Owls are not known as finicky eaters. They prey on almost any animal that they can swallow whole. Like many other birds, owls have an interesting adaptation—a special structure called a gizzard. The gizzard acts as a filter and prevents the indigestible parts of their prey, such as fur, feathers, and bones—from passing into their intestines. These indigestible parts are passed to a storage pouch, where they accumulate. A few hours after consuming a meal, the owl coughs up the accumulated indigestible material, which has been compressed into a pellet. By examining such a pellet, you can tell what the owl ate. In addition, by examining the remains of the owl’s prey found in the pellet, you can get a good idea of what the prey ate. Using this information, you can construct a food chain of the owl and its prey.

**OBJECTIVES**

Examine the remains of an owl’s diet.

Construct a food chain based on your observations.

**MATERIALS**

- disposable gloves
- dissecting needle
- dissecting pan
- egg cartons
- forceps
- owl pellet(s)
- piece of white paper
- small animal identification field guide that includes skull illustrations

**Procedure**

1. Work in groups of three or four. Place an owl pellet in the dissecting pan, and remove it from its aluminum-foil casing.

2. Examine the owl pellet. Using the dissecting needle and forceps, carefully break apart the owl pellet. Separate the fur or feathers from the bones. Be careful not to damage the small bones. Place the bones onto a piece of white paper.

3. Identify the major components of the pellet.
4. If the pellet contains remains from more than one organism, determine as best as you can how many different animals and species are present.

5. Attempt to group the remains by type of organism. Count the number of skulls to find out how many prey were in the pellet. Decide which bones belong with which skulls. Then try to assemble complete skeletons. Sample skeletal diagrams are shown below.

6. Closely examine the skulls of each prey. Compare the skulls to the diagrams of skulls on this page. What purpose do the teeth or bills seem to have—tearing flesh, chewing plant parts, or grinding seeds? If you are able to identify the prey, find out their typical food sources.

7. In the space below, construct a simple food chain based on your findings.
8. Compare your findings with those of other groups of students.

**Analysis**

1. **Examining Data** How many skeletons were you able to make from your pellet? What kinds of animals did you identify in the owl pellet?

2. **Organizing Data** Compare your findings with those of your classmates by using the following questions:
   a. What animals were represented most often in the pellets?
   b. What common traits do these animals have?
   c. How many animals found in the pellets were herbivores? How many were carnivores?

**Conclusions**

3. **Interpreting Information** What biological relationships were you able to determine from your examination of the owl pellets?

4. **Evaluating Data** Of the animals you found in your pellet, how many different trophic levels are represented?
Dissecting Owl Pellets continued

5. Drawing Conclusions  Most owls hunt at night and sleep during the day. From that information, what can you infer about their prey?

Extension

1. Research and Communications  Research information on an owl species and the types of organisms found in its habitat. Make a poster of a food web, including the owl species. Be sure to include producers, consumers, and decomposers.
Dissecting Owl Pellets

Teacher Notes

TIME REQUIRED  One 45-minute class period

SKILLS ACQUIRED
  Constructing models
  Classifying
  Inferring
  Organizing and analyzing data

RATING
  Teacher Prep–2
  Student Set-Up–3
  Concept Level–2
  Clean Up–3

THE SCIENTIFIC METHOD

Make Observations  Procedure, steps 3 and 4
Analyze the Results  Procedure, step 5–8; Analysis, questions 1 and 2
Draw Conclusions  Conclusions, questions 3–5

MATERIALS

The materials listed are enough for a group of 4 to 5 students. You may want to provide bleach to disinfect the skulls. If skulls are disinfected, students can take them home. This would make the lab more memorable for students.

SAFETY CAUTIONS

Since students will be dealing with material associated with a bird, there is a risk of exposure to Salmonella bacteria. Be sure that students use the gloves provided, and you may also want to provide masks for students. Remind students not to eat or drink during the activity and to wash their hands with antibacterial soap thoroughly afterward.

TIPS AND TRICKS

Provide latex gloves for students who are squeamish about handling the owl pellets. This lab requires patience and careful handling of the smaller bones. Caution students to work carefully, as the bones may be brittle and sharp. Encourage students to use tweezers rather than their fingers to gently pick apart the pellets. Suggest that students sort the bones first by shape, and then by size. Student groups may find egg cartons useful for sorting. Label each compartment to hold bones of similar type, such as skull, femur, or vertebrae. Students should not assume that the bones are those of adult animals. Students may make a poster to display their food chains.
Dissecting Owl Pellets

Owls are not known as finicky eaters. They prey on almost any animal that they can swallow whole. Like many other birds, owls have an interesting adaptation—a special structure called a gizzard. The gizzard acts as a filter and prevents the indigestible parts of their prey, such as fur, feathers, and bones—from passing into their intestines. These indigestible parts are passed to a storage pouch, where they accumulate. A few hours after consuming a meal, the owl coughs up the accumulated indigestible material, which has been compressed into a pellet. By examining such a pellet, you can tell what the owl ate. In addition, by examining the remains of the owl's prey found in the pellet, you can get a good idea of what the prey ate. Using this information, you can construct a food chain of the owl and its prey.

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3. Identify the major components of the pellet.

Answers may vary.
4. If the pellet contains remains from more than one organism, determine as best as you can how many different animals and species are present.

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7. In the space below, construct a simple food chain based on your findings.
Dissecting Owl Pellets continued

8. Compare your findings with those of other groups of students.

Analysis

1. Examining Data  How many skeletons were you able to make from your pellet? What kinds of animals did you identify in the owl pellet?

   Students are likely to find the remains of a variety of small animals such as mice, lizards, shrews, voles, young squirrels, or rabbits.

2. Organizing Data  Compare your findings with those of your classmates by using the following questions:

   a. What animals were represented most often in the pellets?

      Answers may vary.

   b. What common traits do these animals have?

      Answers may vary.

   c. How many animals found in the pellets were herbivores? How many were carnivores?

      Answers may vary.

Conclusions

3. Interpreting Information  What biological relationships were you able to determine from your examination of the owl pellets?

   Answers may vary. In many cases, owls feed on different types of animals that are either primary or secondary consumers.

4. Evaluating Data  Of the animals you found in your pellet, how many different trophic levels are represented?

   Answers may vary. There may be one or two trophic levels represented.
Dissecting Owl Pellets continued

5. Drawing Conclusions  Most owls hunt at night and sleep during the day. From that information, what can you infer about their prey?

   Answers may vary. Most of the animals that owls eat are active at night but not always. If students find a ground squirrel or chipmunk skull, the owl was probably active at dawn or dusk, or even during the day.

Extension

1. Research and Communications  Research information on an owl species and the types of organisms found in its habitat. Make a poster of a food web, including the owl species. Be sure to include producers, consumers, and decomposers.

   Owl pellets are a great way to learn about the diet of owls, and to learn about which animals are represented in a local ecosystem.