Effects of Reintroduced Prairie Dogs on the Landscape

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USFWS Directorate Fellow

Sevilleta NWR 2014

Directorate Resource Assistant Fellowship Program

- A new 11- week fellowship program
  - Volunteering with USFWS to complete a rigorous research project
  - Opportunity to develop relationships with USFWS employees

- Over 40 Fellowships throughout the nation
  - Rising college seniors or graduate students
  - GPA 3.0 or higher

- Upon completion, may be eligible for a permanent position that is related to field of study

Ecological Role of Prairie Dogs
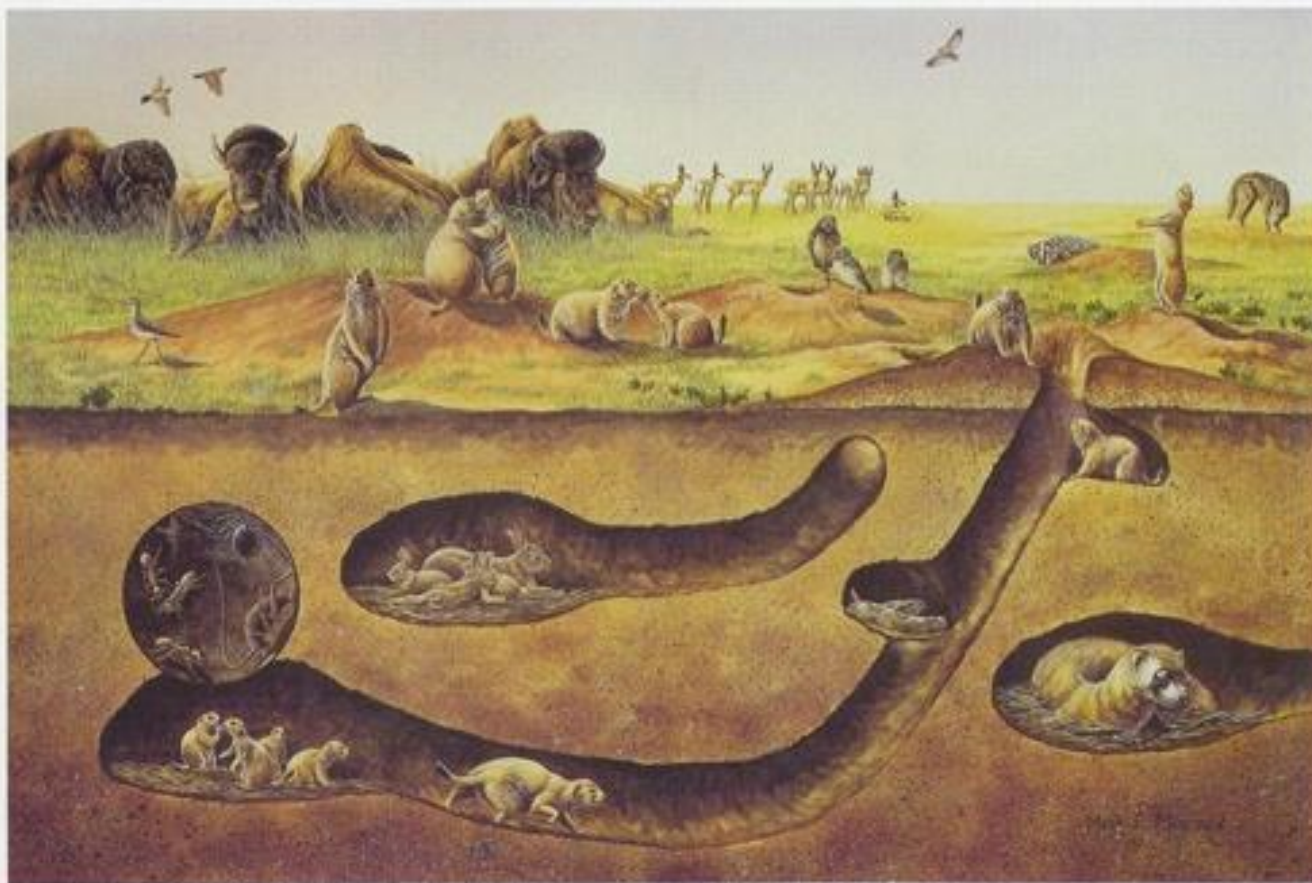
Cross section of a prairie dog burrow. (Drawing by Mark E. Marcuson; courtesy University of Nebraska–Lincoln, Department of Forestry, Fisheries, and Wildlife)
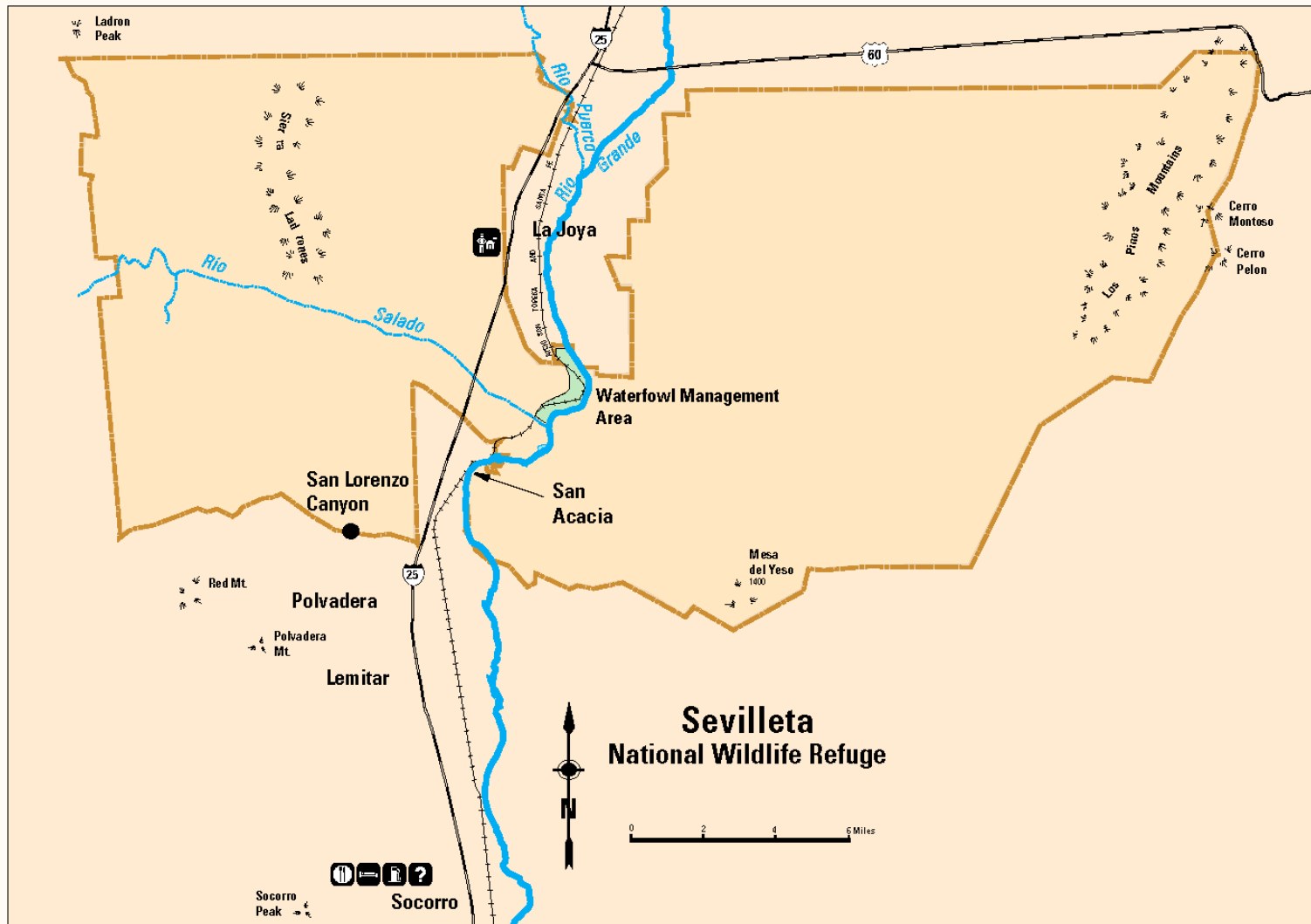
Figure 1

