Are ephemeral wetlands hotspots for avian biodiversity in Pine Savannah ecosystems?

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Introduction

- Wetlands provide ecosystem services, and are repositories for plant and herpetological biodiversity
- 31% of wetlands lost globally (Dixon et al. 2016), only 10% of historic ephemeral wetlands remain today in the Southeast (Bennett and Nelson 1991)
- Ephemeral wetlands are seasonally flooded depressions, isolated from other water sources such as streams and creeks (Semlitch and Brodie 1998)
- Ephemeral wetlands occur in a variety of habitats including Longleaf Pine Savannah, a threatened ecosystem
- Little is known about how ephemeral wetlands contribute to avian biodiversity

Methods

Conducted avian point counts at 2 Longleaf Pine restoration sites (Halidon Hill in Huger, SC and Stono Preserve in Hollywood, SC)

Utilized a block study design to group wetlands with 1 upland site to control for land-use history

Used wetland assessments to gather wetland vegetation attribute data

Questions

1) Is bird biodiversity different in ephemeral wetlands compared to surrounding upland habitats?
2) Do wetlands support unique bird species or communities?
3) Do specific wetland attributes drive avian biodiversity?

Results

- Bird diversity is higher in wetland sites compared to upland sites (F = 5.787, p = 0.025), and diversity was not different between the two sampling locations (F = 1.627, p = 0.215) (Figure 1)

- Bird community composition is most different between sampling site and secondarily between wetland and upland (adj R² = 0.07, p = 0.001) (Figure 2)

- Wetland vegetation attributes including canopy cover (p = 0.507) (Figure 3), midstory cover (p = 0.478), and herbaceous cover (p = 0.476) did not change bird diversity amongst wetland sites

Take Home Messages

- Wetlands support different avian communities than upland habitats
- Wetland vegetation attributes of ephemeral wetlands don’t impact bird biodiversity
- We need higher sample size to better understand wetland vegetation attributes impact on bird biodiversity
- Wetland habitats are hotspots for avian biodiversity, and should receive more conservation attention

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