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Do mitigated wetlands support similar small mammal communities as natural wetlands?

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Introduction

- Wetlands are responsible for a slew of ecosystem services.
- Wetlands are often created or restored to mitigate for losses to natural wetlands.
- It is fair to question the functionality of these mitigated wetlands.
- Do they provide similar habitat as natural wetlands?
- Small mammals are an overlooked taxa in wetland mitigation studies.
- Small mammals have an important ecological role, as seed dispersers and as prey species for many other wildlife.
- Differences in small mammal communities could signify that mitigated wetlands are not providing adequate replacement of natural wetlands.

Objectives

At mitigation and natural wetlands, examine small mammal:

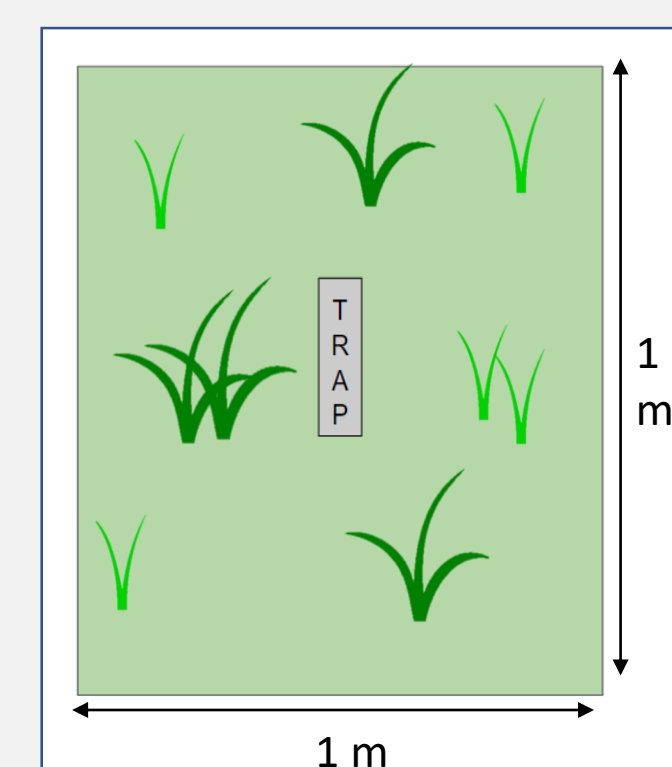
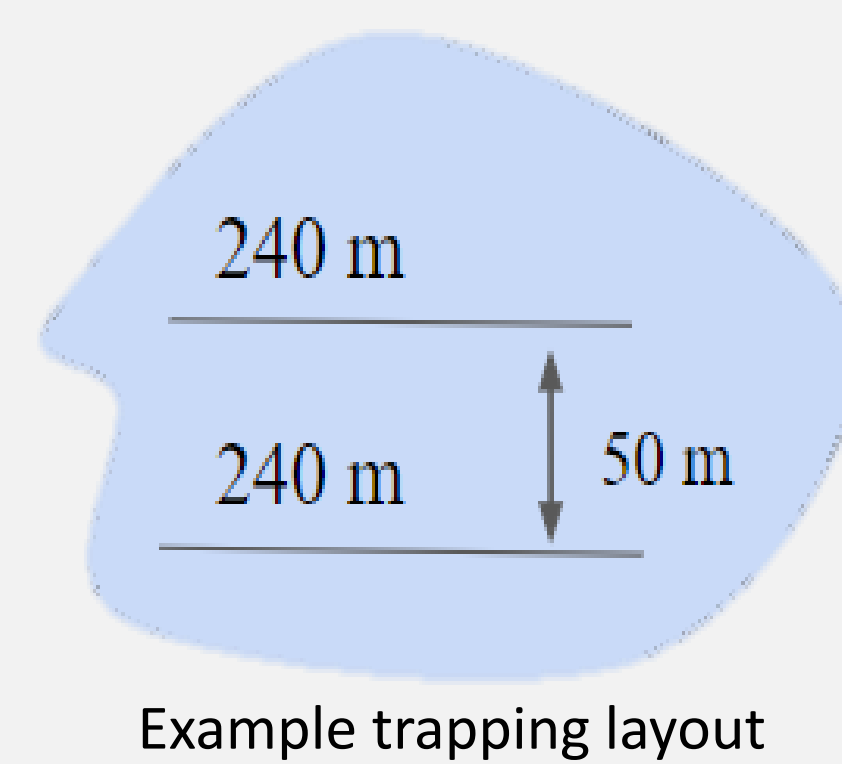
- Community composition
- Occupancy
- Abundance
- Species diversity
- Species richness
- Species evenness



Mitigated wetland in Hazelton, WV

Methods

- Sherman traps used for capture and baited with peanut butter and oats.
- Each wetland receives 2 transects (140 m in length, 25 traps per transect) at minimum, but can receive more based on wetland size.
- Traps are out for 5 consecutive nights from May to August.
- Shrews receive a unique mark with dye.
- Other small mammal species are tagged with 1005-1 Monel ear tags.
- Vegetation survey (1 x 1 m²) is conducted at each trapping location.