Prairie Dogs as Keystone Species

Gunnison's Prairie Dog
(Cynomys gunnisoni)

- **Little known about their specific impact on the ecosystem**

- **If a keystone species, would have similar roles as other *Cynomys* species, such as creating habitat for other species**

Davidson et al. 1999

Prairie Dogs at Sevilleta NWR

- **Reintroductions since 2010 to restore prairie dogs to historic grassland ecosystems**

- **Partnered with Prairie Dog Pals and NM Department of Game and Fish**

Project Focus

Short-term data

- **Pre-release**
  - **Vegetation**
  - **Scat**
  - **Camera**
  - **Burrows**
  - **Small mammals**

- **Post-release**
  - **Small mammals**
  - **Camera**

Project Predictions

- **Refuge's goal is to restore natural biological diversity to its grasslands by reintroducing prairie dogs**
  - My goal is to get pre-data that will help determine if prairie dogs are a keystone grassland species that will achieve Sevilleta's goal

- **In the long-term, GDPs are keystone species and have similar effects like other prairie dog species**
  - Different prairie dog species affect the landscape/ecosystem in unique ways

- **No effect on overall biomass of small mammals during the summer after reintroduction onto the sites**
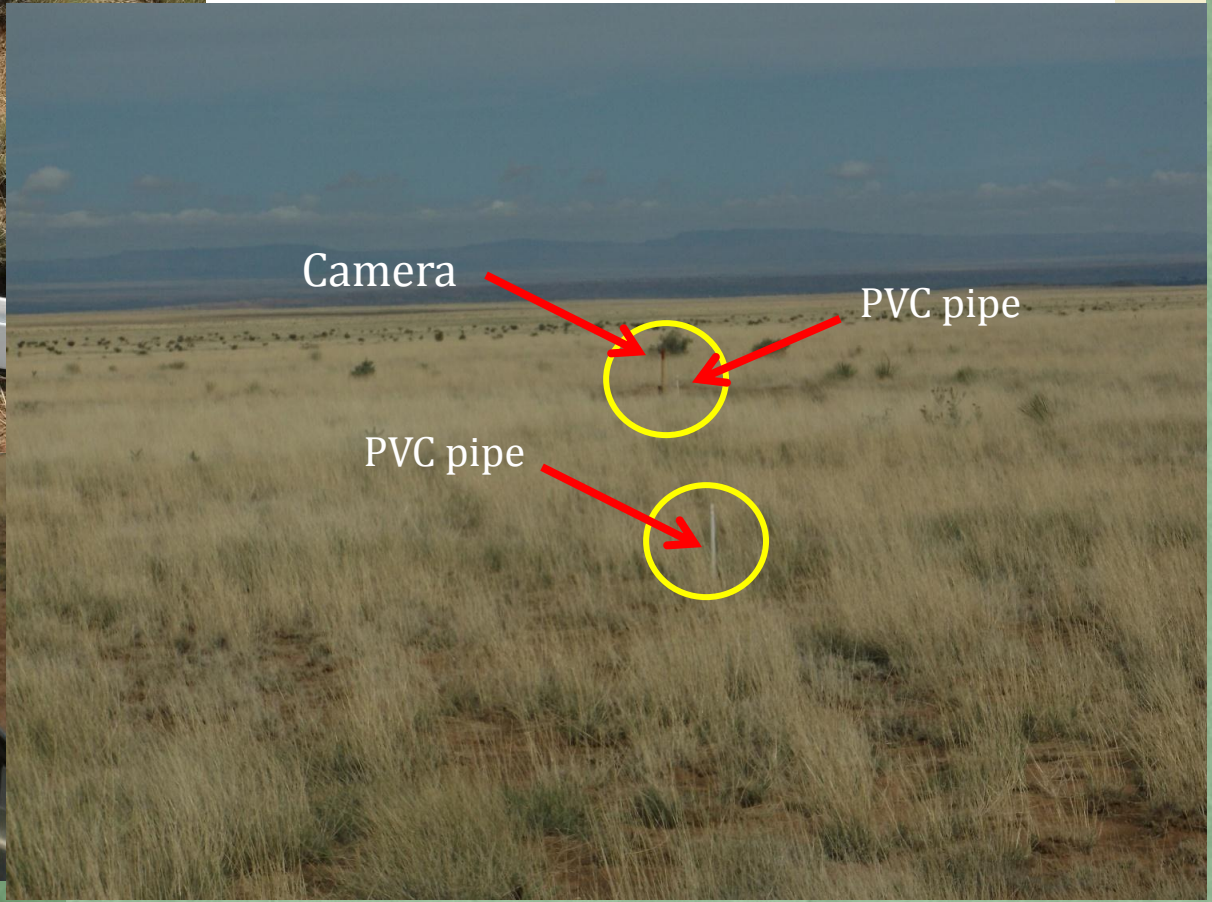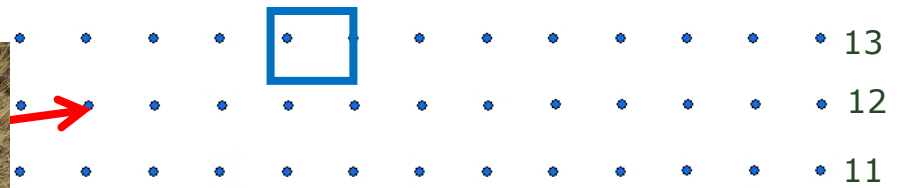 - Cannot see large changes in the short-term
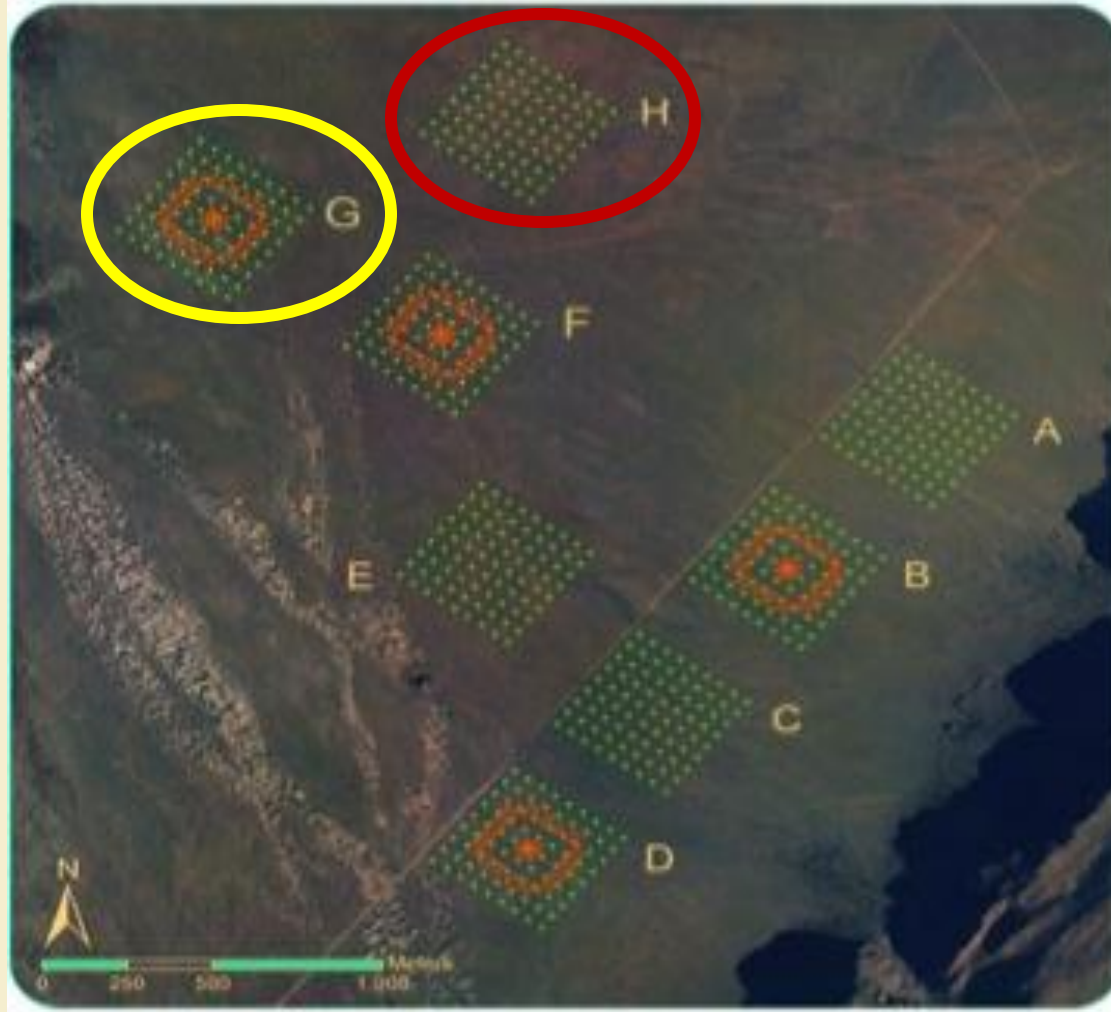
Study Site
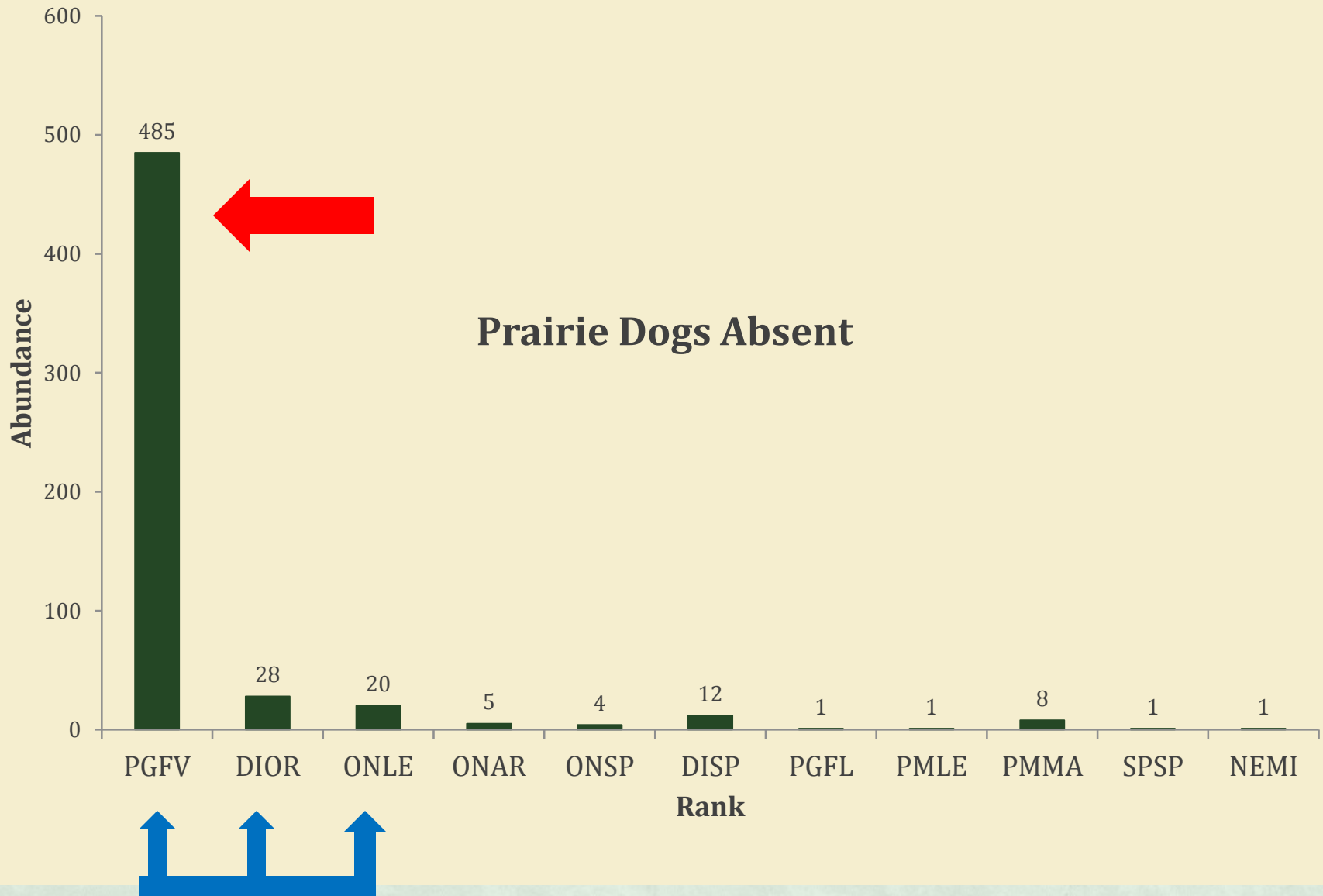**Sevilleta NWR**

