

EFFECTS OF MILITARY ACTIVITIES  
ON SELECTED WILDLIFE SPECIES DIVERSITY, RICHNESS, AND EVENNESS  
IN THE TRANSITIONAL GRASSLANDS

A Thesis  
Submitted to the Graduate Faculty  
of the  
North Dakota State University  
of Agriculture and Applied Science

By

Jennifer Sue Lind

In Partial Fulfillment of the Requirements  
for the Degree of  
MASTER OF SCIENCE

Major Program:  
Natural Resources Management

November 2004

Fargo, North Dakota

## ABSTRACT

Lind, Jennifer Sue; M.S.; School of Natural Resources; College of Agriculture, Food Systems, and Natural Resources; North Dakota State University; November 2004. Effects of Military Activities on Selected Wildlife Species Diversity, Richness, and Evenness in the Transitional Grasslands. Major Professor: Dr. Kevin K. Sedivec.

A study on species diversity, richness, and evenness was conducted on North Dakota National Guard military lands for birds, small mammals, and herptofauna during the summers of 1998, 1999, 2002, and 2003. The objective of this study was to determine the effects of military activities on faunal diversity, richness, and evenness among six different plant community types in the transitional prairie of North Dakota. Permanent transects were established on grassland, wetland, and forest plant communities. The Land Condition Trend Analysis guidelines and methodology were used to conduct faunal research on National Guard lands. Most wildlife species exhibited preferences for similar, not specific, plant communities. However, there were instances where faunal differences did occur among plant community types. The average Simpson's diversity index for birds increased ( $P < 0.05$ ) on the prairie complex from 3.5 to 8.2 species from 1998 to 2002, respectively. Average bird species evenness ( $P > 0.05$ ) did not change over time on the prairie complex; however, richness increased ( $P < 0.05$ ) from 5.2 to 13.6 species from 1998 to 2002, respectively. The average Simpson's diversity for small mammals increased ( $P < 0.05$ ) on the prairie complex from 1.2 to 2.2 in 1998 and 2002, respectively. Average richness for small mammals increased ( $P < 0.05$ ) from 1.3 to 2.6 in 1998 and 2002, respectively. Herptofauna species richness decreased from 8 to 3 species on the prairie complex between study periods. Based on our current analysis, military training activities conducted since 1998 have resulted in no negative impacts on faunal species diversity, richness, or evenness on military lands at Camp Grafton.