

Whooooo Are You?

Students will discover who owls are and how they live by dissecting owl pellets; they will make the connection that we can learn a lot about animals by making observations of what they ingest, and in this case, regurgitate.

Grade Level: Third Grade

Objectives:

- Students will be able to tell what owls eat, where they live, and how big they are based on dissecting owl pellets
- Students will also be able to state basic owl functions and traits.

Materials:

- Sanitized Owl Pellets (one per 2-3 students)
- Newspaper / tablecloth
- For each student:
 - * Skewer sticks
 - * Latex or nitrile gloves
 - * Face masks
 - * Pencils
- Owl Pellet Bone Chart & Rat Skeleton sheet (attached)
- Activity Record (attached)
- Dark sheets of plain paper*
- Bags to put bones in*
- Glue to paste down bones*
- Magnifying glasses*

* Optional

Time Considerations:

Preparations: 15 minutes

Activity 1—Owl Basics: 15 min

Activity 2—What's Inside: 45 min

Related Activities:

Animal Tracking, Skins & Skulls, Animal Homes



Nevada Department of Education Standards

- **Organisms and Their Environment (Life Science Unifying Concept C):** A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one or more components can affect the entire ecosystem.
- **Scientific Inquiry (Nature of Science Unifying Concept A):** Students understand that science involves asking and answering questions and comparing the answers to what scientists know about the world. N.5.A.1 Students know scientific progress is made by conducting careful investigations, recording data and communicating the results in an accurate method. E/S N.5.A.2 Students know how to compare the results of their experiments to what scientists already know about the world. I/L N.8.A.3 Students know how to draw conclusions from scientific evidence. E/S N.5.A.5 Students know how to plan and conduct a safe and simple investigation. E/S

Excellence in Environmental Education Guidelines

- **Strand 1-Questioning, Analysis and Interpretation Skills (A, B, C, G):** Learners are able to develop questions that help them learn about the environment, design simple investigations, locate and collect information about the environment and environmental topics and develop simple explanations that address their questions about the environment.
- **Strand 2.1-The Earth as a Physical System (A, B):** Learners are able to identify changes and differences in the physical environment and in matter.
- **Strand 2.2-The Living Environment (A, C, D):** Learners understand basic similarities and differences among a wide variety of living organisms. They understand the concept of habitat, the basic ways in which organisms are related to their environment and other organisms and know that living things need some source of energy to live and grow.

Background

There's a lot of truth to the saying, 'you are what you eat.' All owls have an interesting way of eating and we can learn about them by studying this process.

Owls are carnivores and eat invertebrates, fish, reptiles, birds and small mammals. They swallow their food whole and

regurgitate the large indigestible parts in a small pellet. The pellet is composed of bones, fur and teeth. With Barn Owls, for example, there is always a complete skeleton of at least one rodent in every pellet. Every bone, from the skull to the last tip of the tailbone, can be found. A good observer with a little patience will be able to piece together the incredible skeletal masterpiece.



A Great Horned Owl, one of the most common owls in the US.

We can learn a lot about who owls are and how they live by observing and dissecting these regurgitated pellets. The size of an owl pellet, the animal(s) in the pellets and where we find the pellets can tell us a lot about the owl that regurgitated it.

Some of the owls we have in the United States of America are: Snowy Owls, Great Horned Owls, Great Gray Owls, Northern Pygmy Owls, and Short-eared Owls. Common owls found in the Great Basin are the Great Horned Owl and the Long-eared Owl.

Preparations

Tell your class beforehand that you will be doing this activity as it may conflict with some student's religious or personal beliefs. As an alternative to dissecting owl pellets, have students virtually dissect owl pellets at: <http://www.kidwings.com/owlpellets/>.

This activity also will allow students to look at multiple owl pellets and pellets from different owls.

