

# Habitat and landscape associations of grassland birds in the Spring Run Complex of northwestern Iowa

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## Goals and Objectives:

- Map habitats on the Spring Run Complex using a classification scheme that reflects differing management and potentially different bird communities
  - Relate bird abundance (using a density index) to habitats, vegetation composition and structure.
  - Estimate nest success for common grassland bird species and relate variation in nest success to vegetation and landscape composition and structure. Compare success on restored grassland sites to success on remnant prairie sites.
  - Assess the likelihood that grassland birds (dickcissels and bobolinks) will reneest on their original territories in restored grassland sites and remnant prairie sites following a nest failure.
  - Assess abundance of grassland snakes on remnant and restored sites. Examine differences in grassland snake abundance at the edge of restored habitat patches and at the interior of habitat patches
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## Progress:

A thesis, filed in August, included the following in chapter abstracts. During the 2003 and 2004 breeding seasons, we located nests in 10 restored and 6 remnant grasslands in northwestern Iowa. Survival estimates were compared to examine the impact of current restoration efforts on local bird productivity. Dickcissels (*Spiza americana*), Bobolinks (*Dolichonyx oryzivorus*) and Red-winged Blackbirds (*Agelaius phoeniceus*) nested in both habitat types. We used logistic-exposure models and AIC model selection to examine variation in daily survival rates. Best-supported models included nest age, habitat type (restored grasslands vs. remnant prairies) and nest height (ground vs. above-ground), though the effects of both habitat type and nest height were weak. Results from our study indicate restored grasslands in highly fragmented agricultural landscapes can provide comparable habitat for grassland-breeding birds, even if the restoration efforts do not mirror native habitat conditions.

Intensive agriculture in the Midwest has reduced the amount of grass on the landscape and increased the amount of edge in remaining grassland patches. Little is known about grassland snake habitat associations and responses to edge in fragmented agricultural landscapes, despite population declines in some grassland-associated species. We examined the effect of edges on snake abundance in 8 restored grassland sites in northwestern Iowa by comparing snake abundance in the interior of patches to abundance within 100m of a road edge. Additionally, we evaluated the effects of local habitat characteristics and landscape composition on grassland snake abundance. Through the use of artificial shelters, we captured 694 individuals of four species during 16 survey weeks. Sixty-six percent of the captures were plains garter snakes (*Thamnophis radix*). We found no significant difference between interior and edge snake abundance, indicating that grassland snake abundance is not influenced by road edges at the scale we measured. Distance to nearest farmstead was the only habitat-structure variable significantly related to snake abundance. Garter snakes, smooth brown snakes (*Storeria dekayi*) and smooth green snakes (*Ophedrys vernalis*) were less abundant closer to farmsteads. Results of this study will help researchers and land managers better understand grassland snake habitat use. Information on habitat use is crucial to maintaining declining populations of grassland snakes in fragmented landscapes.

## Conclusions and Recommendations:

A large restored grassland-wetland complex in northwestern Iowa provided habitat that was of comparable quality, in terms of nest survival, to nearby prairie remnants. Snakes were not consistently more or less abundant in the interior of grassland patches than close to road edges. Embere Hall is now in a temporary position in Wyoming.