Impacts of Great Lakes Typha Invasion on Anuran Species

Elizabeth Thilges*, Drew Monks, Shane Lishawa, Dr. Brian Ohsowski
School of Environmental Sustainability | Loyola University Chicago
ethilges@luc.edu

Abstract

Anuran (frog and toad) populations are in decline worldwide, including around the Great Lakes. Simultaneously, the presence and abundance of the hybrid cattail, *Typha x glauca*, has expanded in Great Lakes coastal wetlands. This invasive plant alters wetlands by forming dense stands, negatively impacting anuran species by fragmenting their suitable habitat. To quantify the effects of Typha on different anuran species, sound recorders were placed in paired invaded and uninvaded wetland sites in the spring of 2021 in northern Michigan. Vegetation surveys were conducted around the sound recorders, and I am now listening to the audio data to determine the presence of anuran species.

Methods

The Sault Tribe Natural Resources Department (STRND) placed Song Meter SM4 sound recorders at each of the wetland sites in the spring of 2021. I analyzed this audio data using bio-acoustic data analysis software (RavenPro), listening to the recording from May 17–23, 2021 at each site from 10:00 to 10:05 pm.

Vegetation Results

I preformed ANOVAs to compare Shannon diversity and the wetland along with the Shannon diversity and the cattail invasion status. There were significant differences in the Shannon diversity by wetland (p-value: 0.000311), but not by cattail invasion status (p-value: 0.362). The data was untransformed, as the residuals were normal and homoscedastic. A Tukey HSD multiple comparison test showed that significant differences were between Sand Island and Mackinaw Bay/Cedarville (p-value: 0.0026762), Sand Island and Munuscong (p-value: 0.0004396), and Sand Island and St Ignace (p-value: 0.0123241).

Audio Results

The frog species I identified were the northern spring peeper (*Pseudacris crucifer*), the American toad (*Anaxyrus americanus*), the northern leopard frog (*Rana pipiens*), the eastern gray treefrog (*Hyla versicolor*) and Cope’s gray tree frog (*Hyla chrysoscelis*), which were not differentiated.

References


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