Owl pellets can be purchased from many sources including the following:

- **Acorn Naturalists**
155 El Camino Real
Tustin, CA 92780
(800) 422-8886
www.acornnaturalists.com
- **Pellet's Inc.**
P.O. Box 5484
Bellingham, WA 98227
1-888-466-OWLS
www.pelletsinc.com

Make sure to order early, because it often takes a while for the pellets to be shipped. Additionally, be sure to get sterilized owl pellets (ie. not from a farm), since there is a danger of Hanta Virus in owl pellets. As an extra precaution, provide each student with masks and latex or nitrile gloves.

Make enough copies of the bone charts and the activity record. Obtain other needed materials.

Doing the Activity

Activity 1—Owl Basics

Begin by asking students what they know about owls and going over their daily functions.

- Have any of the students seen an owl before?
- Where do owls live? *They are found on all continents, but Antarctica.*
- How big are they? *Owls range in size from sixty inches to as small as four inches. Size varies among species as well as sex. Fe-*

male owls are often 25% larger than male owls.

- What do owls do for the winter? *Some migrate, but most stay where they are and continue to be active and hunt.*
- What do owls eat? *Invertebrates (insects, spiders, earthworms, snails and crabs), fish, reptiles, birds and small mammals.*
- How do they eat? *Their food is swallowed whole. A filter in their throat catches the hair, bones, etc. and then they regurgitate a pellet.*
- When are they active? *They are nocturnal, which means active at night.*
- Do owls hunt? *Yes. They are birds of prey with exceptional hearing and vision.*
- How do owls hunt at night? *Owls have many systems that specifically help them hear the slightest movement of their prey. Their satellite-dish-shaped face guides sounds to their asymmetrical or lopsided ears that allow them to hear the slightest movements of their prey—even under leaves or snow.*



A Great Gray Owl with it's prey—a field mouse.

Activity 2—What’s inside?

Now that students understand the basic functions of owls, including their eating habits, ask, “What can we tell about an owl’s habitat and lifestyle by looking at its pellets?” Students will answer this question as they do the following activity.

Review safety procedures and make sure that every student washes their hands before and after dissecting the pellets.

Divide students into groups of 2-3, and have them cover their work area with newspaper or a disposable tablecloth. Give each student a skewer, a face mask, a copy of the Activity Record and a pair of latex or nitrile gloves. Give each group one pellet (still wrapped in foil), one piece of plain dark paper on which to put their bones for easier viewing, glue, a bag, a magnifying glass and one copy of each bone chart.

During the activity, have students use the Activity Record as their guide—both to follow the directions and to record their predictions and findings.



Before the students unwrap their pellet, have them record their predictions about what they will find inside. Then, have students unwrap their pellet and record the length, width, estimated weight, color, texture and shape of the pellet.

Have students carefully unwrap their pellets and separate the bones from the fur and other materials. They should use the owl pellet bone chart (page 6) attached to help identify the type of animal(s) the owl ate by comparing the various skulls and bones found in the pellet. Have them record their findings on the Activity Record (page 5).

Students should be able to determine if there are bones from more than one animal in the pellet. If there is, how many animals are represented?

Evaluation—

Use the Activity Record as a guide to get a sense of what the students are learning.

- Have students glue together, onto

black construction paper, the bones they find in as much of a complete skeleton as possible (using page 7 as a guide), with bones belonging to one prey separate from the bones of another prey. The students should be able to label their skeletons (with white pencil or crayon) and/or be able to tell the class which kinds of animals they found.

- Assess the students on their ability to recognize the different bones in their pellets, as listed on the bones charts.

Extension Activities— Food Chain Exploration

- Have students draw a picture of a simple food chain that includes the owl, its prey, and other animal or plant life that may be in the chain.

Owl Facts

- Share the following interesting owl facts with your students:
 - *A group of owls is called a parliament
 - *Small groups of birds will attack and harass an owl, but the owl rarely responds and is rarely harmed.
 - *Most other birds are scared of owls and try to force them into other areas.
 - *An owl can only look straight ahead because it doesn't have eye "balls" that rotate. It's eyes are like long tubes.
 - *Owls can detect a difference of about 30 millionths of a second of sound hitting one ear before the other.



