Viability of mountain plover

My professional judgment that there are not viable population of mountain plover o the PNG is based on the below conversations and data from David Augustine, Harmon and Braude, and prairie dog habitat data on the PNG. Currently, prairie dog habitat provides the most consistent, highest densities of mountain plover habitat on the PNG. My rationale for effects determinations of :likely to adversely affect with a trend toward federal listing, or loss of viability in the planning area is also based on conversations with Fritz Knopf (included his cornell title).

Based on conversations with David Augustine, ARS wildlife researcher who has conducted published mountain plover research on the Pawnee National Grassland, there are not likely viable populations of mountain plover on the PNG. Below is the rationale.

Augustine's rationale for needing 500 birds is based on the concept of 50/500 rule for conservation of small populations (Harmon and Braude= need date). This concept states that you want to go for a minimum viable population of 500 for long-term viability, and ensure that you don't ever get below 50 or it's a real problem (Augustine 2013). Thunder Basin National Grassland biologists also used this 50/500 rule for their viability assessments, which was accepted and peer reviewed at the Regional Office level.

The estimate to use for the PNG is the density estimates on active prairie dog towns, as this is the only data we have for estimate numbers for. This also in recent years is the habitat that most often consistently has the greatest numbers of mountain plovers. His email on population densities are below.

From: Augustine, David
Sent: Monday, September 16, 2013 5:14 PM
To: Philbrook, Kristen R -FS
Subject: RE: plover viability

Kristen-

My surveys for 2008-2012 on PNG give a mean density of 5.91 plovers per square kilometer on active prairie dog colonies on the PNG. So if you think that **500 plovers is a minimum viable population, then you need 84.6 km2 (20,897 acres) of active prairie dog colonies on PNG to support a MVP**. If you think that **100 plovers is a minimum viable population, then you need 16.9 km2 (4,179 acres)** of active prairie dog colonies on PNG to support a MVP. Really depends on how many birds you want to support. Of course the details depend on spatial distribution of the colonies, their longevity/turnover relative to plague, etc. But the crude estimate is to take the number of birds you want to have, divide by 5.9 to get sq. km, then multiply by 247 to get acres. (1 square kilometer = 247 acres).

Let me know if you want to discuss further. Here is a table of yearly densities calculated from program Distance- I am writing this up for a manuscript that I will be submitting for publication this fall:

Mountain Plover Densities on Active Prairie Dog Colonies on Pawnee National Grassland, 2008-2012

	Density	-95%Ci	+95%CI	
5-year Mean	5.91	4.71	7.42	Acres of prairie dog towns
2008	6.4264	5.1151	8.0739	2398
2009	9.5632	7.312	12.507	2889
2010	6.3063	4.8037	8.279	3408
2011	5.9404	4.1247	8.5553	4161
2012	4.3353	3.367	5.5821	3417

Average acreage of prairie dog towns 2008-2012 = 3,254.

Based on prairie dog town acres, there are not enough acres to support 500 mountain plover, which is needed to promote long term viability. We do not have enough to support 100 mountain plovers, which is 4,178 acres. We have enough prairie dog towns to support 50 mountain plovers, which is 2,093 acres. Maintaining a population of 50 mountain plovers does not support long-term viability. Within 10 years it is unlikely the population would survive.

Thunderbasin is in a similar situation. They currently do not have enough mountain plovers to support a long term minimum population. The low acreage of prairie dog towns does not take into account that the PNG does not have the recommended complex of prairie dog towns as stated in the prairie dog EA. The definition of a complex is one thousand acres within 7 km of each other (Vanpelt 2013). It also does not account for plague, which can cause declines of more than 50% of acreages in less than 2 years (over 1,100 acres in 2011 vs. 600 some acres (2013 data) on the Pawnee side. Prairie dog towns on the PNG plague out on average once every 5 years. (get reference and exact acreages for above sentence).