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ECO-602 Analysis of Environmental Data
Partners: N/A

Week 10 Reading Questions

Q1: We want a model selection criteria to penalize the number of parameters in a model because it helps to prevent over-fitting. It also helps with balancing bias and increases the variance.

Q2: The slope parameter $\beta 1$ is the unit change in x. To better explain this, let me give you an example. I am studying the difference between three butterfly species living in the same habitat. I want to know which species will persist with climate change, and which will either have to move higher up in elevation or will the population disappear. I will be taking wing measurements off all three species and comparing them to see if bigger wings make stronger flier and they are able to fly further in distance.

After measuring all three species I will do a model coefficient table and get the intercept and the average wing size of all three species. From there, to see if there is potentially a positive relationship. I will take the intercept and add the 1-unit of one species and see what the parameter slope is. I will then repeat that with the third species. Doing this will show if there is a positive relationship between wing size and traveling distance.

Q3: The low water level treatment is the base case.

Q4: The average plant mass in grams for the low water level treatment is 2.4g. This is because the low water level treatment is the base case so I do not need to add anything to the base to get the average. To get the base case you do a one-way ANOVA and the intercept is the base case.

$2.4 = 2.4 + 0 * 1.3 + 0 * 13.6$

Q5: The average plant mass in grams for the medium water treatment level is 3.7g. To get the average plant mass for the medium water treatment I did $3.7 = 2.4 + 1 * 1.3 + 0 * 13.6$. I took the base case and added the medium water treatment unit once to get the average mass in grams.

Q6: B. Is water availability a significant predictor for plant biomass accumulation?

The model coefficient table cannot tell us if there is an overall significance of the categorical predictor.