The contents of a single owl pellet

Vocabulary

Carnivore: an animal that eats meat.

Food Chain: an order of animals and plants in which each feeds on the one below it in the chain.

Habitat: the place and natural conditions in which a plant or an animal lives.

Mole: a type of rodent that lives underground, has small eyes, strong front feet, and eats insects.

Nocturnal: active at night.

Owl Pellets: the oval-shaped wad of indigestible materials (fur and bones) that an owl regurgitates after eating.

Pelvic Bone: hip bone.

Predator: an animal that hunts and eats other animals for food.

Prediction: a guess of what will happen in the future.

Prey: an animal that is hunted by another animal for food.

Regurgitate: to spit food or indigestible materials out through the mouth, like vomiting.

Rodent: a mammal with large, sharp front teeth that is used for gnawing things. Examples: rat, mouse, shrew, mole, vole, hamster, guinea pig, etc.

Scapula: triangular shaped bone also called the shoulder blade.

Shrew: a rodent with a long nose and small eyes that eats insects.

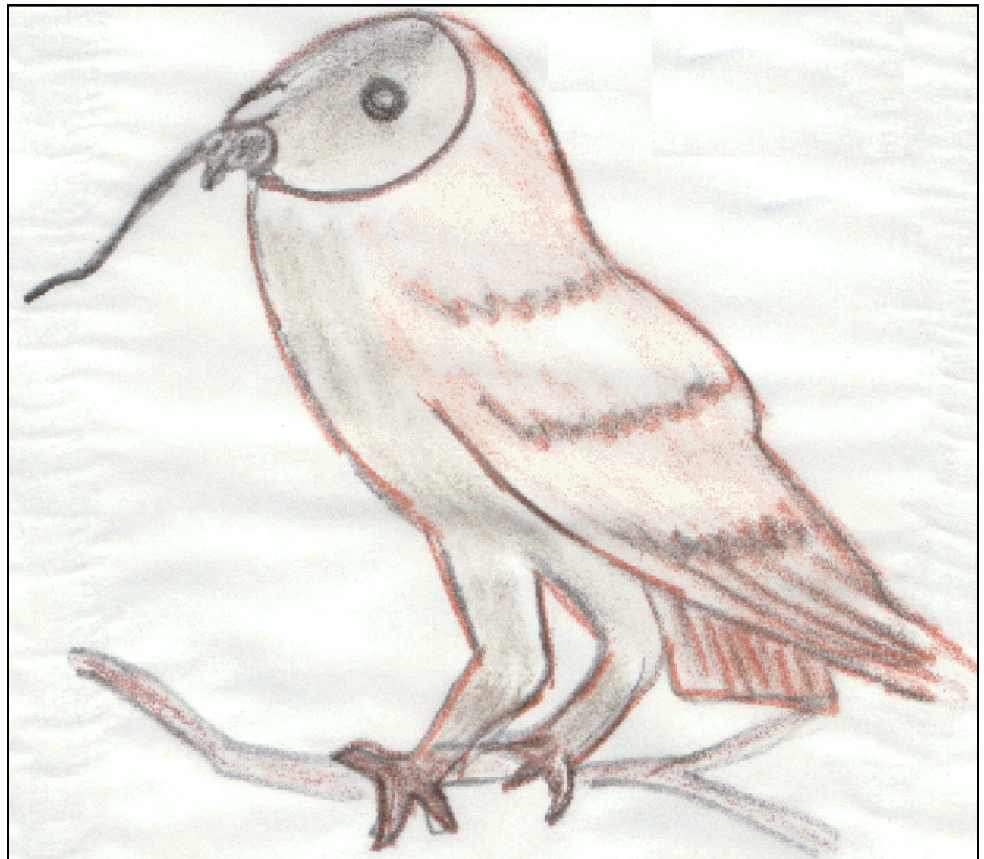
Vertebrae: small bones in the back that fit together in a line to make up the spine.

