

Territorial Behavior

OBJECTIVES

- **Recognize** that territorial behavior is a type of social behavior.
- **Observe** how male crickets behave in close proximity to a defensible resource, such as food.
- **Form hypotheses** about the function of male territorial behavior in crickets.

MATERIALS

- disposable gloves
- colored paint, nontoxic, washable
- aquarium
- cardboard, 5 cm square
- potato, piece
- crickets (5 male and 5 female)
- paint brushes, several, small
- cardboard tube
- apple, slice
- watch, with second hand





Preparation

1. **Scientific Methods State the Problem** Under what circumstances do male crickets chirp most frequently?

2. **Scientific Methods Form a Hypothesis** Form a hypothesis that explains how different situations and cues trigger chirping in a male cricket. Record your hypothesis.

Procedure

OBSERVE TERRITORIAL BEHAVIOR

1.  Put on gloves.
2.  **CAUTION: Crickets are animals and should be handled with care.** With colored paint, mark the backs of 5 male crickets. Use a different color for each cricket. Place the crickets in an aquarium.

Territorial Behavior *continued*


3. Place 5 unmarked female crickets in the aquarium.
4. Make two shelters. Construct the first shelter by turning the cardboard tube on its side. Construct the second shelter by folding the cardboard square in half to form a tentlike structure.
5. Place the shelters in different areas in the aquarium.
6. Place a slice of apple and a piece of potato in the aquarium.
7. Observe territorial behaviors among the male crickets, such as chirping, stroking others with antennae, and pushing others away.

DESIGN AN EXPERIMENT

8. Design an experiment based upon your hypothesis and the available materials. Predict the results.

9. Write out your experimental procedure. Identify the variables that you will control, the experimental variables, and the responding variables. Create a table to record your results.

CONDUCT YOUR EXPERIMENT

10. Put on gloves. Carry out your experiment. Record your observations.
11.  Clean up your lab materials according to your teacher's instruction. Wash your hands before you leave the lab.

Territorial Behavior *continued*

Analyze and Conclude

1. **Scientific Methods Analyzing Data** Were any individual crickets more aggressive than the others? If so, was their sufficient evidence to explain this behavior? Give evidence to support your answer.

2. **Describing Results** What caused the most overt examples of aggression among the crickets? Cite supporting evidence. Was your prediction correct?

3. **Scientific Methods Identifying Variables** What did the shelter and food represent to the male crickets?

4. **Scientific Methods Forming Hypotheses** For each aggressive behavior observed, form a hypothesis that explains the behavior's function.

5. **Drawing Conclusions** Explain the reproductive advantages gained through the crickets' territorial behavior. Describe the interaction between male and female crickets. Did it differ greatly from the male-to-male socialization?

Territorial Behavior *continued*

6. **Inferring Conclusions** What different modes of communication did you observe among the crickets? Is it possible they were also communicating in a way you were unable to perceive? Explain and cite examples from your research.

Extensions

7. **Insect Behavior** Use the Internet to research the types of territorial behavior in other insects. Write a compare/contrast report detailing the similarities and differences between cricket behavior and the territorial behavior of another insect. Share your report with the class.
