

## **Lesson: Activity 78: Coughing Up Clues**

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<b>Unit Theme/Course:</b>	SEPUP Ecology
<b>Date:</b>	
<b>Timing:</b>	2 Days

### **Challenge Question:**

What can an owl pellet tell you about an owl's diet? How can you use this information to develop part of a food web?

### **Overview:**

Students will learn about the diet of owls by reconstructing a skeleton from an owl pellet. Students will dissect an owl pellet, separating out the bones, and then sorting and organizing the bones by type to attempt to reconstruct a skeleton. In doing this, students will begin to gather the type of information used to construct food webs, as well as quantitative information about the amount of food needed to sustain an organism. Students will also learn how to use a dichotomous key to identify the type of skeleton they build.

<b>Learning Objectives [cognitive, academic, language, socio-cultural]</b>	<b>Assessment Criteria</b>
Student use appropriate tools and techniques to gather, analyze, and interpret data.	Students are safely using dissecting needles to separate bones from owl pellets, and request/use other tools as needed
Students develop descriptions, explanations, predictions and models using evidence	After dissecting the pellets, students identify the types of bones and animals eaten, predicting an owl's diet
Populations of organisms can be categorized by the function they serve in an ecosystem	Students identify owls as predators
The complex feeding relationships in an ecosystem are best represented by webs, rather than simple chains	Students draw a food web for an owl

### **Standard/EALR:**

6-8 SYSB	The boundaries of a <i>system</i> can be drawn differently depending on the features of the <i>system</i> being <i>investigated</i> , the size of the <i>system</i> , and the purpose of the <i>investigation</i> .	<i>Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree).</i>
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6-8 INQC Investigate	Collecting, analyzing, and displaying data are essential aspects of all <i>investigations</i> .	<i>Communicate</i> results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. *a  Recognize and interpret <i>patterns</i> – as well as <i>variations</i> from previously learned or observed <i>patterns</i> – in data, diagrams, symbols, and words
6-8 LS1E	In classifying <i>organisms</i> , scientists consider both internal and external structures and behaviors.	Use a classification key to identify <i>organisms</i> , noting use of both internal and external structures as well as behaviors.
6-8 LS2B	Energy flows through an <i>ecosystem</i> from <i>producers</i> (plants) to <i>consumers</i> to <i>decomposers</i> . These <i>relationships</i> can be shown for specific <i>populations</i> in a <i>food web</i> .	<i>Analyze</i> the flow of energy in a local <i>ecosystem</i> , and draw a labeled <i>food web</i> showing the <i>relationships</i> among all of the <i>ecosystem</i> 's plant and animal <i>populations</i> .
6-8 LS2C	The major source of energy for <i>ecosystems</i> on Earth's surface is sunlight. <i>Producers</i> transform the energy of sunlight into the chemical energy of food through <i>photosynthesis</i> . This food energy is used by plants, and all other <i>organisms</i> to carry on life processes. Nearly all <i>organisms</i> on the surface of Earth depend on this energy source.	<i>Explain how</i> energy from the Sun is <i>transformed</i> through <i>photosynthesis</i> to produce chemical energy in food.  <i>Explain that</i> plants are the only organisms that make their own food. Animals cannot survive without plants because animals get food by eating plants or other animals that eat plants.

### **Preparation Time:**

30 minutes to make copies and gather materials

### **Materials:**

- Owl pellet for each pair of students
- Petrie dish for each pair of students
- Dissecting needle for each student
- Cardboard and glue for each pair of students
- Copies of owl pellet dichotomous key for each lab group to share

### **Instructional Sequence:**

#### **Day 1**

1. Begin with an introduction of food webs
  - a. Display a picture of a bald eagle
    - i. Ask: What does this animal need to live (looking for energy)
    - ii. Where does it get its energy from? (food)
    - iii. How does this animal use energy? (flying, eating, breathing, etc)
  - b. Attempt to construct a food web for the eagle as an example
2. Have students read the introduction in the book

- a. Review the diagram in the book
  - b. Arrows go in the direction of energy, not predator to prey.
  - c. Distinguish between a food chain and a food web
3. Have students begin an entry sheet by writing down the title and the challenge question
4. Have students work together to dissect the owl pellets
  - a. Explain that as they are dissecting owl pellets, should be trying to gather qualitative and quantitative data about what owls eat
  - b. Must very gently pull pellet apart so bones aren't broken
  - c. Remove as much fur as possible from each bone
5. Save all of the bones in a plastic bag
6. Safety notes
  - a. No eating or drinking during this activity
  - b. Careful with the dissecting needs
  - c. Wash hands thoroughly with soap and water when done/before leaving classroom

## Day 2

1. Using the table in the book, students should identify the different types of bones
  - a. Organize the bones by type
  - b. Count the number of bones of each type
  - c. Record this on the activity sheet
  - d. Use the dichotomous key to attempt to identify what type(s) of skeleton(s) they have in their pellet
2. Try to arrange the bones to make a complete skeleton
  - a. Display the vole skeleton transparency on the board
  - b. Students should arrange their skeleton and glue down on the piece of cardboard
3. Notes to talk about with students during work time
  - a. Pellets can contain bones of several animals
  - b. Delicate bones might have been crushed and are missing
  - c. For each skull, there are 2 jawbones – one for each side
4. Answer analysis questions in the book.

## Note

If student will not dissect owl pellet, or is absent for the activity, have them complete the online dissection at: <http://www.kidwings.com/owlpellets/flash/v4/index.htm>

## Assessment

- Students will be assessed during group work time through individual questioning
- Students will be assessed at the end of the activity by showing an accurate representation of a food web for an owl