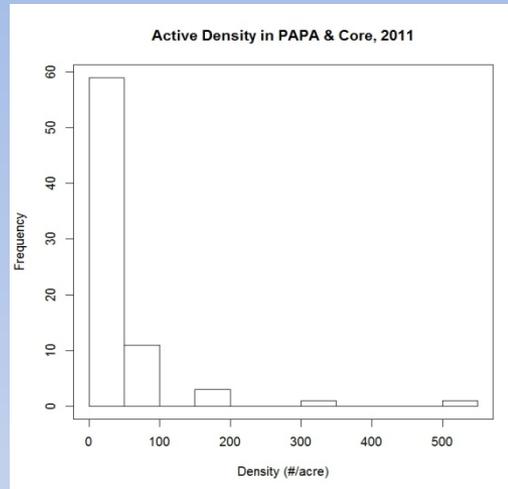
Area	Year			Change in Acreage from 2009 to 2011 acres / (%)	Change in Acreage from 2011 to 2012 acres / (%)	Change in Acreage from 2009 to 2012 acres / (%)
	2009 (acres)	2011 (acres)	2012 (acres)			
Core Dev. Area	1,483	1,431	1,389	-52 / (-3.5)	-42 / (-2.9)	-94 / (-6.3)
PAPA	4,248	4,309	4,341	61 / (1.4)	32 / (0.7)	93 / (2.2)
Reference	1,974	2,003	2,176	29 / (1.5)	173 / (8.6)	202 / (10.2)
Total	6,222	6,312	6,517	90 / (1.4)	205 / (3.2)	295 / (4.7)

Survey Methods-Burrow Density

- Mapped towns were surveyed for burrow density based on methods in Biggins et al. (1993).
 - Strip transects (3m wide) spaced 60m apart
 - Data Recorded during each visit:
 - Total Number of Burrows (>7 cm diameter entrance without visible end)
 - Number of Active Burrows (fresh scat within 0.5m of entrance)

Analysis - Outliers

- Calculate burrow densities for each town (# burrows/area surveyed)
- Outliers identified that were highly influencing the data (i.e., small towns with extreme burrow densities due to sampling)
- 5 outliers in identified 2011 data and 4 in 2012 data