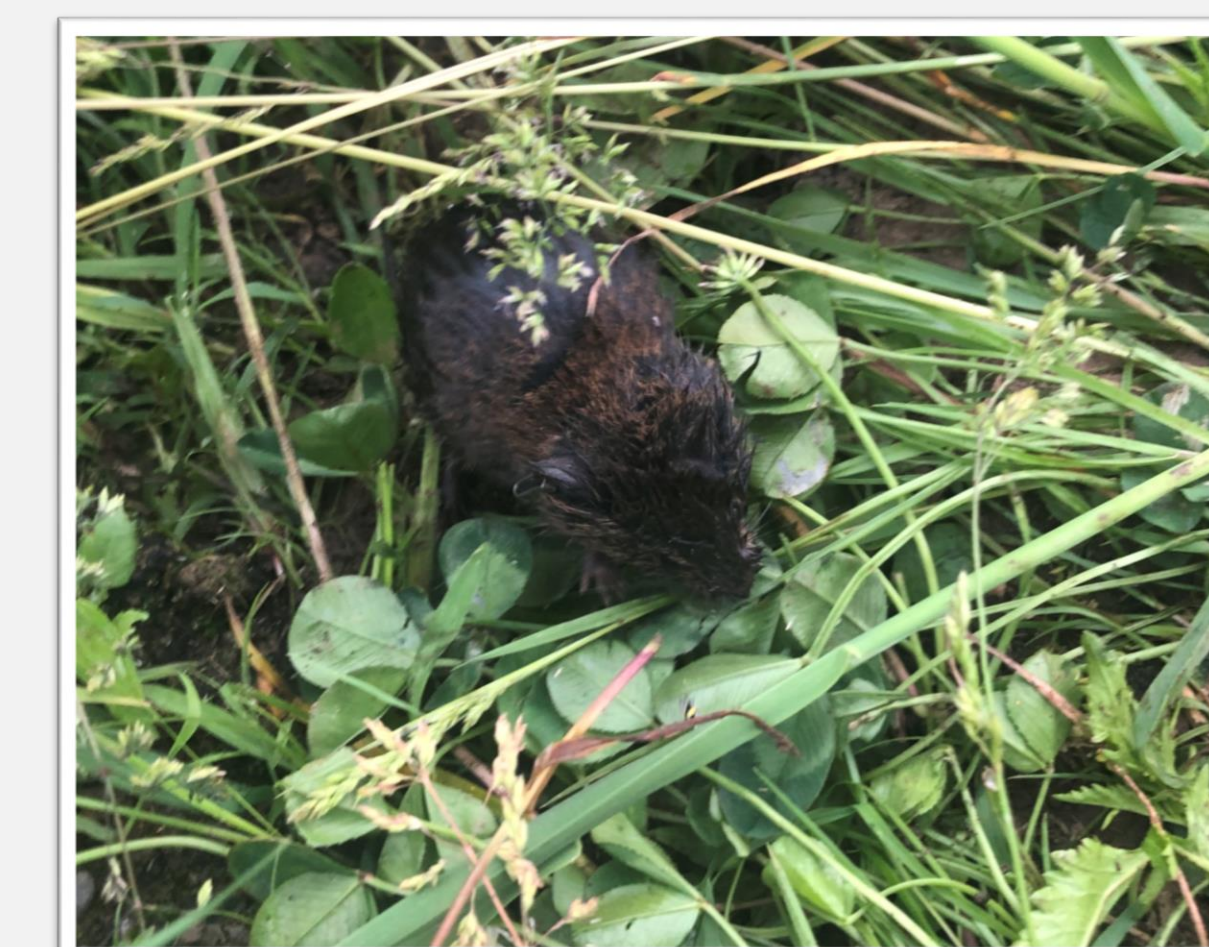


Conclusion and Future Steps

- So far, we have found no significant differences in small mammal community metrics between mitigated and natural wetlands.
- However, this may be due to our small sample size.
- Therefore, we will be trapping this summer at more mitigated and natural wetland sites for more robust data.
- Other analyses that will be performed on the data are: occupancy models for each species, diversity and evenness obtained using Shannon-Weiner Diversity Index, and cluster analysis for comparing community composition.

