

1. For both models identify the predictor variables and the data type/scale used for the predictor variable.
  - a. For model 1 the predictor variable is extent of late-successional forest.
  - b. For model 2 the predictor variable is total basal area.
2. For both models identify the response variables and the data type/scale used for the response variable.
  - a. For model 1 the response variable is brown creeper abundance.
  - b. For model 2 the response variable is brown creeper occurrence.
3. For both models: How did the data type or scale influence or constrain the choice of model?
  - a. In model 1, the response variable is continuous as relative abundance can occupy any point on the scale from 0 to 1. This allows the data to spread out across the y axis, and results in the visual form we see. The data can be comfortably approximated by a linear model  $y = mx + b$ , ignoring the stochastic component, and the line describes the data well.
  - b. In model 2, the presence/absence data of brown creeper occurrence is discrete, and cannot hold any intermediate values between 0 and 1. This results in the dichotomous form we see on the graph. This binary form cannot easily be estimated and so a more complex model is necessary and McGarigal uses a 2-parameter logistic function to create his best fit line.
4. What are the pros and cons of the Ricker model?
  - a. The Ricker function works well for very specific data patterns, "hump-shaped skewed to the right," but if the data does not fit that form, the model cannot be accurately used. The Ricker function also works well because it's a standard in the scientific community and well established.
5. What are the pros and cons of the quadratic model?
  - a. Quadratic models are much more flexible than the Ricker model so they are much more adaptable to fit the shape of the data exactly. However, because they can be fitted so precisely, quadratic models can get mathematically complex.