Treatment: Plot G

Control: Plot H

Camera

PVC pipe

PVC pipe

13

12

11

Monitoring: Small Mammals

Pre-release Results:

Pre-release Results:

Plains Pocket Mouse

Treatment Plot

White-footed Mouse

Silky Pocket Mouse
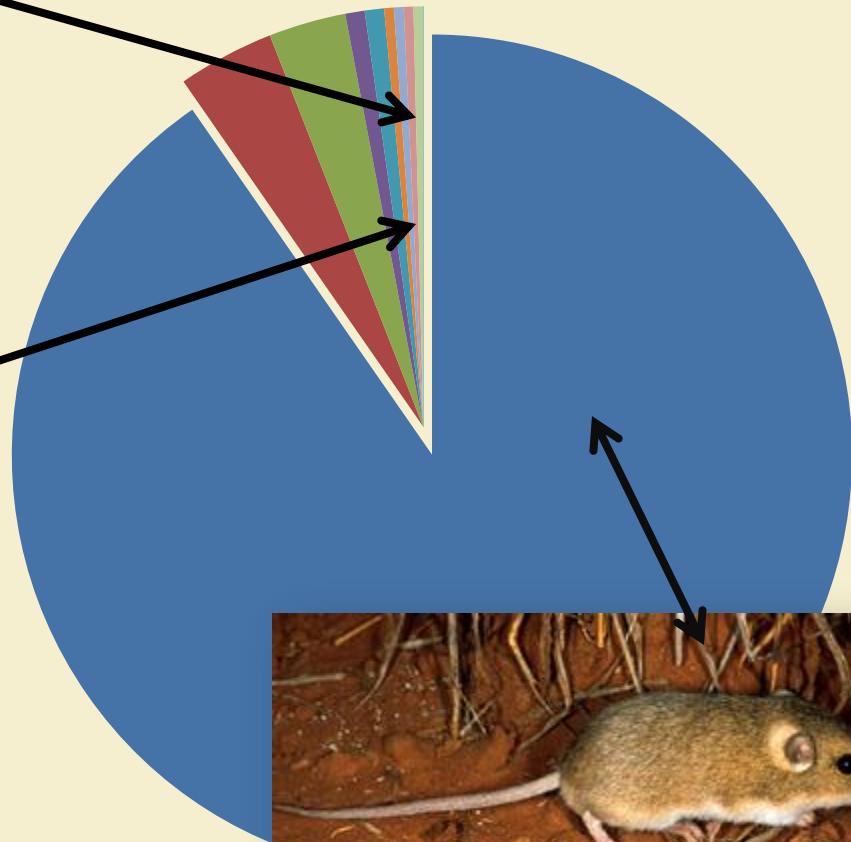
Pre-release Results:

