Preregistration

My preregistration for the Fiddler Crab Project

Sherry Du[1,2]

[1] University of Toronto Mississauga, Department of Biology

[2] University of Toronto, Department of Ecology and Evolutionary Biology

22. September 2025

Study Information

Title	Changes in Atlantic marsh fiddler crab (*Minuca pugnax*) body size across latitude. My preregistration for the Fiddler Crab Project
Description	Bergmann's rule is a phenomenon that explains differences in body size across latitude within the same taxa. Specifically, this rule states that individuals at higher latitudes are bigger than those at lower latitudes. However, little is known about whether this applies to Atlantic marsh fiddler crabs (*Minuca pugnax*). The purpose of this project is to answer the following question: How does Atlantic marsh fiddler crab (*Minuca pugnax*) body size change across latitude?

Hypotheses If latitude affects body size, I expect that Atlantic marsh fidder crabs will be larger at higher latitudes than lower latitudes.

Design Plan

Study type **Observational Study**. This project is an observational study as we do not manipulate any variables. We are merely observing crabs at different latitudes in the Plum Island LTER. This data was collected from https://lter.github.io/lterdatasampler/articles/pie_crab_vignette.html.

Blinding No blinding is involved in this study as this is on crabs.

Study design Source: https://lter.github.io/lterdatasampler/articles/pie_crab_vignette.html

(If we were to make this study PRIOR to registration): Because this is essentially a survey, we would be conducting a cross-sectional study. The outcome that we would measure is body size, and the exposure is latitude. These two variables would be measured at the same time (i.e., present).

Randomization We will try to randomize the crabs being sampled at each site.

Sampling Plan

Existing data **Registration prior to analysis of the data**. As of the date of submission, the data exist and you have accessed it, though no analysis has been conducted related to the research plan (including calculation of summary statistics). A common situation for this scenario when a large dataset exists that is used for many different studies over time, or when a data set is randomly split into a sample for exploratory analyses, and the other section of data is reserved for later confirmatory data analysis.

Explanation of existing data	To avoid exposure to any patterns or summary statistics about this data, I have avoided analyzing the body size parameters against latitude that will be used in my study.
Data collection procedures	Enter your response here.
Sample size	Enter your response here.
Sample size rationale	Enter your response here.
Stopping rule	Enter your response here.

Variables

Manipulated variables	Enter your response here.
Measured variables	Enter your response here.
Indices	Enter your response here.

Analysis Plan

Statistical models	Enter your response here.
Transformations	Enter your response here.
Inference criteria	

Data exclusion	Enter your response here.
Missing data	Enter your response here.
Exploratory analyses (optional)	Enter your response here.

References