

#### Case 14: Environmental Factors on Antler Length

In ecological research, it is often necessary to study a group of wild animals in a nonintrusive way, such as through camera traps or direct observation, where individual animals cannot be distinguished due to their similarity and elusive behavior. Researchers are investigating the antler length (in centimeters) of a small, isolated group of animals that belong to the Bovidae family over several months. The objective is to analyze the antler length data to assess whether environmental factors, such as habitat quality (e.g., forest density), influence antler length. The data includes repeated measures from multiple sightings, collected over time with an associated predictor: forest density (low or high). ([download data](#))

**Initial Questions**

1. What are the research objectives?
2. What are the statistical questions?
3. What is the response variable, and what is the data type of the response variable?
4. What are the explanatory variables of interest?
5. Are there covariates?
6. What is the population of interest?
7. What is the subject, and what is the number of distinct subjects?
8. Are there subject-level data?
9. Are response variables dependent (repeated measures / clustered subjects)?
10. Are the subjects selected randomly?
11. Are the subjects randomly assigned to different groups?

**Initial Thoughts**