Sources—

- Lesson adapted from:
 - * Council for Environmental Education. *Project Wild K-12 Activity Guide*. "Owl Pellets Lesson." Bethesda, MD: Western Regional Environmental Education Council, 1992, pp. 144-5.
 - * Rettke, Jamie. <http://www.lessonplanspage.com/ScienceOwlPelletsSkeletalSystem58.htm>. Accessed on Feb 4 2009.
- Basic information on owls from: Lewis, Deane P. *The Owl Pages*. <http://www.owlpages.com>. Accessed on February 3 2009.
- Owl Pellet Bone Chart and Activity Record adapted from: <http://www.edb.utexas.edu/faculty/jackson/owlpellet.html>
- Definitions adapted from: Editors of Scholastic Inc. *Scholastic Children's Dictionary*. New York, NY: Scholastic Inc, 1996.

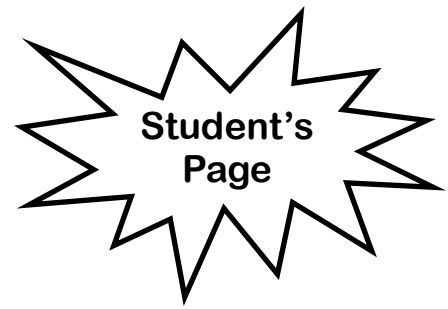
Images—

1. "Owl pellet contents," Google Images, May 29, 2008. <http://www.msncucleus.org/membership/html/k-6/lc/ntenvn/2/images/owl%20pellet.jpg>.
2. "Owl Pellets," May 22, 2008. <http://www.owlpellets.com/specialtyowlpelletcomparison.htm>
3. "Grey Gray Owl Catches Prey-13." Ann Cook, photographer. <http://www.owlpages.com/image.php?image=sequence-Ann+Cook-Great+Gray+hunting-13>. Accessed on Feb 3 2009
4. "Great Horned Owl" AP Photo. <http://animal.discovery.com/guides/wild-birds/d-h/great-horned-owl.html>. Accessed on Feb 3 2009.



An Owl Catching Prey by Scott

Names _____



Activity Record

STEP ONE: Before you unwrap your pellet, write your predictions of what you will find inside the owl pellet.

STEP TWO: Carefully unwrap the pellet. Do not separate the pellet yet. Describe the object in front of you. Use the spaces below to record the size, shape, color, texture, and weight of the pellet.

Length: _____ cm Width: _____ cm Weight:~ _____ g (hint: a pencil weighs approximately 50g)

Color: _____ Texture: _____ Shape: _____

STEP THREE: Now it is time to carefully separate the bones from the fur and other materials in the pellet. Write what you found in the owl pellet.

STEP FOUR: Compare the bones you found to the Owl Pellet Bone Chart. How many of the following bones did you find?

Skull: _____

Jaw: _____

Vertebrae: _____

How many animals did this owl eat?














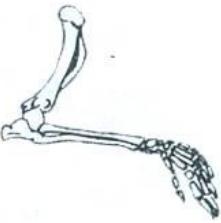



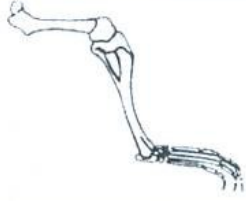














Draw and label the bones you found:

A large, empty rectangular box with a thin black border, intended for a student to draw and label the bones they found in the pellet.

What can you learn about the owl from what you found inside the pellet? _____

Where (in what habitat) do you think this owl hunted and why? _____

OWL PELLET BONE CHART

	RODENT	SHREW	MOLE	BIRD
SKULL				
JAW				
SHOULDER BONE (SCAPULA)				
FORE LIMB				
HIND LIMB				
PELVIC (HIP) BONE				
RIB				
BACK BONE (VERTEBRAE)				

Rat Skeleton

