Bird biodiversity in isolated wetlands of the United States is impacted by wetland characteristics and anthropogenic land cover

Jackson Barratt Heitmann[1], Brittany M. Mason[1], and Corey T. Callaghan[1]

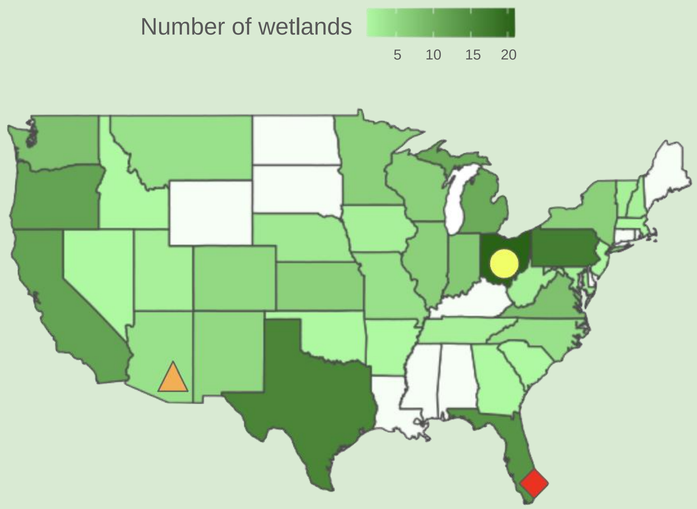
[1]Department of Wildlife Ecology and Conservation, Fort Lauderdale Research and Education Center, University of Florida

Introduction

- Isolated wetlands are globally important habitats, harboring biodiversity and providing ecosystem services.
- Wetland loss due to anthropogenic land use has caused widespread construction of wetlands, and preservation of natural ones.
- Contributions of isolated wetlands to bird biodiversity is well documented, but only in regional field studies.
- We investigate the contributions of many isolated wetland types, across a large spatial (conterminous US) and temporal (multiple years) scale, to bird biodiversity along the rural-urban gradient.

Methods

- Mapped *n*=207 wetlands sites that overlapped with an eBird hotspot.
- Calculated land cover metrics at each site (*local*) and within 25 km of each site (*regional*).
- Calculated species richness for all species and for 5 different primary lifestyles (functional groups).



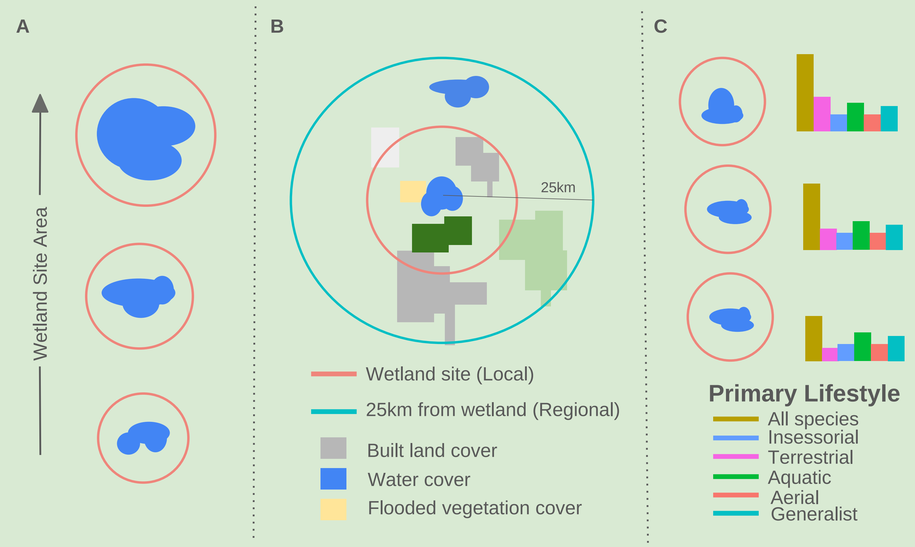
- Figure 1. Number of mapped wetlands by state, with examples from AZ, OH, and FL, respectively. Wetlands were the main feature of each wetland site.

