

## Week 4 Reading Questions:

### Functions

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### Brown Creeper Model:

Q1:

#### Abundance model:

- a. Predictor variable was landscape comprised of late-successional forest
- b. The data type was % or proportion, this is a continuous variable within the bounds of 0-100.

#### Presence/Absence model:

- a. The predictor variable was total basal area of trees
- b. This is a continuous non-negative variable.

Q2:

#### Abundance model

- a. The response variable was brown creeper abundance.
- b. This data is whole numbers, or real number data, which would be analyzed as count data.

#### Presence/Absence model:

- a. The response was whether or not the brown creepers were present or absent at each individual plot (n=1,046)
- b. The scale used for the response variable was binary being either 1 or 0,

Q3

For the abundance model the both the predictor and the response variable were continuous variables which would be that fitting a linear model would be a good option. The increase in brown creeper abundance seems to be linear increasing with increasing % of landscape with late-successional forest.

For the presence/absence model is bound by the binary response variable, 0 or 1, and that there is a relationship with more observations of brown creeper presence as the total basal tree area increased. A logistic model would be the best because of its sigmoid shape.

Q4

The pros of the Ricker model are that as a logistic mechanistic model it adequately describes the functional response relationship for this example using the theoretical framework of predator and prey dynamics. This is only useful if there is a mechanistic model for the data a priori, which is most of the time not the case. The quadratic function fits the data better than any other of the mechanistic models but is not supported by theory. This would only describe the phenomenon not the mechanism. The different model types give us different levels of interpretation and strengths to those interpretations, all of which depends on the question.