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Week 4 Reading Questions
ECO 602 - Analysis of Environmental Data
9/29/2022

Q1 (2 pts.): For both models (abundance and presence/absence) identify: The predictor variable(s). The data type/scale used for the predictor variable.

For the abundance model, the predictor variable was extent of late-successional forest which is numeric, continuous, ratio data.

For the presence/absence model, the predictor variable was total basal area, which is numeric, continuous, ratio data.

Q2 (2 pts.): For both models (abundance and presence/absence) identify: The response variable. The data type/scale used for the response variable.

For the abundance model, the response variable was brown creeper abundance which is discrete, numeric, ratio data.

For the presence/absence model, the response variable was brown creeper occurrence which is discrete, categorical, nominal (as 1 and 0 are used to describe “presence” and “absence”; “presence” and “absence” could be replaced for 1 and 0).

Q3 (4 pts.): For both models: How did the data type or scale influence or constrain the choice of model?

For the abundance model, the data type and scale resulted in an increasing linear looking spread. This meant a phenomenologically descriptive linear model was a logical choice as the model was picked based on observing patterns in the data.

For the presence/absence model, the deterministic model was restricted by binary response variable (brown creeper occurrence) which made choosing a logistic model a good choice.

Q4 (1 pt.): What are the pros and cons of the Ricker model? What are the pros and cons of the quadratic model?

Pros of the Ricker model include that it is based off an ecological assumption that per capita fecundity decreases exponentially with density, that it is widely used as a phenomenological model for variables that start at 0 then go up to a peak then slowly decrease back to zero, and that the Ricker model can also be used as a mechanistic model.

Cons of the Ricker model include that it is a complex model, not as flexible, and that it has a finite limit. The Ricker model did not fit the data in the McGarigal text as well as the quadratic model did.

Pros of the quadratic model include that it fits the data of McGarigal chapter the best, and that it is highly flexible.

Cons of the quadratic model include that it does not incorporate any principle's or theories of ecology, and it is only phenomenological.