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ECO-602 Environmental Data Analysis Lecture

Week 4 Reading Questions:

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

- a. The predictor variable in example 1 is the extent of late-successional forest, and in example 2 it is total basal area.
- b. In example 1 the data type is factor because it's a categorical indicator for subbasin. In example 2 the data type is integer and the scale used is 0-207. The units of measure are m² per ha

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

- a. The response variable in example 1 is brown creeper abundance. The response variable in example 2 is brown creeper occurrence.
- b. The data type for example 1 is integers because it is the likely hood of seeing a brown creeper in percentage compared to extent of late-successional forest. The scale is 0-1 In example 2 the data type is binary, and the scale is 1 – 0

Q3: In example 1 the extent of late-successional forest data is contained to categories not allowing for brown creeper abundance to be found outside of these constraints. In example 2, there are more survey locations in areas with a lower total basal area, this makes the data skewed and does not give an accurate picture of brown creeper presence/absence in area with high total basal area.

Q4: Some pros with the Ricker model are that instead of giving you a negative number for the population estimate for the next generation it gives you a more accurate estimate when planning to stock fish. The Ricker model also gives insight into the underlying environmental causes of the pattern in your model. A con is that the Ricker model assumes the population is closed when stocking fish. In some cases, this is true, but the Ricker model always assumes there is no immigration or emigration.

The main pro with using a quadratic model is that it can fit the data extremely well and explain the pattern clearly. Because the quadratic model is phenomenological, we can use it when we don't have prior data that is needed for a mechanistic model. The con is that the quadratic model does not give you an explanation of the underlying cause for the pattern like a mechanistic model would.