Effects of grazing systems on the abundance and diversity of grassland birds in northern mixed-grass prairie habitats

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Introduction

- Grassland bird populations have seen greater declines than any other guild of birds.
- Most remaining grassland bird habitat is rangeland grazed by domestic livestock.
- Montana FWP implements rest-rotation grazing within conservation easements and Upland Gamebird Enhancement projects (fig. 1).
- Rest-rotation grazing may create patch-size heterogeneity on the landscape, an important requirement of native grassland bird habitat.

Methods

- Generated 305 random point count locations across pastures (fig. 2):
  - 150 points on the FWP conservation easement.
  - 155 on adjacent reference pastures in season-long and intensive summer rotational grazing.
- Conducted three 5-min point counts during 31 May – 23 June, 2016.
- Recorded all species seen or heard within 100m.
- Established five 20-m habitat transects with 5 subplots per transect within 100m of every bird survey location.
- Measured visual obstruction.
- Measured percent coverage of new growth grass, residual grass, litter, forb, tree, bare ground, and rock.
- Recorded heights of the grass, shrub, forb, and litter.
- Estimated shrub coverage with line intercept surveys.
- Estimated abundance and detection probability using N-mixture modeling from the pcount function in R package unmarked.
- Visualized avian community composition through a principle component analysis biplot.

Preliminary Results

- Preliminary evidence of a difference in abundance between easement and reference pastures for four focal species.
- Grasshopper sparrow and Baird’s sparrow abundance highest within season-long grazing system.
- Brown-headed cowbird abundance highest within rest-rotation.

Discussion

- Preliminary evidence of a difference in abundance between easement and reference pastures for four focal species.
- Grasshopper sparrow and Baird’s sparrow abundance highest within season-long grazing system.
- Brown-headed cowbird abundance highest within rest-rotation.
- Avian community composition is similar between grazing systems.
- Future analyses will include habitat components.

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