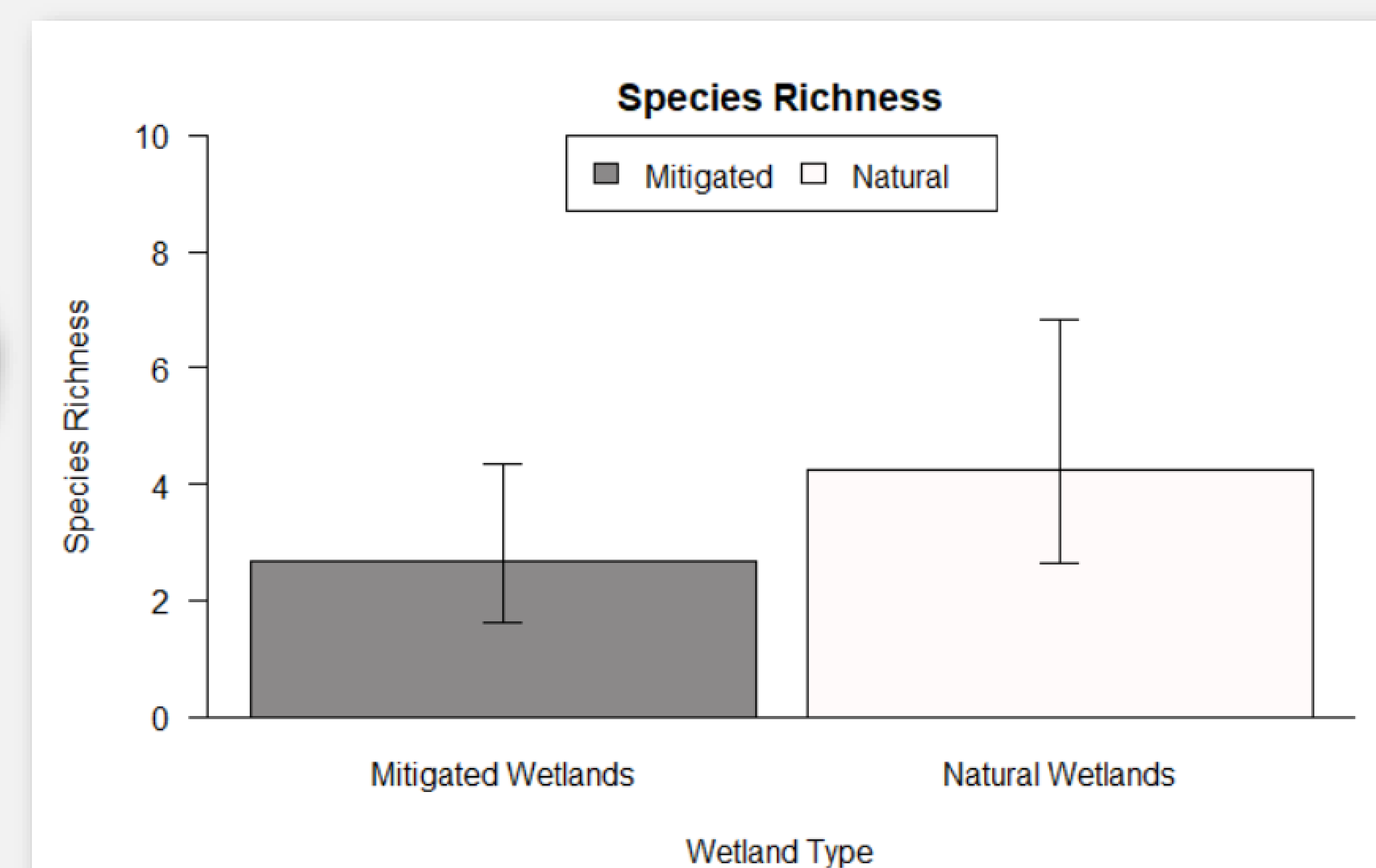
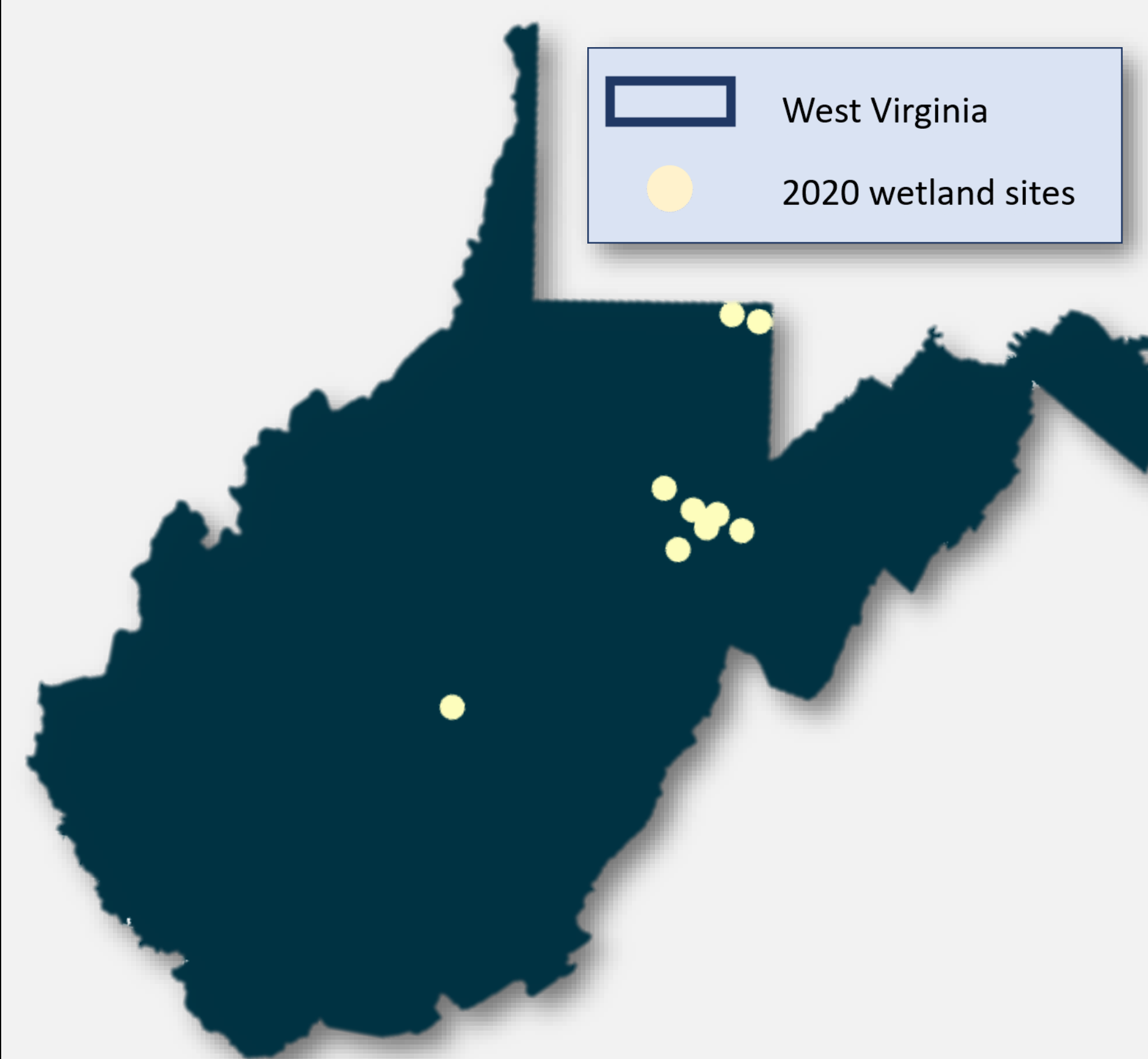
Significance:

- This project will determine whether small mammal communities are using mitigated wetlands similarly and contribute to whether current wetland mitigation is truly filling its intended purpose.
- Could inform future wetland mitigation projects.



Results

- Over the 2020 field season, ten sites were trapped (6 mitigated and 4 natural) and over the course of these 3,645 trap nights, there were 249 total captures, with 170 of them being unique individuals.
- Of all captures made, 31% were recaptures.
- *Peromyscus leucopus* and *Peromyscus maniculatus*, accounted for the majority of all species captured.



Species richness between mitigated and natural wetlands



Capture and processing of a deer mouse

- Modeled apparent species richness (count data) using Poisson general linear model as a function of wetland type (mitigated vs. natural).
- P-value: 0.181
- Not statistically significant BUT possibly biologically significant.
 - More sampling needed!

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