Burrowing Owl Ecoregional Research Across Great Plains National Grasslands

- Current & Pending Support
- Current Project Overview
- Future Directions
- Questions

Cooperative Program

After this season: 54 undergraduate, 5 graduate students

Universidad Autónoma de Chihuahua
New Mexico State University
USDA, Forest Service

Grant Proposals

- ***Funded***

  Student Experiential Learning in a Multicultural Environment Through Agency Internships and an International Exchange Program - USDA Hispanic Serving Institutions Program - $350,000

- ***Submitted***

  Source-sink dynamics in burrowing owl populations across Great Plains prairie dog colonies: implications for owl and livestock management- $500,000

Four Study Areas with 356 Nests Monitored
(standardized approach across grasslands)

- Kiowa and Rita Blanca National Grasslands
  (12 prairie dog colonies, 68 nests)
- Comanche National Grassland
  (12 prairie dog colonies, 86 nests)
- Pawnee National Grassland
- (14 prairie dog colonies, 104 nests)
- Buffalo Gap National Grassland
  (17 prairie dog colonies (some quadrats), 98 nests)

Summary of Results 2006

- Significantly higher nest failure in the south (44 and 30% compared to 9 and 14%).
- Significantly higher productivity at the 2 northern sites ($F_{352,3} = 21.553$, $P = 0.00$).
- Sig. differences in nest spacing among sites ($F_{3, 347}$, $P = 14.48$).
- Higher productivity at supplemented nests for 3 of 4 sites ($F = 12.77$, $P = 0.00$).

Fledging Success per Pair 2006 (5-6 weeks of age)

- Kiowa-Rita Blanca – 1.7 chicks/pair
- Comanche – 2.4 chicks/pair
- Pawnee – 4.2 chicks/pair
- Buffalo Gap – 3.5 chicks/pair

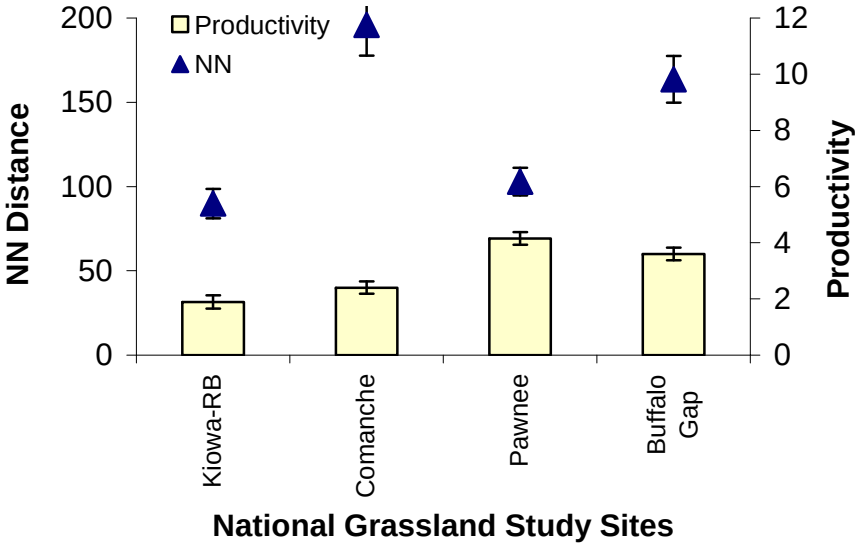

Figure 1. Owl nearest-neighbor (NN) distance and productivity among the National Grasslands (2006)

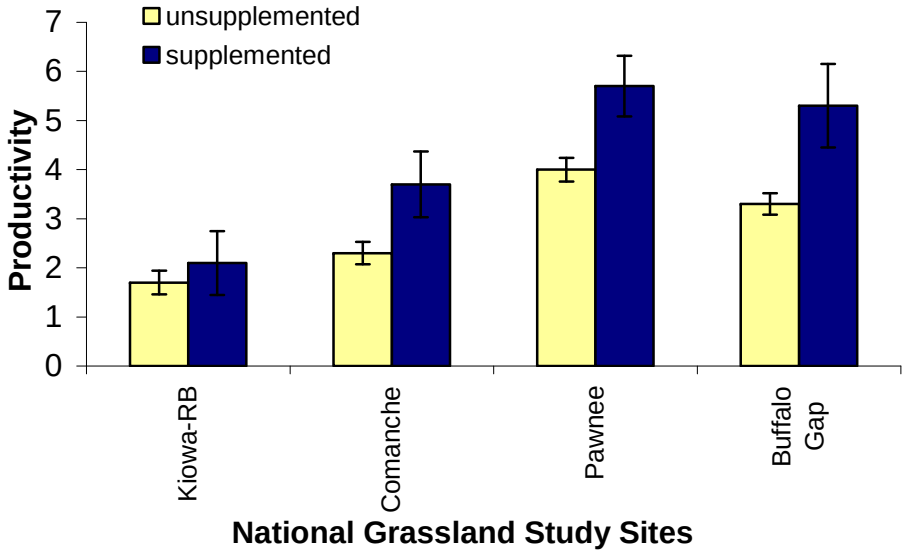

Figure 2. Burrowing owl productivity across study sites for supplemented and unsupplemented nests (2006).

Table 1. Burrowing owl occupancy rate, nearest-neighbor (NN) distance and productivity/nest in prairie dog colonies arranged latitudinally from North to South. Dash lines indicate data was not available.

Site	Occupancy Rate (%)	$\bar{X}$ NN Dist. (m)	Productivity (fledgling/nest)	Reference
Montana	16	220	2.6	Restani et al. 2001
North Dakota	22-49	430	3.4, 3.6	Restani et al. 2001
South Dakota	72	266, 296	2.6	Savidge pers. comm.
This study	100	164	3.5	Desmond unpubl.
Colorado	80	--	--	Orth & Kennedy 2001
This study (north)	94	103	4.2	Desmond unpubl.
This study (south)	76	196	2.4	Desmond unpubl.
Nebraska	59	110-130	1.9[A]	Desmond et al. 1995 Eckstein 1999
New Mexico	100	54	2.3	Berardelli 2003
This study	100	87	1.7	Desmond unpubl.
Texas	100	60	2.8[B]	Teachner 2005
Chihuahua	100	107	--	McNicoll 2005

Future Directions

- Large scale mark-recaptaure (bands, petagial wingtags, geolocators)
- Use combination of Stable Isotope Data and Mark-recapture to estimate adult and juvenile survival
- Continue intensive productivity studies
- Create a large scale GIS database that links productivity to local and landscape factors

Future Directions - Graduate Students

- MS student in wildlife ecology –SIA to examine owl movements (NMSU)
- PhD student Wildlife ecology – combine Mark-Recapture and SIA to estimate survival (NMSU)
- MS Student – Geography – examine owl productivity in relation to GIS database (NMSU)
- MS Student – wildlife ecology – examine owl productivity in relation to GIS database (UACH)

Expected Impact

- Improve the management of BUOW populations in prairie dog systems and provide recommendations to USDA Forest Service- sustainable management of GP NG
- Increased student retention and academic performance
- Successful career paths of students enrolled in the program
- Increased collaboration/communication among the USDA FS, NMSU and UACH
- Institutionalize and expand the exchange program between NMSU and UACH

Questions