Lesson: Activity 78: Coughing Up Clues

Teacher: Kaylan Duthie
Unit Theme/Course: SEPUP Ecology
Date: 
Timing: 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.

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

| 6-8 SYSB | The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation. | 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). |
**6-8 INQC Investigate**
Collecting, analyzing, and displaying data are essential aspects of all investigations. *Communicate* results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. *a*

Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words

**6-8 LS1E**
In classifying organisms, scientists consider both internal and external structures and behaviors.

Use a classification key to identify organisms, noting use of both internal and external structures as well as behaviors.

**6-8 LS2B**
Energy flows through an ecosystem from producers (plants) to consumers to decomposers. These relationships can be shown for specific populations in a food web.

*Analyze* the flow of energy in a local ecosystem, and draw a labeled food web showing the relationships among all of the ecosystem’s plant and animal populations.

**6-8 LS2C**
The major source of energy for ecosystems on Earth’s surface is sunlight. Producers transform the energy of sunlight into the chemical energy of food through photosynthesis. This food energy is used by plants, and all other organisms to carry on life processes. Nearly all organisms on the surface of Earth depend on this energy source.

*Explain* how energy from the Sun is transformed through photosynthesis to produce chemical energy in food.

*Explain that* 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  


Note  

If student will not dissect owl pellet, or is absent for the activity, have them complete the online  

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