

UNITED STATES GOVERNMENT
MEMORANDUM

DATE: April 22, 2010

REPLY TO

ATTN OF: Kathy McPeak

SUBJECT: 2010 Report of Prairie Grouse Breeding Ground Survey on Fort Niobrara NWR

TO: Steve Hicks, Todd Frerichs

Objective: To monitor trends in abundance of sharp-tailed grouse and greater prairie chickens on Fort Niobrara NWR.

Methods: Annual prairie grouse breeding ground counts were conducted 8 mornings April 8-17, 2010 on Fort Niobrara NWR. Refuge grasslands south and east of the Niobrara River totaling approximately 12,000 acres were searched for displaying grouse beginning ~30 minutes before sunrise and continuing for 1-2 hours depending upon weather and bird activity. Lek locations on private land within ½ mile of the refuge are included in the survey. Biological technician S. Magstadt conducted listening counts of the entire area to detect new grounds, while K. McPeak conducted counts of historic grounds. New and old grounds were visited at least twice to confirm activity and number of males displaying.

Results: A total of 251 sharp-tailed grouse males were counted on 18 grounds which is significantly higher than 2009 count results of 196 males on 9 grounds and above historic high counts of 180+ males recorded in 1959, 1967, 1968, and 1980. Three of the nine new grounds have sufficient number of males (10-15 each) to suggest the grounds are well established and have likely been there for more than one year. The remaining six new grounds have fewer than 5 males with activity and location suggesting they were loosely organized and probably established this year. The 5-, 10-, 15-, and 20-year trends for sharp-tailed grouse are all positive suggesting an increasing population.

A total of 59 greater prairie chicken males were counted on 6 grounds which is similar to 2009 count results of 60 males on 7 grounds. Magstadt could hear additional booming chickens on lands adjacent to the refuge but was unable to see them for counting. Trend analyses of data collected the past 20 years suggest the prairie chicken population is stable on the refuge with the long-term trend (1956-2010) positive.

Refer to attached map and data graphs for specific information.

Discussion: Sharp-tailed grouse and greater prairie chicken populations are affected by a variety of factors and can fluctuate greatly from one year to the next. Both species use a range of vegetation structures to meet their life requirements (short for displaying, taller for nesting, more heterogeneous for brood rearing). Breeding ground survey data suggest that changes in refuge management the past 10 years may be benefiting prairie grouse. During the period 1990-2000, bison, elk and Texas longhorn cattle consumed approximately 5,000 AUMs of forage annually in

the count area (.42 AUM/acre average). Since 2001, annual forage utilization by bison and elk in the count area has remained under 3,000 AUMs per year (.25 AUM/acre average) resulting in increased residual vegetation and possibly healthier and more diverse plant communities.

The possible relationship between lek count results (number of male sharp-tailed grouse, number of male prairie chickens) and previous year forage utilization in the count area (amount of forage consumed by large ungulates in AUMs) was explored for the period 1990 – 2010 using the correlation function in Excel. The correlation coefficient for sharp-tailed grouse and AUMs was -0.68 with the R square value describing the proportion of variance in sharp-tailed numbers stemming from the variance in AUMs at a .46 suggesting the reduction in grazing is likely a component contributing to the increasing sharp-tailed grouse population. The correlation coefficient for prairie chickens and AUMs was -0.25 and the R square value was .06 indicating there was no evidence that these two data sets are strongly linked.

So, what does all of this mean?? The refuge is providing quality habitat for *sustainable* populations of sharp-tailed grouse and prairie chickens; and because prairie grouse are considered an “umbrella” species, the refuge is also likely providing good habitat for a broader suite of grassland birds. Why the prairie chicken population has not increased in response to the decrease in grazing like the sharp-tailed grouse population is unclear and may be due to several factors including nature of habitat available at Fort Niobrara, less tolerant of disturbance by grazing bison, require year-round rest and/or lighter grazing rate, interspecies competition, etc.