Results

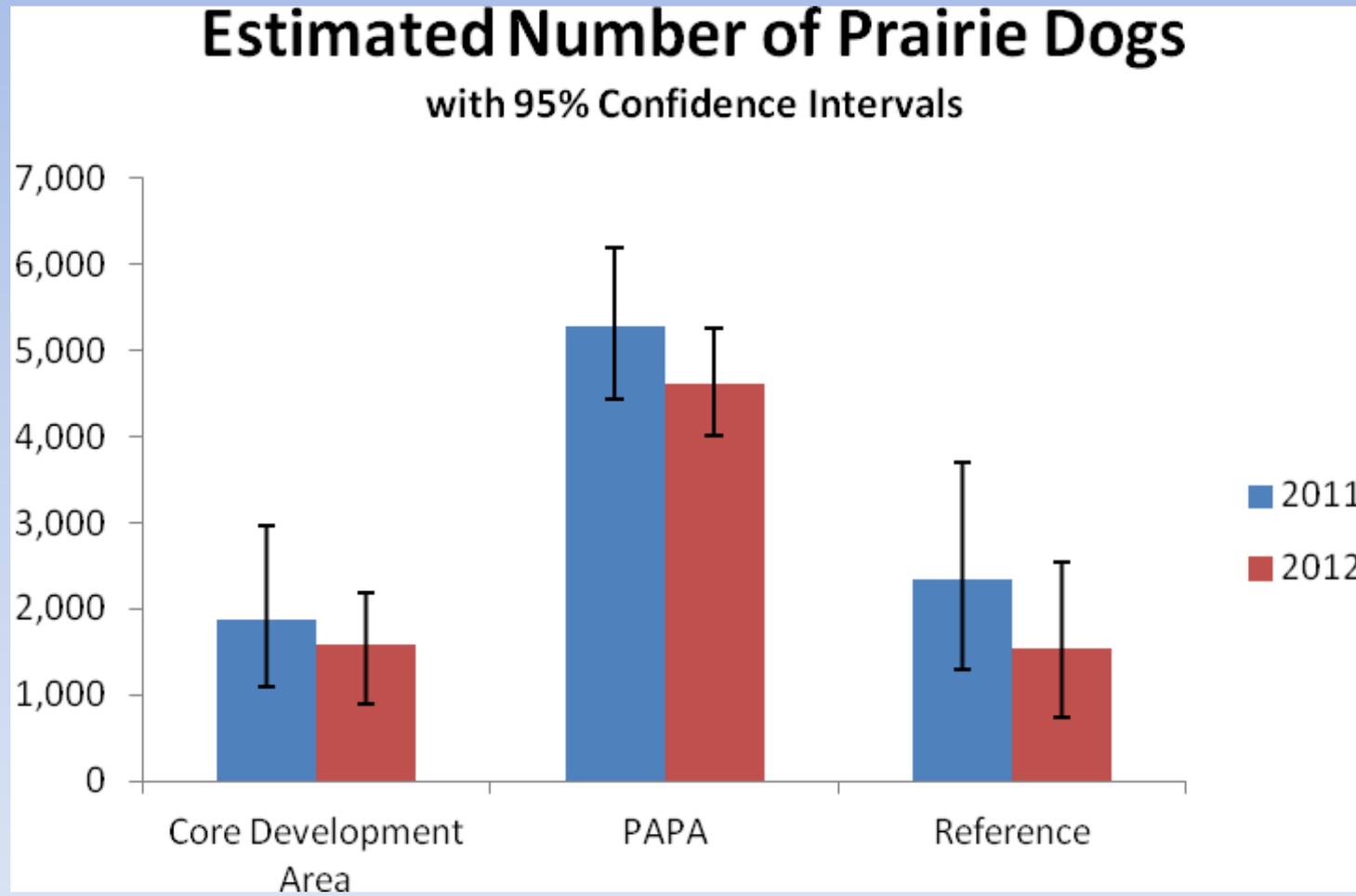
Table 9. Average active burrow density (number per acre) based on dataset excluding outliers in each area with 95% bootstrap confidence interval.

Area	2011			2012		
	Density	95% Confidence Interval		Density	95% Confidence Interval	
		Lower	Upper		Lower	Upper
Core Dev. Area	23.92	14.22	33.85	20.83	15.22	25.52
PAPA	20.99	15.32	26.89	14.94	12.40	18.74
Reference	17.98	11.96	24.13	14.10	9.28	19.15

Table 11. Total number of white-tailed prairie dogs in each area, based on the Biggins conversion, with 95% bootstrap confidence interval.

Area	2011			2012			% Change 2011 to 2012
	Number	95% Confidence Interval		Number	95% Confidence Interval		
		Lower	Upper		Lower	Upper	
Core Dev. Area	1,868	1,097	2,971	1,579	902	2,186	-15%
PAPA	5,275	4,248	6,642	4,608	3,808	5,606	-13%
Reference	2332	1,581	3,263	1,547	1,195	1,969	-34%

Number of Prairie Dogs



Recommendations

- Continue with current methods of mapping towns and estimating burrow densities
- Modify protocol to include the number of burrows (active and total) for each individual transect walked
 - This will provide for estimation of variation in burrow density within individual towns.
- Conduct survey (aerial or other) of the entire study area (PAPA and Reference Areas) to search for newly established towns.
 - Without a survey of the entire Study Area, the monitoring protocol may be biased toward easier estimation of decreases in prairie dog presence/occupancy (i.e., # and/or acreage of towns) if newly established towns are only added incidentally.