

Bird Response to Enhanced Vegetation Diversity in the Spring Run Complex of Northwestern Iowa

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Duration: June 2006 to August 2010

Funding Source(s): Iowa Department of Natural Resources
U.S. Fish and Wildlife Service

Goals and Objectives:

- Quantify bird use of four habitat types that have been or might be established on managed land in the Spring Run Complex.
 - Monitor vegetation composition and structure in each habitat.
 - Estimate nest success, nestling growth rate, and brood survival of common bird species using each habitat type.
 - Measure invertebrate populations in the three habitat types.
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Progress:

The Spring Run Wetland Complex of northwest Iowa is one of the largest grassland units in the state. It has been recognized as an official site in the National Audubon Society's Important Bird Areas program. Previous research indicated that increased vegetation diversity could enhance the reproductive success of grassland birds. The Spring Run Study Area includes 24 study fields arranged in a complete block design (six blocks each with four field types). The four field types are (1) Cool Season - introduced grasses, (2) New CP-2 - a mix of native tall-grass species planted since 2000, (3) Old CP-2 - a mix of native tall-grass species planted before 2000, and (4) Primo - a diverse mixture over 40 species of forbs and native grasses.

In the summer of 2008, we conducted seven rounds of line transect bird surveys on each field. We detected 2,788 individuals of 28 different species during 2008 surveys. The most common species were Bobolink, Common Yellowthroat, Grasshopper Sparrow, Red-winged Blackbird, and Sedge Wren. We encountered fewer birds during the 2008 surveys (2,788) than the 2007 surveys (3,280). In addition, we recorded fewer species in 2008 (28 species) than in 2007 (38 species). Line transect bird surveys were conducted using the same methodology for the 2009 field season.

We conducted nest searches for grassland songbirds on all fields using systematic searches and behavioral observations. We found a total of 152 nests of 11 different species in 2008. We found more nests in 2008 than in 2007 (109) but we found two fewer species in 2008. We did not find any Dickcissel nests on the Spring Run study area during 2008. However, we found 2 Dickcissel nests on the Spring Run study area during the 2009 field season.

In addition to determining nest fates, Red-winged Blackbird, Dickcissel, and Bobolink nests were monitored to assess nestling growth rates and baseline corticosterone levels. Corticosterone levels are good indicators of physiological conditions of developing birds; increased corticosterone levels are associated with poor feeding conditions. During 2008, we measured 66 Red-winged Blackbird nestlings, five Bobolink nestlings, and four Brown-headed Cowbird nestlings. During 2008, we took blood samples from 24 birds just prior to fledging. Blood glucose readings were taken in the field from each nestling using a portable blood glucose meter. Blood samples were centrifuged and stored at Iowa Lakeside Laboratory until the end of the summer. Nestling growth measurements and blood samples were collected using the same field methods in 2009. During 2009, we took blood samples from 66 nestlings.

We conducted two rounds of vegetation surveys and three rounds of invertebrate sweep net surveys during 2008. Invertebrate sweep net samples collected during 2008 are being identified to order, dried and weighed. Vegetation data from 2007 and 2008 have been summarized. We conducted vegetation and invertebrate samples using the same field methods during 2009.

Future Plans:

Data collected during the 2009 season will be entered and summarized during Fall, 2009 and we will continue analysis of data collected during all three field seasons (2007-2009). Invertebrate sweep net samples collected during 2009 season will be identified to order, dried and weighed. We will begin processing nestling blood samples in the lab to determine baseline corticosterone levels during the fall of 2009.