Control Plot

Southern Plains Woodrat

Banner-tailed Kangaroo Rat

Deer Mouse

Spotted Ground Squirrel

Silky Pocket Mouse
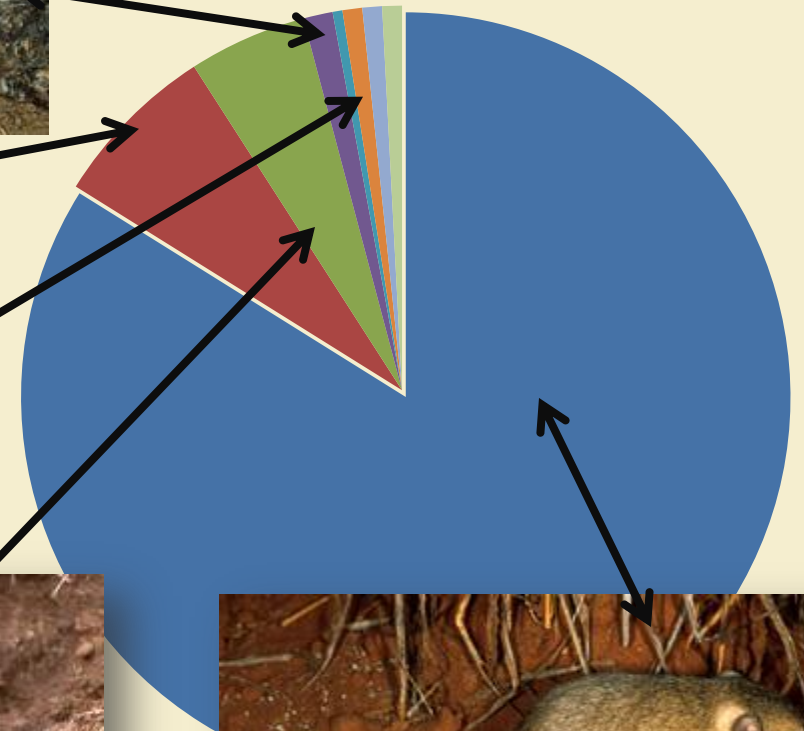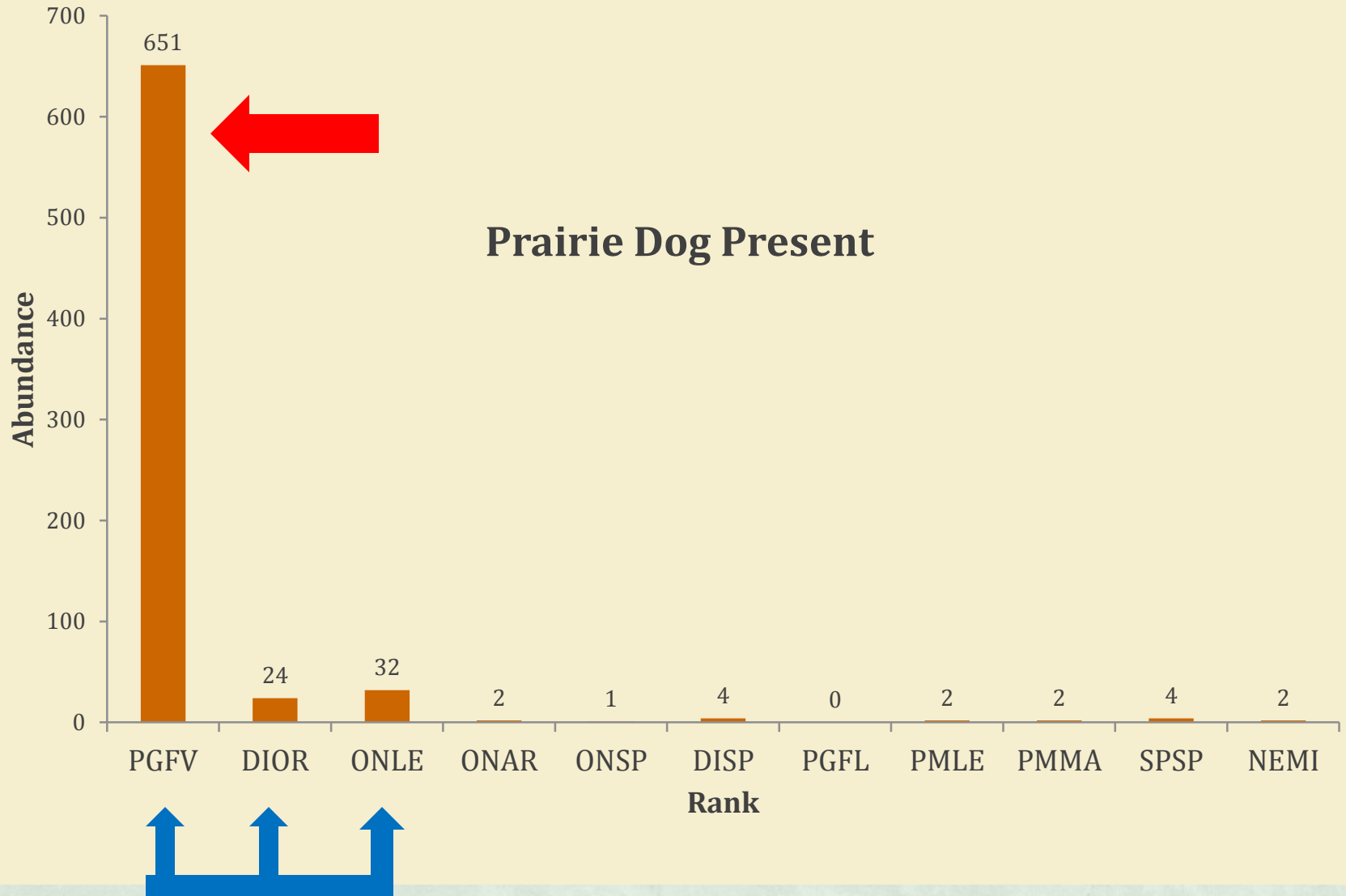
Prairie Dog Reintroductions

