

THE EFFECT OF GUNNISON'S PRAIRIE DOG COLONIES ON ARTHROPOD DIVERSITY
IN THE NEW MEXICAN SHORTGRASS PRAIRIE

by

THADDAEUS BLAKLEY

Major: Fisheries, Wildlife, Conservation, and Environmental Biology
Minor: Mandarin Chinese

A FINAL HONORS PROJECT

submitted in accordance with the University Honors Program requirements

Department of Biology
College of Arts and Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

Spring 2027 Expected Graduation

Approved by:

Dr. Andrew Hope

Required: Select one by typing a X on the line

☒ Yes, I give my permission for my Honors project to be archived in [K-Rex](#) subject to the [Distribution License](#).

☐ No, I do not give my permission for my Honors project to be archived in [K-Rex](#) subject to the [Distribution License](#).

Abstract

Enter abstract here, no longer than 350 words.

The Sevilleta National Wildlife Refuge is opportunistically located at the intersection of four distinct biomes: Chihuahuan semi-arid desert scrub, pinon-juniper woodland, Colorado Plateau shrub-steppe, and shortgrass prairie. The last of these ecosystems, located on the eastern edge of the Great Plains, supports a small but mighty mammal that ultimately formed the focal point of my research: the Gunnison's prairie dog (*Cynomys gunnisoni*).

Prairie dogs are a highly studied component of grasslands across the US and are widely recognized as keystone species and ecosystem engineers. The Sevilleta refuge hosts several human-facilitated prairie dog towns, the result of a relocation/reintroduction effort that was originally established in 2010. As there are relatively few studies documenting the influence of reintroduced prairie dogs on ecosystem diversity, I developed my thesis to evaluate how this conservation program impacts other components of biodiversity. Given that arthropods are reliable indicators of biodiversity, I collected, quantified, and analyzed the diversity of arthropod families within and outside of prairie dog towns. Arthropods are widespread, diverse, and acutely sensitive to environmental changes, potentially providing valuable insight into drivers of biodiversity change across landscapes.

I set up 48 pitfall traps across two prairie dog towns and one control site. Each week, I collected and identified all specimens that had fallen into the traps. After four weeks of fieldwork, I began data analysis. My results demonstrated that the presence of prairie dogs did not significantly affect biodiversity, evenness, richness, or abundance; however, it did impact the community composition of arthropod families. These results suggest that prairie dogs influence microhabitats. These areas, while not more or less diverse than the surrounding prairie, nonetheless support a different variety of organisms. Additional research into these dynamics both at the Sevilleta and within other biological systems may be crucial for endangered species reintroduction programs, through a greater understanding of the role of these important species within their native communities.