

Reading questions week 4

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

Abundance model

- a) The predictor variable is the extent of late-successional forest
- b) The data type for the predictor variable is percent, or value 0-1. The data is continuous on a ratio scale

Presence/absence

- a) The predictor variable is total basal area of the trees
- b) The data type/scale for the predictor variable is continuous, numerical data on a ratio scale

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

Abundance model

- a. The response variable is Brown Creeper abundance
- b. The data type for the response variable is abundance along a spectrum from 0-1 (continuous, ordinal, ratio scale)

Presence/absence

- a. The response variable is Brown creeper presence/absence
- b. The data type/scale for the response variable is logical (True/False or 0 or 1)

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

The abundance model has two variables on a continuous scale. Given the visible pattern in the scatterplot, a linear model makes a good fit - allowing the analyst to try to predict the abundance of BRGR at different types of forest. The relationship could be modeled with a simple intercept and slope, and padded with a stochastic model to show the noise.

The presence/absence model gives the predictor value along a spectrum, but plots binary points (0 or 1). It makes the most sense to use a logistics model, which graphs the probability of presence or absence of a BRGR, given the total basal area of the trees. In this case, it shows the probability of a creeper grows with the higher basal area sites.

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

Rosalyn Bathrick

The Ricker model is rooted in ecological theory has broad application in ecological data when there is growth from zero, a peak/plateau in growth, and some decline. It is not very specific nor customizable to other variables. A Quadratic model is a customized model fit specifically to the data – it may provide a better fit than other models, but it does not have ecological theory or broad application at its origin.