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

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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 and map land cover classes around each study field.
- 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.

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, two rounds of vegetation surveys, and three rounds of invertebrate sweep net surveys on all fields. We conducted nest searches for grassland songbirds on all fields using systematic searches and behavioral observations. Data on nest success were recorded for each nest encountered.

For three species (Dickcissels, Bobolinks, and Red-winged Blackbirds), we monitored nestling growth rates. Starting on the first day after hatch, we weighed and measured (tarsus and wing) each nestling. Nestlings were individually marked with a non-toxic felt-tipped marker until they were large enough to receive aluminum and color leg bands. Measurements were repeated every two days until fledging. On the day of the last nestling growth measurement, we drew blood samples to estimate the nutritional status of each nestling. Blood glucose readings were taken in the field using a portable blood glucose meter. We will also use the blood samples to determine baseline corticosterone levels for each nestling. Corticosterone levels are good indicators of physiological conditions of developing birds; increased corticosterone levels are associated with poor feeding conditions.

We detected 2,788 individuals of 28 different species during our 2008 bird transect surveys. The most common species encountered in the study area were Red-winged Blackbirds, Common Yellowthroats, Bobolinks, and Sedge Wrens. Our nest searches yielded 152 nests of 11 different species. The most common nesting species were Red-winged Blackbirds, Blue-winged Teal, and Ring-necked Pheasants. We did not find any Dickcissel nests on the Spring Run Complex in 2008.

We finished sorting all of 2007 invertebrate samples to Order. We dried and weighed each of the samples and counted the number of individuals in each Order. We are in the process of sorting the 2008 invertebrate samples and continuing to compile and analyze the data from bird, invertebrate, and vegetation samples from 2007/ 2008 field seasons.

Future Plans:

We will continue processing the 2008 invertebrate sweep net samples during the spring of 2009. We will continue with preliminary analysis of data collected during both 2007 and 2008.