Thesis Project Proposal

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2020-2021

Main Objective:

What is the single main objective of the research? This needs to relate to some kind of general ecological issue, and be articulated in a single concise statement.

How is environmental variation (temperature, pH, nutrient composition) systematically studied and manipulated across organismal, population, and community ecology and how does study design influence conclusions about environmental variation compare across these bodies of literature?

Testable hypothesis: A hypothesis or set of hypotheses must:

clearly contribute to achieving the main objective be able to be definitively tested and rejected ideally, the set of hypotheses should together support some inference about the main objective. Generating hypotheses is a challenge. Make sure there are not logical gaps between the hypotheses, objective and methods used to test them, or if gaps exist, address them.

H0: There is no difference in how variation is studied at different levels of biological organization and thus the conclusions are the same across all levels.

Ha: Short term responses to simple environmental variation manipulation is prioritized at the organismal level, long term and more complex environmental variation manipulated is prioritized at the population and community level, owing to differential experimental design and conclusions about how variation type will interact in the ecosystem.

Methods:

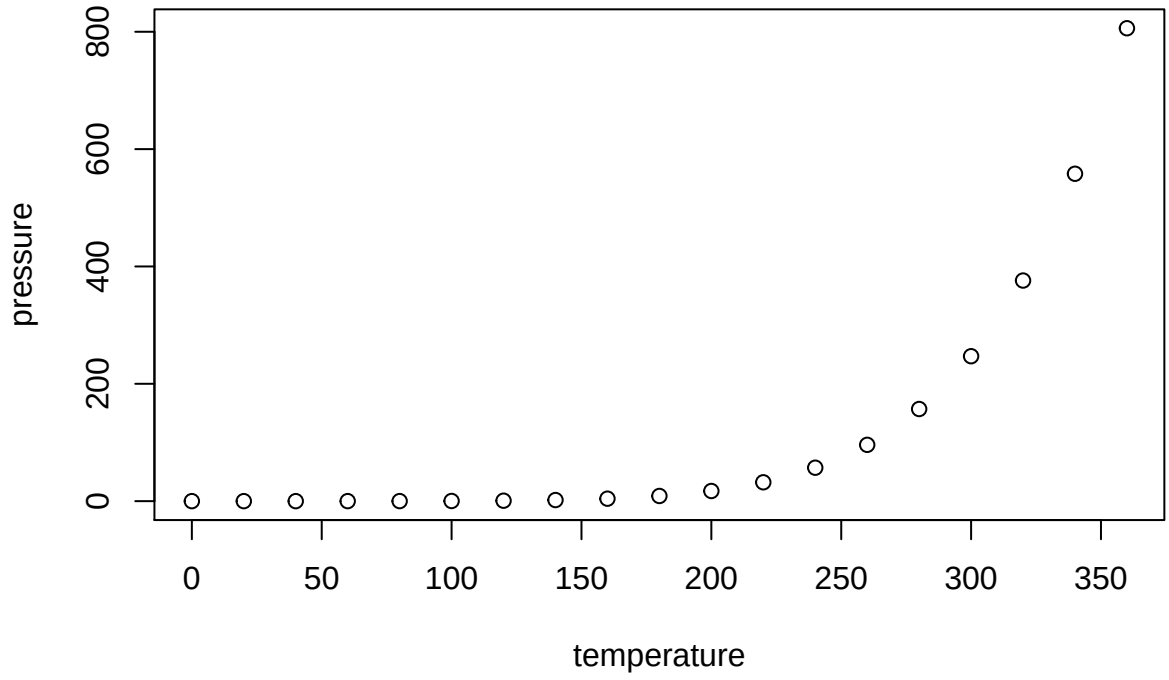
- How will hypotheses be tested? General categories include experiments, observations (surveys), meta-analyses, analysis of theoretical models. Will inferences be drawn from more than one type of evidence?
- How will data be collected and analyzed? What statistical tests and software will you use?
- What resources are required? Budget for time (e.g., timeline) and for costs. #Results: Consider, in advance, the 2-3 key figures or tables you will produce for your final paper. Sketch them, including axes, and even the data that would reject or fail your hypotheses or support your predictions. #Inference and Next Steps: What logical steps will you use to achieve your main objectives, and draw conclusions? How exactly will your figures (sketched above) answer your original questions? Consider different possible versions of the results, and how you might interpret them. Then revisit your questions – are you happy with how your hypotheses are stated, given the possible results?

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.