Research Questions

A. Does species richness accumulate along the predicted species-area relationship?

B. Do local, or landscape level land cover metrics influence bird biodiversity?

C. Do taxonomic and functional diversity follow similar trends?



- Figure 2. Conceptual research design illustrating our 3 main objectives.

Sweetwater Wetlands Park, AZ

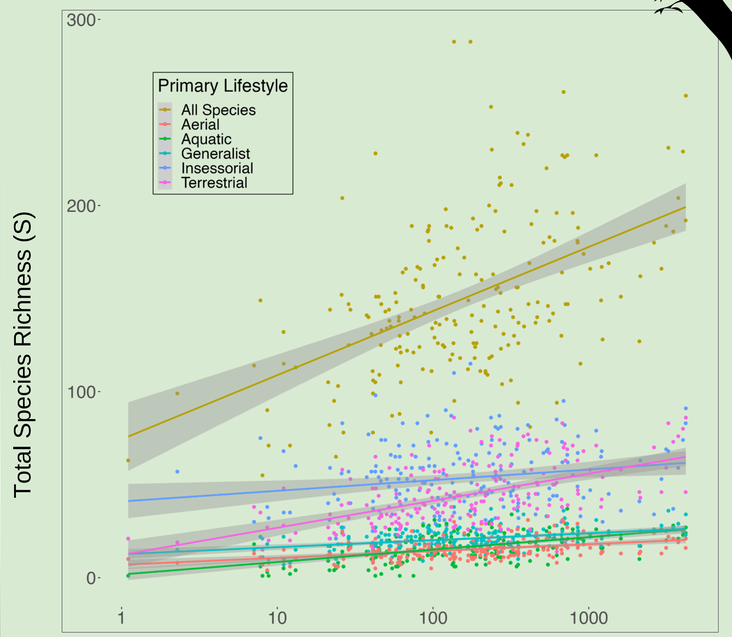
Ohio State University Wetlands, OH

Green Cay Wetlands Center, FL

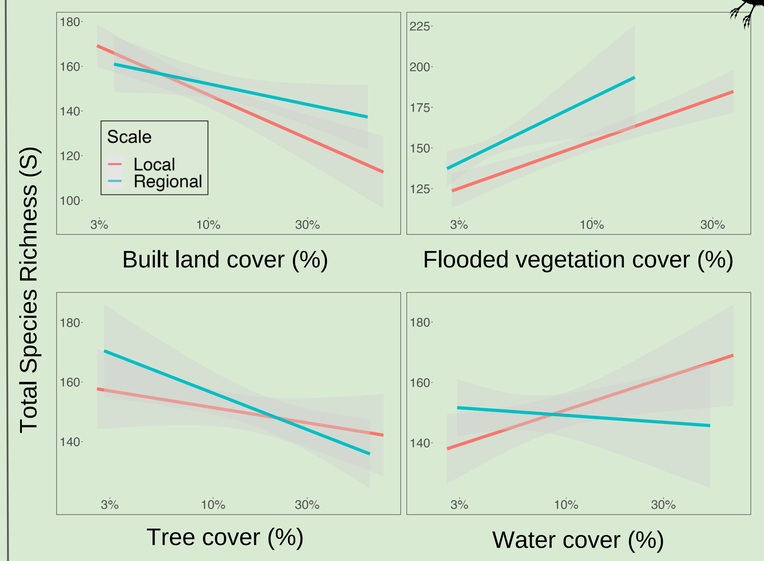
Discussion

- Overall species richness and all primary lifestyles' functional richness, increase significantly as area increases.
- Built land cover at the local scale significantly decreases species richness.
- Flooded vegetation at the local and regional scale significantly increase species richness.

Results



- Figure 3. Bird species richness increases with area in isolated wetlands.



- Figure 4. Built land cover and tree cover reduce species richness at both scales. Flooded vegetation increases species richness at both scales, and water cover increases species richness at the local scale.