

Food Chains from the Field (Who's for dinner?)

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E & E Standard:	4.5A and 4.5B - Food Chains
Skills:	Observing, Classifying, Reasoning, Constructing, Analyzing

Overall Learning Objectives:

1. Identify various bones found in an owl pellet.
2. Classify the bones in an owl pellet as to structural function.
3. Identify the prey according to the skulls found in the owl pellet.
4. Construct the probable food chain from the evidence found in the owl pellet.
5. Recognize the interdependency of the organisms in a food chain.
6. Discuss energy flow from one trophic level to another.

Background:

The owl is a predator that feeds on various rodents and other animals. Owls are primarily night hunters, with a few hunting at dusk or early morning. Since the owls do not “chew” their food, they rip the prey into pieces and ingest the animal fur and all. The owl’s digestive tract then dissolves what is considered to be useable food and regurgitates the rest in the form of a pellet. This pellet consists of hair and bones from the animal(s) that were consumed. It is expelled by the owl while perched in a tree and can be collected from underneath the tree.

We can use the contents of the owl pellets to analyze what the owls eat, what type of rodents are in the area, and obtain some clues about the rodent populations found in that area. The bones can be retrieved and classified according to bone type. The types of skulls will give a good indication for the identification of the rodents eaten by the owl.

Once the rodents and owls are identified, a probable food chain may be constructed outlining the energy flow in the system.

Materials Needed:

Owl pellets (obtained from a supply house)	5 X 7 Cards
Dissecting probes and forceps	Glue
Pellet bones charts (obtained from a supply house)	Ziplock baggies

Timeline: Usually 2 or 3 class periods.

Procedure: Outlined on the handout for the student.

Data Collection: Bones from the pellets

Analysis: Identification of the animals from the bones in the pellet.

Discussion: Classification of the bones located in the pellet. Identification of the organism’s remains found in the pellets. Food chains and the interdependency of the organisms involved. Further discussion may include the topics of bioaccumulation if rodents consume food that contains contaminants.

Whooo's for dinner?

Owls feed on a wide variety of rodents found in their local environment. Since they are primarily night hunters, we can study their feeding habits by examining the remnants of their dinners. Owls consume their food whole or nearly so, ingesting the entire animal, hair and all. Since the hair and the bones have no nutritional value to the owl, they are expelled in the form of an owl pellet.

Once the pellet hardens, it can be collected and dissected to determine the contents. The various types of the bones found in the pellet will give the scientist an indication of the types of rodents in the area as well as some clues as to the populations of the types of organisms.

In the next few days, you will be dissecting the owl pellet and saving the bones collected in the ziplock bag provided. Once all the bones have been collected, you will identify the types of bones as to their structural function. You will identify the types of organisms the owl consumed and also construct a food chain using the organisms from the pellet.

Materials:

Owl pellet
Ziplock bag

Dissecting probes and forceps
5 x 7 card and glue

Bone Charts
Plain paper for food chain

Instructions:

1. Obtain an owl pellet from your instructor and the rest of the materials from the center in the room.
2. Dissect the owl pellet using the dissecting probes and forceps, reserving the bones you find in the ziplock bag.
3. Divide your card into various sections, labeling them with the names of the bones (such as skulls, femurs, scapulas, etc).
4. Identify the bones according to the chart provided. You will sort and glue the bones on the 5 X 7 card according to types (femurs, skulls, etc).
5. Count the number of individual organisms found in the pellet. Assuming that the owl consumes this many organisms in one night, how many organisms does the owl consume in a week? _____ In a month? _____
6. On the plain sheet of paper, construct a food chain using the organisms found in the pellet. Since we know the owl ate these organisms, it is on the top of the food chain. You may have to do some research to find out what the various organisms found in the pellet consumed. The food chain should have a minimum of three trophic levels with arrows identifying which organism consumes which organism.

Name _____	Class _____	
Skulls	Scapulas	
Femurs	Radius	Ulna
Backbones	Pelvic bones	

Sample food chain:

