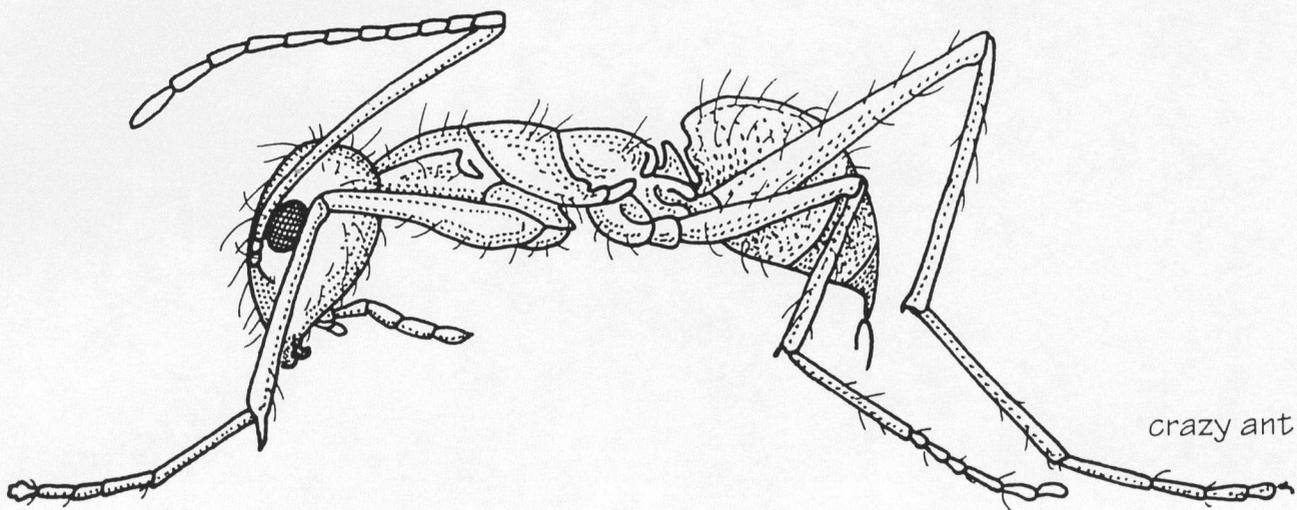


# ANTWICHES



## KEY QUESTION

Will ants eat every part of a sandwich or will they only eat certain parts?

### CURRICULUM FRAMEWORK TOPICS:

- I.A. Perception
- I.B.2. Spatial Scale
- I.C.3.b. Finding Food, Water, and Favorable Temperatures — Animals

### RELEVANT HANDBOOK ENTRIES:

Ants

### TARGET AUDIENCE: GRADES 3-5, AGES 8-10

Suitable for visual learners. Appropriate for all academic ability levels.

### SCIENCE PROCESS SKILLS USED:

BASIC: Observation, Prediction, Inference

### CORRELATED STATE PERFORMANCE

### OBJECTIVES:

Primary Minimum Standards:

18 102

Primary Standards of Excellence:

1037 1042 1047 1470

Elementary Minimum Standards:

20 27 29 32 112

Elementary Standards of Excellence:

1037 1041 1042 1047 1170 1470 1488

### TIME REQUIRED TO COMPLETE LESSON:

In-class: 25-35 minutes. In-field: 20-30 minutes.

### BEST TIME OF YEAR FOR LESSON:

Spring and fall; winter, if days are warm

## BEHAVIORAL OBJECTIVES

As part of this activity, students will:

- (C) 1. observe and describe differences in perception and scale between humans and ants.
- (C) 2. recognize that scale in a habitat is determined by an organism's perspective.
- (A) 3. become aware that humans often bias decisions regarding environments by viewing them only from a human perspective and scale.

## MATERIALS

### ESSENTIAL:

- Small sections of sandwiches such as peanut butter and jelly (one per group of three-four students)
- Hand lenses (one per student)

### SUPPLEMENTAL:

- Ant farm

## GETTING READY

Scan the school grounds and locate a warm, sunny spot containing several ant mounds (colonies). Check the area for large fire ant mounds!

You might want to plan to conduct this lesson during your students' lunch break and ask each student to bring a sandwich for lunch that day.

## PROCEDURE

### BEFORE GOING OUTSIDE (10–15 MINUTES):

1. Ask students to sketch an ant on a sheet of paper. Review the three basic body parts of an ant (head, thorax, and abdomen). Ask students how many legs ants have. Make sure students understand that ants are insects and have six legs. Ask students where ants live. Make sure students understand that most ants are social insects and live in colonies. Explain that the ants in colonies work together and help each other survive. Different types of ants in a colony have different jobs. For example, some ants lay eggs and produce new ants while other ants help take care of the eggs and young ants or find food for the rest of the colony.

2. Ask students to describe an ant home. Make sure they realize that the exposed hole and mound is only a small part of the entire ant colony and that most of the ant colony consists of underground tunnels. If an ant farm is available, let students examine the tunnels.

3. Explain that during this lesson you will all be sharing lunch with the ants on purpose and observing their feeding behavior. Make sure students understand that the purpose of the activity is to find out how ants view their food and to compare this with the way humans view their food.

4. Show students one whole peanut butter and jelly sandwich. Ask students to predict how many ants could eat a full meal from that one sandwich. Next ask how many humans could eat a full meal from that one sandwich. Ask students why so many ants could eat a meal from one sandwich while only one human could eat a meal from one sandwich.

5. Finally, ask students how one sandwich could be divided up in order to feed several colonies of ants.

### WHILE OUTSIDE (20–30 MINUTES):

1. Lead the class to the study site and divide students into groups of three to four. Distribute a small sandwich square (one to two square inches)

to each group and give each student a hand lens. Ask students to look closely at their "antwiches" and describe the parts, colors, textures, and tastes of their sandwiches.

2. Next, ask students to describe how people eat sandwiches. (Basically, there are two types of sandwich-eaters: picky eaters who dissect their sandwiches and eat them part by part, sometimes throwing away the parts they don't like; and munchers who look at the sandwich as a whole unit and eat it as is, bite by bite.) Ask students to try to predict which parts of their sandwiches ants will eat. Ask students to predict whether they think ants will be picky eaters or munchers. Ask them to provide reasons for their predictions.

3. Instruct each group of students to locate an ant colony in the study site and place its sandwich pieces near the hole. Next, allow students to closely observe the feeding activity of the ants visiting their sandwiches for five to 10 minutes. Tell them to note whether the ants are picky eaters or munchers and what parts of their sandwiches the ants seem to prefer (e.g., jelly-soaked bread only, crust only, peanut butter, etc.). Remind students not to get too close to the ants or touch or disturb them while they are eating.

### AFTER GOING OUTSIDE (15–20 MINUTES):

1. Ask each group to briefly share its observations with the rest of the class. Next, ask students to try to explain why ants eat the way they do. Ask students to compare the way humans view a sandwich with the way ants view a sandwich (e.g., what looks small to a human looks quite large to an ant; what looks like a snack for one human could be a full day's nutrition for 100 ants, etc.). Ask students the following question: Who could be pickier about which part of a small (one to two square inches) "antwich" it eats, a human or an ant?

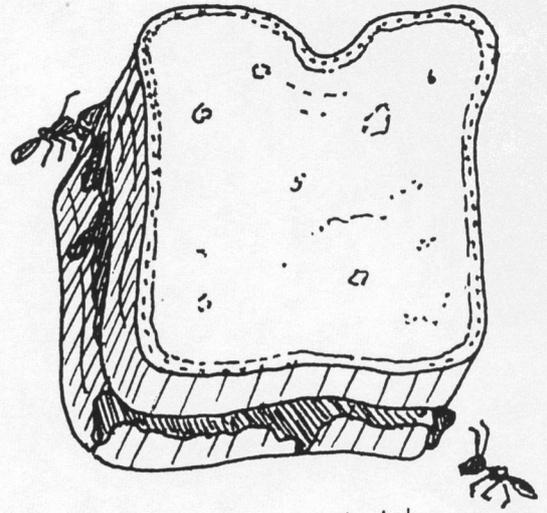
2. Next, ask students to think about a grassy area of the schoolyard and conduct a whole-class discussion addressing the following questions:

- Would a cow eating in the grassy area of the schoolyard be a muncher or a picky eater?
- How about a grasshopper?
- Which type of animal could be pickier about which parts of the grassy area it eats, a cow or a grasshopper? Why?

- What if a new building was built on half of the schoolyard's grassy area? Would the organisms living in the grassy area have to be more or less picky about what grass they eat? Why?

Make sure students understand that the smaller the amount of food available, the less picky organisms can afford to be about what parts they eat. Therefore a cow eating in the schoolyard could not be as picky as a grasshopper.

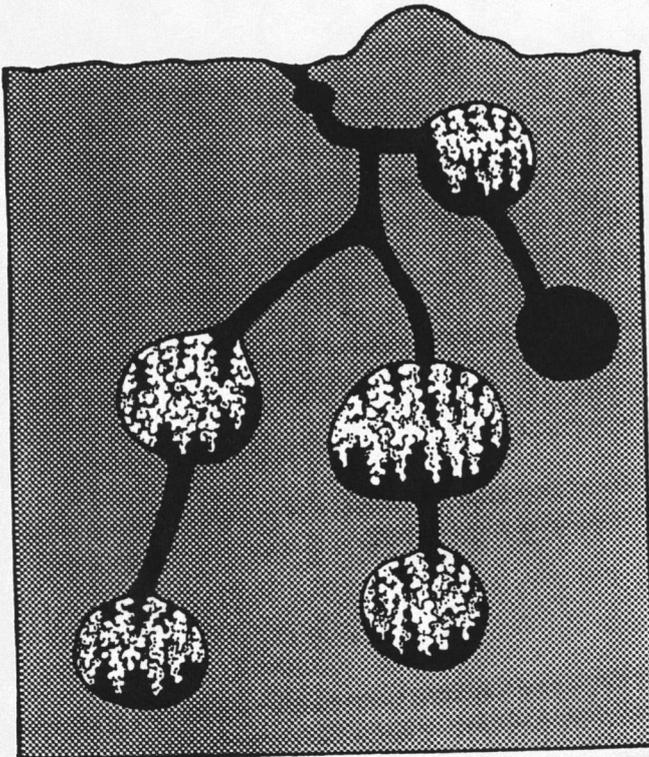
3. Finally, ask students to describe different areas that humans might consider useless as a food source but other animals might consider useful as a food source (e.g., a flowering coral honeysuckle vine is only a decoration to humans but serves as a food source for hummingbirds, bees, caterpillars, etc.). Reinforce the idea that before environments are changed, the potential impact of the changes on other plants and animals living in the area should be considered.



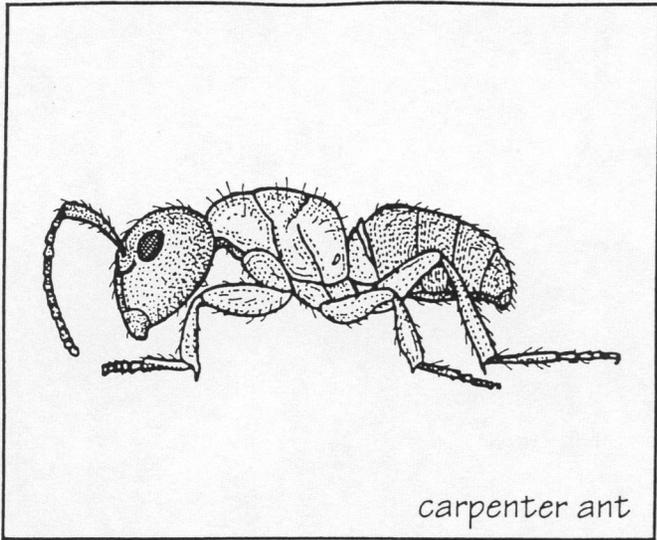
antwich

## GOING FURTHER

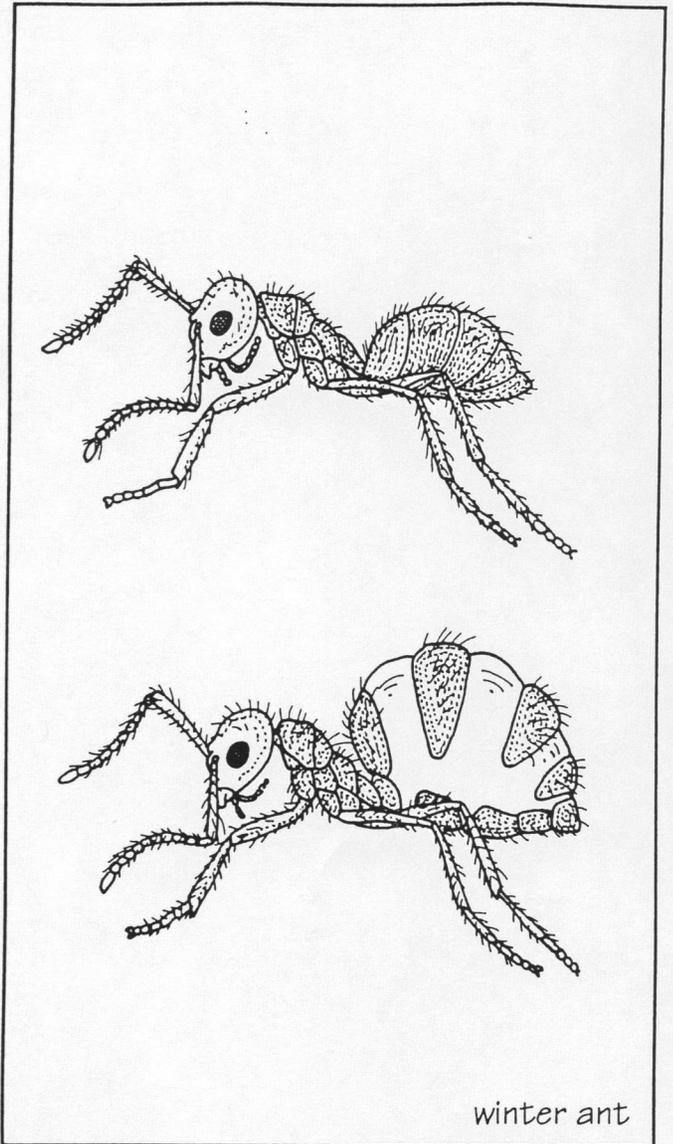
Complete the activity "Ant Views."



