

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

Goals and Objectives:

- Quantify bird use of three habitat types that will be established on managed land in the Spring Run Complex. The types are (1) monotypic, introduced grass (smooth brome) with scattered legumes such as alfalfa, (2) a five-grass mix of native tall-grass species, and (3) and a diverse mixture of forbs and grasses, planted with over 40 species.
 - 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.
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Introduction:

Natural resource agencies face increasingly complex challenges as they move from single-species management toward ecosystem management. In Iowa, grasslands are an important focal ecosystem because of historic losses of prairie and continuing continental declines of a very visible component of the biological community: grassland birds. Restored grassland/wetland complexes in Iowa are able to attract the same species that inhabit prairies, although grassland size may limit reproductive success. One of the largest grassland units in Iowa is the Spring Run Complex southeast of Spirit Lake in Dickinson County. Spring Run has been recognized as an official site in the National Audubon Society's Important Bird Areas program (<http://www.audubon.org/bird/iba/index.html>).

Previous research on the Spring Run Complex documented bird use of the various habitats, estimated nest success of some common species, and examined the snake community (Hall, 2005, M.S. thesis). Comparison of nest success in the Complex with nearby prairies indicated that greater vegetation diversity might enhance reproductive success of grassland birds. An important game species, ring-necked pheasant, might also benefit from more diverse vegetation. In particular, brood movement might be easier and food resources more abundant where forbs are a substantial component of the vegetation. Experimental evidence for such benefits is lacking. We have designed a study to evaluate the bird response to plantings that vary in plant species diversity. This replicated study focuses on experimental "treatments" that span the range of planting mixtures likely used by habitat managers. We will monitor nest success and bird use of these treatments. The species monitored will include game species because managers need to know how they respond, but the primary objective is to document responses of high-priority grassland birds, in keeping with the current emphasis on "all-bird conservation."

Food resource availability in the form of arthropods varies with plant diversity and may play a role in how areas are used by grassland birds. There is evidence suggesting that differences in both invertebrate community composition and abundance will influence the amount of energy birds use in feeding themselves and their young.

Progress:

In summer 2006, 9 study fields were selected – the other half will be planted during the winter of 2006-2007. In each of the 9 fields (3 habitat types), transects were laid out for estimating bird densities and vegetation structure/composition. A field assistant conducted two rounds of bird surveys and measured vegetation in late summer. Invertebrates were sampled (sweep nets) in some areas to test the sampling protocol and invertebrate processing system. Pilot work was conducted at the Boone Research Station to test imprinting techniques for pheasant chicks.