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ECO 602
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Weekly Reading Questions 4

**All questions answered alone*

Q1 (2 pts.): For both models (abundance and presence/absence) identify:

a. The predictor variable(s). - For the abundance model, the forest succession gradient and for the presence/absence model, the total basal area.

b. The data type/scale used for the *predictor* variable. - For the abundance model, the forest succession gradient, which is a continuous gradient, and for the presence/absence model, the total basal area, which is also continuous as a measurable amount of area.

Q2 (2 pts.): For both models (abundance and presence/absence) identify:

a. The response variable. - For the abundance model, the abundance of brown creepers and for the presence/absence model, the presence/absence of brown creepers.

b. The data type/scale used for the response variable. – For the abundance model, brown creeper abundance as a proportion of the total, and for the presence/absence model, the probability of brown creeper occurrence, which is binary.

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

For the abundance model, they chose to fit a linear model to assess the relationship between the two variables, creating a phenomenological model for the data. This works well for this data set, as there is no major constraint based on the data itself, but a linear model can be fit based on observing the patterns in the data.

For the presence/absence model, they were constrained by the fact that the dataset is binary with a high volume of 1s and 0s. They chose a logistic function to fit the data because logistic models are well suited to a binary data set, or something with a lot of presence/absence data.

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

The Ricker model is a mechanistic model that allows you to fit data based on the idea that per capita fecundity decreases exponentially with density. It's very flexible and accurate, but since it's mechanistic, it is best suited to data that fit its mechanism. Quadratic models on the other hand are phenomenological, and are able to fit a wide range of data, sometimes better than a mechanistic model, but they can't show the mechanism behind the fit.