Start release date: July 2, 2014

To date: ~270 prairie dogs released onto Treatment Plot

Post-release Results:

Prairie Dog Present

Bar chart — Y-axis: Abundance (0 to 700), X-axis: Rank

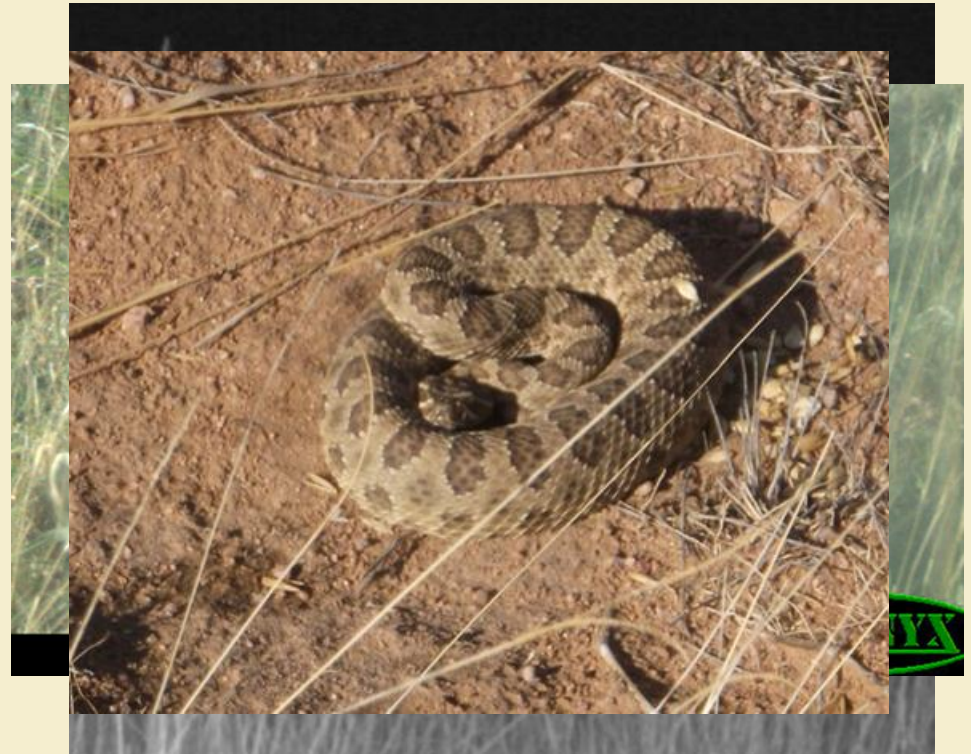| Rank	Abundance
PGFV	651
DIOR	24
ONLE	32
ONAR	2
ONSP	1
DISP	4
PGFL	0
PMLE	2
PMMA	2
SPSP	4
NEMI	2

