

St. Norbert Abbey: Between Year Comparison of Small Mammal Species Dynamics

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ABSTRACT

Long term biological studies spanning several years are rare but a key part in analyzing trends which may not be obvious in a single season of research. Here we examine data collected between 2017 and 2019 concerning small mammal populations dynamics at the St. Norbert College Field Station (De Pere, WI; Figure 1). Using a mark and recapture method, small mammals were measured and tagged to supply data representative of the populations residing around the field station. With this data, we determine how small mammal populations vary from year to year and respond to changes occurring in and around the ecosystem that the St. Norbert College Field Station offers. The main goal of this research project is to monitor the population dynamics and trends occurring over time. Through this work we aim to provide stakeholders with the necessary data to ensure proper conservation measures are taken.



Figure 1. St. Norbert College Field Station, De Pere WI

AIM

- Obtain samples which adequately represent and supply quantitative data for the population
- Compile data for long term studies comparing populations from year to year
- Determine annual variation and long term trends in diversity and abundance
- Provide data useful in advocating for preservation of this site

METHOD

- Trapping Period:
 - 5 trap nights during the 3rd week of August (2017-2019)
 - 6am and 6pm daily
 - 2 Transects, 33 traps
- Sherman Live Traps (Figure 2, A)
 - Baited with black oil sunflower seeds and cotton balls
- Animals marked and measured
 - Ear tags to mark individuals (Figure 2, B)
 - Morphological measurements taken
- Supplemental Camera Traps
 - Strapped to trees or inside 5-gallon buckets (Figure 2, C & D)
 - 3-photo burst w/ 30 sec delay
 - Or 10 second video
- Schnabel Method to estimate population size
- R-studio to perform t-test and determine significance
- Running species list

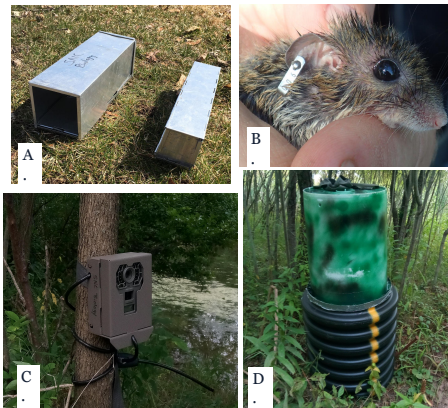


Figure 2. Mark-recapture and visual search equipment: A) large and small Sherman live traps B) P. leucopus with ear tag C) Stealth Cam Game Camera STC-G42NG D) 5 gallon bucket trap

RESULTS

- Lower average weight in 2019 (Fig. 3)
- Greater increase in average body length than tail length (Fig. 4)
- Lower estimated population size in 2018 (Fig. 5)

FIGURES:

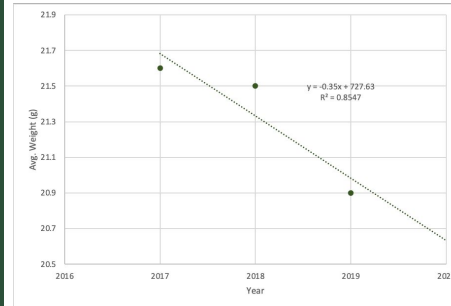


Figure 3. Comparison of average P. leucopus weights between years.

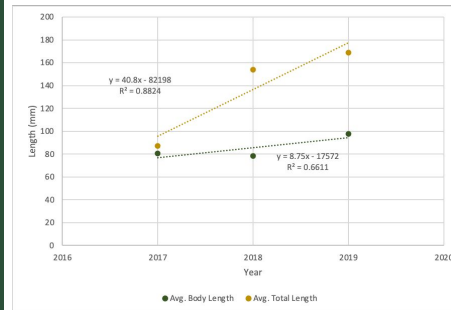


Figure 4. Comparison of P. leucopus average body and tail length between years.

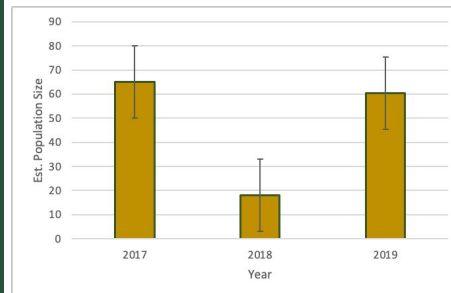


Figure 5. Comparison of estimated P. leucopus population size between years.

RESULTS. CONTINUED

- Total of 24 species have been spotted over 3 years (Figure 6)
 - 8 mammals
 - 1 marsupial
 - 14 birds
 - 1 amphibian
- 3 novel species in 2018

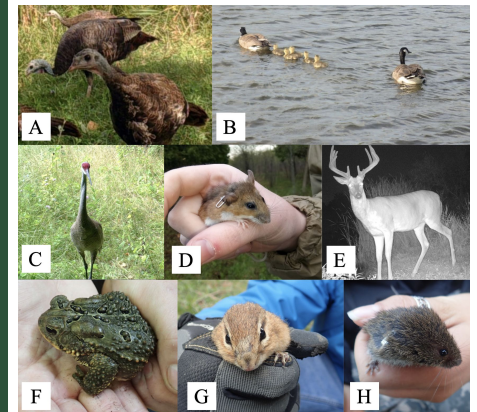


Figure 6. A) Wild Turkey, B) Canada Goose, C) Sandhill Crane, D) P. leucopus, E) White-tailed Deer, F) American Toad, G) Eastern Chipmunk, H) Meadow Vole

CONCLUSIONS

- Ecosystems are very complex
- Populations seem to be heavily affected by weather events and habitat changes
 - Late-April snowstorms
 - Underbrush removal
- Longitudinal data helps us to understand these effects with greater certainty
- Information can be given to stakeholders to improve the care of this area

ACKNOWLEDGEMENTS

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