

Title of Science Lesson: *Dissection of Owl Pellets*

Developed for: Macdonald
Developed by: Elaine Humphrey (scientist), Debby Meyer and Joyita Rubin (teachers)
Grade level: Presented to grades 5 - 6; appropriate for grades 2 - 6 with age appropriate modifications.
Duration of lesson: 1.25 hours

Objectives

1. Learn about Harry Potter's favorite birds (different kinds of owls)
2. Learn about what owls eat.
3. Discover what an owl pellet is and find out about its contents.
4. If time, compare the eating habits of an owl feeding at the coast with an owl feeding in the interior.

Background Information

Owls are important predators in almost every land ecosystem. Owl species common to the B.C. coastal rainforest include the barn owl, saw-whet owl, western screech owl, northern pygmy owl, spotted owl (endangered), barred owl, and great-horned owl. In the grasslands of the Okanagan, there are burrowing owls, great-horned owls, screech owls.

Most owls feed on rodents (mice, shrews, voles and rats), small birds and reptiles. Unlike other predators, owls have no teeth. While smaller prey is often swallowed whole, the owl will use its sharp, hooked beak to tear larger prey into smaller pieces.. Bones could cause much damage to the bird's digestive tract. For this reason the owl has a gizzard as well as a stomach. Prey is ground up and digested by sand, gravel and digestive juices in the owl's gizzard. Indigestible parts, including fur, feathers, bones, teeth and claws are compressed and then gagged or coughed up by the owl in the form of a pellet. By studying these owl pellets, one can determine the owl's diet.

The first important fact that can be ascertained from pellets is the diet of the owl. Knowing what the owl eats can help scientists track the types and abundance of certain animals in any given area. If we know that an owl's favorite food is traditionally vole yet the pellets produced mainly consist of field mice, we know that the area the owl is hunting in has a sparse vole population.

Over time, changes in the owl's diet can alert scientists to changes in the environment and need of conservation measures to protect lands and animals that are becoming endangered. It is known that changes that affect one part of the environment will cause a chain reaction which will impact all life in the affected area, so owl pellets can be extremely effective in predicting and stopping environmental endangerment.

Scientists can also tell from the pellet itself exactly what species of owls inhabit a certain area. A decline or rise in pellets of different species can mean migration of species in or out of an area, or a general decline in owl populations. In some areas owl pellets have revealed a population of rodent species that previously were unknown to have inhabited that area at all. Because some species of small rodents are extremely hard to find and track, pellets are a major help in tracking prey populations.

In some areas of the planet owls have existed for millions of years. Some caves have been found that have supported owl populations since they first appeared on the planet. The pellets from owls in these areas can be found in layers, each layer dating further back in time. By studying these pellet layers scientists have learned what small species existed in specific eras of time. They can follow evolutionary changes in both the prey and the predator. Even some important climate changes can be evaluated through study of the pellets.

We are going to assist a researcher investigate the feeding habits of a local species of owl.

Vocabulary

<u>Owl pellet:</u>	Compressed, non-digestible parts of an owl's food which is coughed up and expelled in a dried oval form.
<u>Gizzard:</u>	An organ found in birds which contains sand and gravel as well as digestive fluids to grind and dissolve food.
<u>Birds of prey:</u>	Birds which hunt and eat other animals, also known as predator birds and include owls, hawks, eagles.
<u>Prey</u>	What the predator eats
<u>Species</u>	A group of animals or plants which are alike and differ only with minor details

Materials

- Tweezers
- Toothpicks
- Sterilized owl pellets:
can be obtained online
or from OWL* (see
below).
- Butcher paper
- White glue
- Bone charts* (see below)
- Probes

In the Classroom

Introductory Discussion

1. What are birds of prey? What birds of prey live in our temperate rainforest? What do they eat? Do birds have teeth? How do they "chew" their food?
2. Explain that owls and other birds of prey eat their prey whole. They cannot digest some parts of their meal (fur, bones, teeth, claws and feathers) so they cough or gag up the indigestible parts of their meal in the form of a dry pellet. These pellets tell us a lot about what the owl has eaten. The owl pellets that we will be studying have been sterilized and treated. Show and pass around a pellet. The contents of the pellets are small and delicate. Please be very careful.

Science Activity/Experiment

1. Spread butcher paper on the tables or desks.
2. Give each student a sterilized owl pellet, toothpick, probe, tweezers, and a bone chart.
3. Let students note the colour, smell & texture and measure the length and width of their pellet.
4. Students can make predictions about the contents of their pellets.
5. Let students gently tease out bones and skulls from the pellet.
6. Students can try to identify bones and glue them on to a bone chart/skeleton. Students may trade extra bones for ones they are missing. Try to make a complete skeleton. Students may need to work in groups of 2-3, depending on the number and variety of bones they find.

Closure Discussion

What did your owl eat? What can an owl digest? Not digest? Discuss the food web with owls as the top predators.

References

1. www.owlbrandkits.com
2. <http://www.carolina.com/owls/guide/physical>.
3. http://www.pelletlab.com/images/Poster-Bone_Sort

Extension of Lesson Plan

1. Make a food web using an owl as a top predator.
2. Pool all results of the identifications of each pellet to have numbers of each species of prey. Use these numbers to look at which species is the favorite prey of a coastal species of owl and a grassland species
3. Have presentation by Burrowing Owl Conservation Society (BOCS) or Orphaned Wildlife Rehabilitation Society (OWL*). The latter presentation includes bringing in live owls and other birds of prey to the school. OWL supplies pellets and bone charts as well as a teacher's package.

OWL, 3800 – 72nd St., Delta, B.C., V4K 3N2, Tel. 604 946 3171, Fax 604 946 3172, www.owlcanada.ca.
BOCS, The Burrowing Owl Conservation Society Of Bc Bocs C/O 2165 Palmerston Ave., West Vancouver BC V7V 2V7 <http://burrowingowlbc.org/>