

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

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## ABSTRACT

Rush, Renae Elizabeth Hines, M.S., Program of Natural Resources Management, College of Graduate and Interdisciplinary Studies, North Dakota State University, December 2006. Effects of Military Activities on Selected Wildlife Species Diversity, Richness, and Evenness in the Transitional Grasslands: Phase III. Major Professor: Dr. Kevin K. Sedivec.

A study of avian species composition trends and small mammal diversity, richness, and evenness was conducted on North Dakota National Guard military land in 1998, 1999, 2002, 2003, and 2005. The objective of this study was to determine the effects of military activities on faunal diversity among six different plant community types in the Transitional Grasslands of North Dakota. Permanent transects were established on three grassland, two wetland, and one forest plant communities. The Land Condition Trend Analysis guidelines and methodology were used to conduct faunal research on National Guard lands. Breeding bird surveys were conducted using the modified point-count transect technique. Victor mouse and rat traps were used for the small mammal surveys on the same transects surveyed for breeding birds. Avian species composition was different ( $p \leq 0.05$ ) within each habitat type among years. The richness of breeding bird species varied among habitats and years. Small mammal species diversity, richness, and evenness were not different ( $p > 0.05$ ) among years within each habitat type. The Simpson's diversity for small mammals was lower ( $p \leq 0.05$ ) in the wet meadow than any other habitat type. The study year 2002/03 had a greater ( $p \leq 0.05$ ) Simpson's diversity for small mammals than 1998/99 or 2005. Small mammal species richness was lower ( $p \leq 0.05$ ) in the wet meadow than in the woodland, midland, or upland habitat types. Conclusions regarding impacts by military activities on avian and mammalian species cannot be determined because of regional changes in bird and small mammal distribution and climatic conditions.