

USE OF HAYED AND NON-HAYED CONSERVATION RESERVE PROGRAM FIELDS BY GRASSLAND BIRDS IN JOHNSON COUNTY, MISSOURI

Jamie L. McCallum

Introduction

The Conservation Reserve Program (CRP) was established by the Food Security Act (Farm Bill) of 1985. It was designed to control soil erosion, improve ground and surface water quality, and enhance wildlife habitat on environmentally sensitive agricultural land (USDA 2012). To participate in the Conservation Reserve Program, producers take highly erodible or environmentally sensitive lands out of agricultural production and plant them with approved resource-conserving covers. They enroll the land in contracts for 10-15 years and receive financial compensation for participation. A site-specific conservation plan must be developed before contract approval (USDA 2012). Participants must maintain the CRP cover in accordance with the conservation plan. Specific maintenance activities may include mowing, burning, and/or spraying (USDA 2012).

CRP lands benefit grassland bird species across the Midwest (Patterson and Best 1996, Best *et al.* 1997, Herkert 2007) and may act as a source habitat for some species in Missouri (McCoy *et al.* 1999). Mowing or haying CRP fields can result in fewer grassland bird species and lower overall bird abundance (Frawley and Best 1991). Female, nestling, and nest mortality are often high when hay cutting occurs during the nesting season, and nest abandonment and predation also increase after haying (Warner and Etter 1989, Bollinger *et al.* 1990). Conversely, haying may be

beneficial to grassland birds in some cases, and some species may be more abundant in hayed fields (Dale *et al.* 1997, Horn and Korford 2000, Murray and Best 2003).

Emergency haying or grazing of CRP lands may be authorized in periods of drought or excessive moisture. The Farm Services Agency (FSA) allowed Missouri farmers to perform emergency haying and/or grazing on qualifying CRP fields in response to the severe drought of 2012 (USDA 2012). This opportunity allowed me to investigate if emergency haying influenced grassland birds in Johnson County, Missouri.

Methods

This study was conducted over the 3-month nesting season (May, June, July) in 2013. Fourteen CRP fields, ranging from 1.24 - 12.2 ha, were used as study sites. The seven hayed and seven non-hayed fields were paired by similar size and treatment (hayed paired with non-hayed). Each field was sub-sampled using 1 grid point per 1.60 ha placed randomly across the habitat. Twenty five percent of grid points were visited in a study site during each sampling period (1 month). Two or more investigators were always present during the sampling, and no grid points were revisited during the study.

To flush birds from their nests, a 30 m dragline was attached to a central pivot at each point and drug 360⁰ through the vegetation. 30 m wide transects were used when a field was too narrow to accommodate the 30 m radius circle. Visual point counts and digital audio recordings were used at all grid points to identify birds.

Species richness and diversity was recorded and compared between hayed and non-hayed fields for breeding grassland birds and for total (breeding and non-breeding)

grassland birds (Table 1). Diversity was calculated using the Simpson's Index of Diversity. A two-sample t-test with an alpha of 0.05 was used to test if species richness, diversity differed between hayed and non-hayed fields.

Results

No significant difference was found in either species richness (Fig. 1) or species diversity (Fig. 2) between hayed and non-hayed CRP fields.

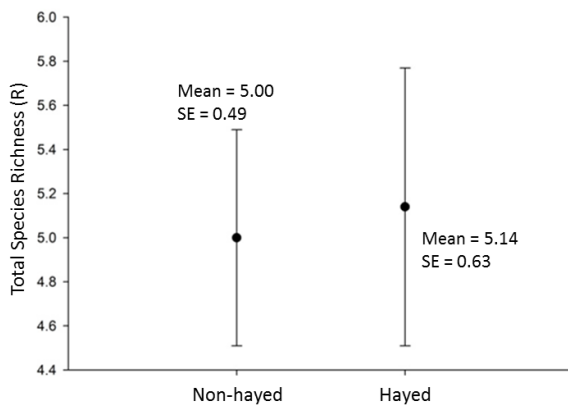


Figure 1. Total species richness (R) observed from May – July 2013 in non-hayed and hayed CRP fields in Johnson County, MO.

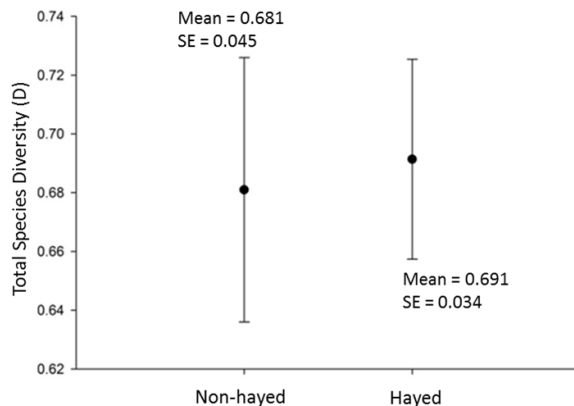


Figure 2. Total species diversity (D) observed from May – July 2013 in non-hayed and hayed CRP fields in Johnson County, MO.

Conclusion

The findings of this study suggest that emergency haying of CRP fields in Johnson County, MO had no observable impact on the grassland birds I studied. Therefore, future emergency haying practices should not impact grassland birds in this area. Further studies on a larger scale will be necessary to determine if emergency haying has an impact on grassland birds elsewhere.

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