Change in Abundance After Prairie Dogs
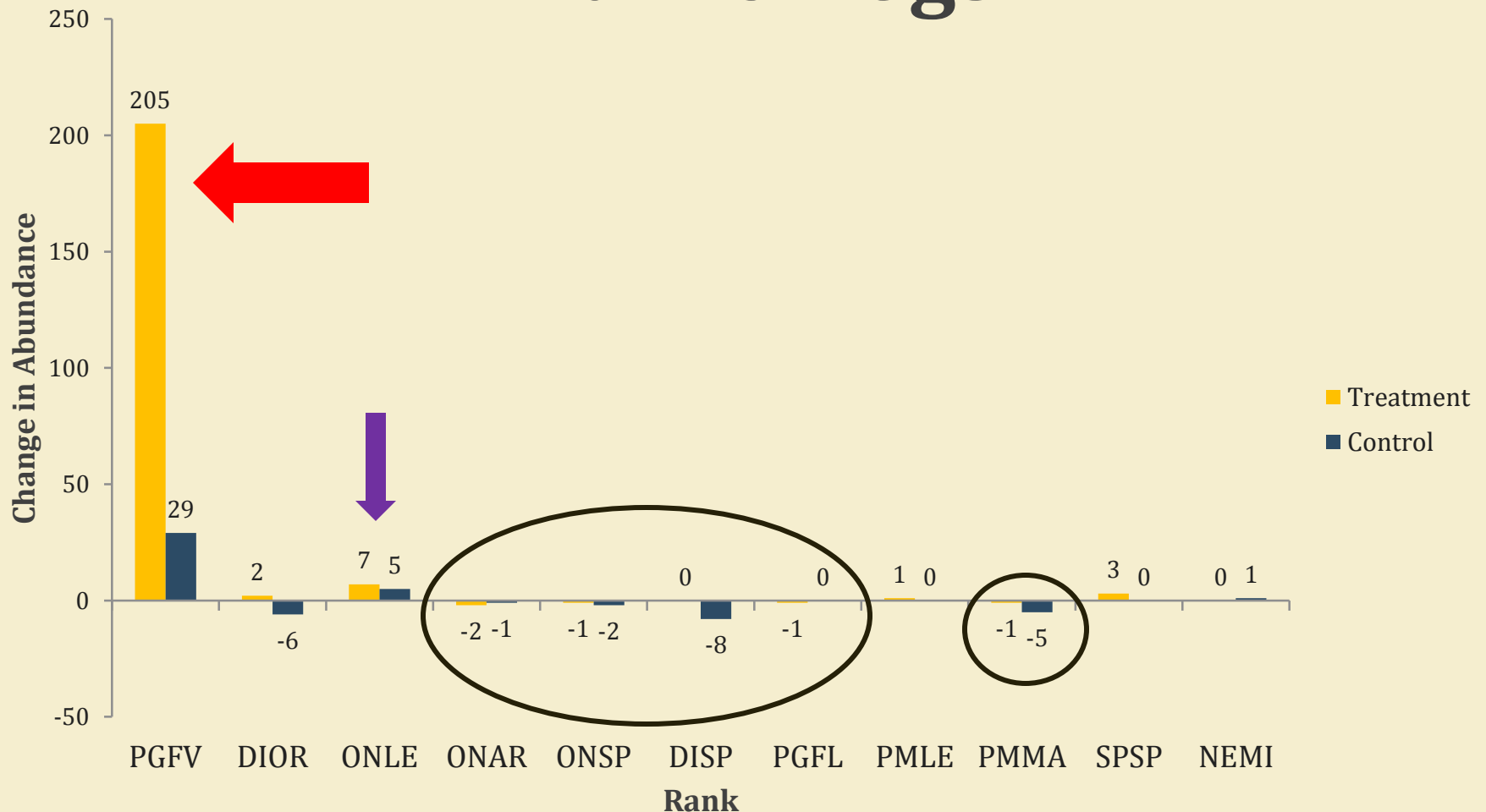
Camera Data

Pre-release

Post-release

Summary

Differences after Reintroduction

- **Unable to determine if GPDs are keystone species in the short-term**
  - **Contributing factors:**
    - **Rain**
    - **Supplemental feeding**
    - **Other keystone species**
    - **Time scale:**
      - **Must have stable, reestablished population for 2 or more years**

- **Displacement of individuals and introduction of other species onto the site**
  - **Increase in predators**
  - **Increase in other species on the plots**

Differences after Reintroduction

- **Determine effects on other species besides small mammals**
  - **Lizards, pronghorn, birds, etc**

- **Modification of the landscape over time**

Continuation of Project

- Camera
  - Vegetation changes over time (diversity, landscape)
  - Predators on the plots over time
  - Prairie dog interactions

- Scat
  - Record of species not seen or captured on cameras

- Small mammals
  - Dependent and independent species
  - Population, abundance, and diversity

- Kangaroo rats as keystone species
  - If not prairie dogs as keystone species, but kangaroo rats

Acknowledgements

- **Jon Erz, USFWS Wildlife Biologist**

- **Nancy Nicolai, UNM Professor**

- **Sevilleta NWR**

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- **SCA Interns**

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- **REU students**

Questions?