DO RESTORED WETLANDS PROVIDE SUITABLE HABITAT FOR MIGRATING WATERFOWL?

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North American wetland ecosystems are believed to have supported substantial waterfowl biodiversity. Loss of wetland habitats, however, has been severe in many Midwestern states, including Iowa. Two unanswered questions facing land managers interested in restoring wetlands to the Iowan landscape are to what level are waterfowl using restored wetlands compared to natural wetlands and what factors are playing a role in the selection process? This study reports data from eight restored or natural wetlands in central Iowa. There were a total of 11 species of waterfowl surveyed and species displayed a distinct preference between which wetlands were selected. Species abundance was marginally higher on natural wetlands compared to restored wetlands. Sheet water wetlands, especially restored sheet water wetlands, contained the greatest species abundance. Sheet water wetlands also contained the highest species richness and again a single restored sheet water wetlands contained the highest species richness. Natural wetlands have the greatest species abundance and richness when a single outlier is removed.

Introduction

Figure 1: Migration track of waterfowl species traveling through the Mississippi Flyway.

The fall migration is a slow, drawn-out process. Species will form large flocks that will linger and feed whenever possible. Waterfowl move south only when they are uncomfortable, that is when water condition, food availability, and weather are not at levels they can survive on in there current location.

With strong conservation efforts throughout Iowa many wetlands are being restored and many questions involve whether restored wetlands are able to mimic the many factors that occur in natural wetlands.

Research Question

- Do restored wetlands create suitable habitat to support migrating waterfowl?
- Hypotheses:
  - (i) Natural Wetlands will have a higher abundance and species richness than restored wetlands.
  - (ii) Restored wetlands will have a greater variability in composition than natural wetlands, due to differences in hydroperiod and vegetation cover.

Sampling Design

Sites

- Eight sites were selected including four restored and four natural wetlands throughout Central Iowa in Polk, Dallas, and Story Counties.

Waterfowl Sampling

- Sampling was done using point counts with a spotting scope and data were collected between October 4th and December 10th.

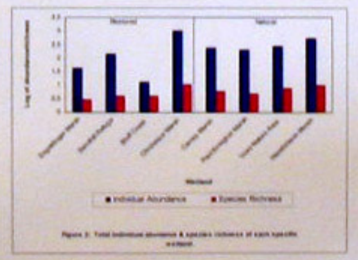
Data Analysis

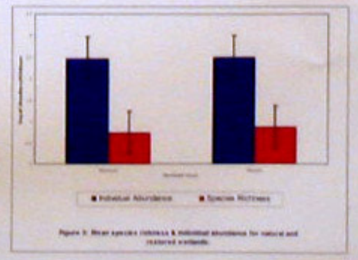
- Nonmetric Multidimensional Scaling (NMS) –to test for differences in composition of wetland classes.
- t-test – to test for differences in diversity among wetland classes

Results

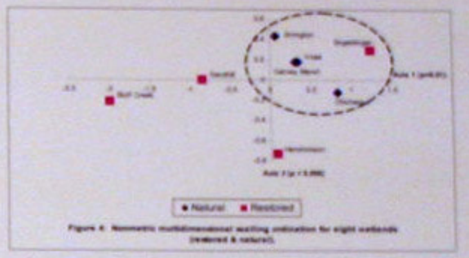
- Natural Wetlands
  - 1275 total individuals
  - 10 total species
- Restored Wetlands
  - 1191 total individuals
  - 11 total species
- T-test Results
  - No significance in species abundance among wetland classes was found between the 8 sites with a p-value of 0.1385 (Figs. 2,3).
  - There was a significance found when an outlier from each wetland type was removed (p-value of 0.0185). Variability within wetland class appears large.
  - No significance was found for species richness (p-value > 0.1).

Total Abundances and Species Richness of Waterfowl





NMS Ordination of 8 Wetlands



Interpretations:

1. Similar wetland types clustered together.
2. Variability of wetlands was greater for restored wetlands opposed to natural wetlands.
3. Axis 1 = Cover of emergent and surrounding vegetation.
   Axis 2 = Duration of hydroperiods.

Implications for Wetland Restoration in Iowa

- Focus on retaining natural wetlands and especially natural sheet water wetlands.
- Focus on restoring sheet water wetlands opposed to pothole wetlands.
- When restoring wetlands put emphasis on maintaining a consistent hydroperiod and creating emergent and surrounding vegetation. Use Chichaqua Marsh as a model.

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