

**The Missouri Greater Prairie-Chicken: Present-Day  
Survival and Movement**

**2010 Graduate Research Scholarship Summary Report Presented to the  
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by

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## **Introduction**

Once thought to number in the thousands, Missouri's Greater Prairie-Chicken (*Tympanuchus cupido*) now struggles to maintain a population of less than 100 (Jamison and Alleger 2009). To address the declining population, the Missouri Department of Conservation (MDC) has engaged in a range of recovery efforts for the birds. Within a recent five-year plan, MDC recognized gaps in information needed to ensure the successful conservation of the prairie chicken in Missouri. Specifically, foundational information is needed about Greater Prairie-Chicken adult and juvenile survival, movements and habitat use. My goal is to address these knowledge gaps through two major objectives.

The first major objective of my project is to investigate Greater Prairie-Chicken adult survival and movement through a radio-telemetry study of resident birds. Current habitat management techniques for prairie chickens in Missouri are directed by the Partners in Flight Grassland Bird Conservation Area Model (Fitzgerald et al. 2000, MDC 2006). Managers are working to maintain a large central patch of native prairie habitat surrounded by smaller patches of cropland, non-native grassland, and privately owned prairie. Unfortunately, uncertainty remains about the utility of this type of habitat management for Greater Prairie-Chickens (Winter et al. 2001, Johnson and Winter 2005).

The second major objective of my project is to provide estimates of juvenile Greater Prairie-Chicken vital rates through a combination of direct observations, mark and resight, and radio-telemetry for the first year after hatch. Although studies have underscored the importance of the first year of survival to Greater

Prairie-Chicken population growth rates (Wisdom and Mills 1997, Peterson et al. 1998, Wisdom et al. 2000, Fefferman and Reed 2006), no formal studies estimate the survival of these birds from hatch to the first breeding season. Prairie chicken conservation efforts in Missouri also include supplementing the current population with adult and juvenile birds from Kansas, however, survival of translocated juveniles has not been investigated. As a consequence, the utility of this current management practice is uncertain.

### **2010 Field Work**

I began to address my first major objective on 22 March 2010. With the help of a field technician and 6 MDC employees, I set up over 24 walk-in traps on two leks in Wah'Kon-Tah Prairie. From 23 March 2010 to 15 April 2010 traps were set and monitored daily, except during inclement weather. I captured and radio-tagged a total of 12 birds (3 females and 9 males) to supplement the study population of birds that were already marked by MDC.

In addition to trapping and banding, I also initiated the adult radio-telemetry portion of my study. Twenty-nine adults were located daily from 24 March 2010 through 21 August 2010 resulting in a total of 2919 locations and an average of 100.7 locations per bird. A summary of these locations indicated that over half (66%) were in native prairie habitat managed by MDC. Of the remaining locations, the majority (23%) were in privately owned grassland. Preliminary analyses demonstrate that Greater Prairie-Chicken survival in the native prairie habitat (84%) was almost double the survival rate in the privately owned grassland (45%).

Eight of the 29 resident birds tracked throughout the field season were hens. Of these 8 radio-tagged hens, 6 hatched their first nest attempt successfully. The 2 remaining hens were able to successfully reneest. Brood counts were used to monitor early juvenile survival from hatch to 60 days of age. Brood counts indicated low early-juvenile survival (<10%).

Juvenile survival after 60 days of age was assessed through radio-telemetry. Juveniles still alive at the age of 60 days were captured and radio-tagged. Capture efforts resulted in the banding and tagging of 3 juveniles. This low return underscored the poor early juvenile survival observed in the brood counts. Fourteen juveniles that were translocated from Kansas to Missouri between 27 July and 3 August 2010 were also radio-tagged and monitored in a similar manner. Post-release survival of translocated juveniles was much lower than that of resident juveniles during this time period.

### **Continuing work**

This spring and summer I will continue my research in order to supplement the data obtained in 2010. I hope to track an additional 30-40 birds to gain further insight into the habitat use, movements, and survival of Greater Prairie-Chickens in Missouri. The resulting data set will allow me to fully address my two main objectives. The published results should provide valuable information regarding the utility of current Greater Prairie-Chicken habitat management and conservation strategies.

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