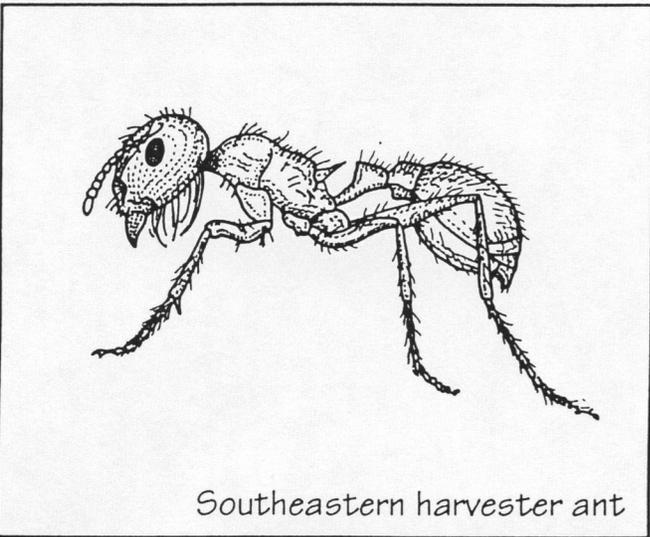
northern fungus ant colony



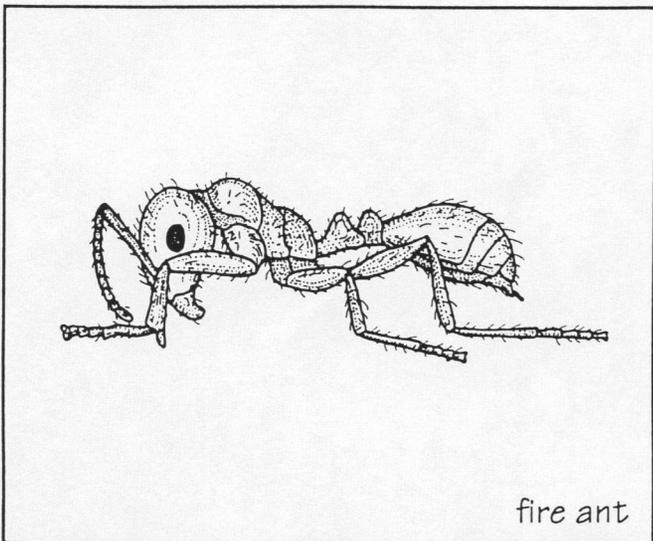
carpenter ant



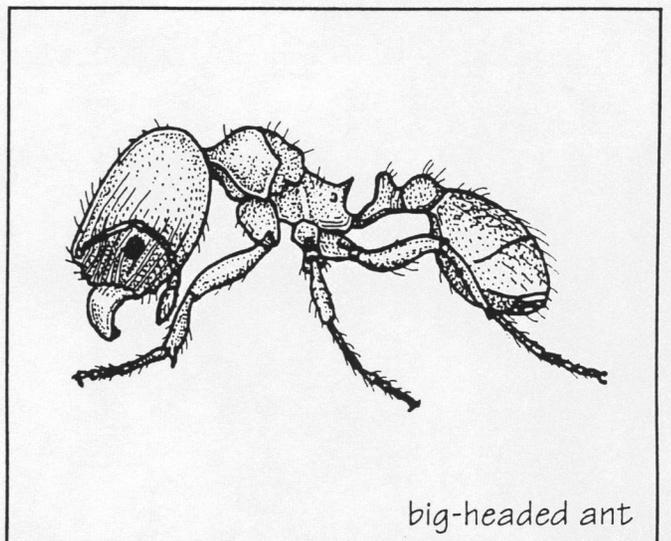
winter ant



Southeastern harvester ant



fire ant



big-headed ant