OWL PELLETS
LESSON PLAN

WOLF RIDGE℠
ENVIRONMENTAL LEARNING CENTER

OWL PELLETS

CLASS DESCRIPTION: An Animal Ecology Class

By dissecting sterilized owl (barn) pellets, they find and rebuild a skeleton of a small mammal or bird, which can be identified, glued onto a card, and taken home. Students will also learn about the adaptations of owls and their role in the food web.

Total time: 1.5 hours
Audience: 4-20 students, 4th grade through adult
Activity level: easy
Travel: none
Total uphill travel: none

PRACTICES

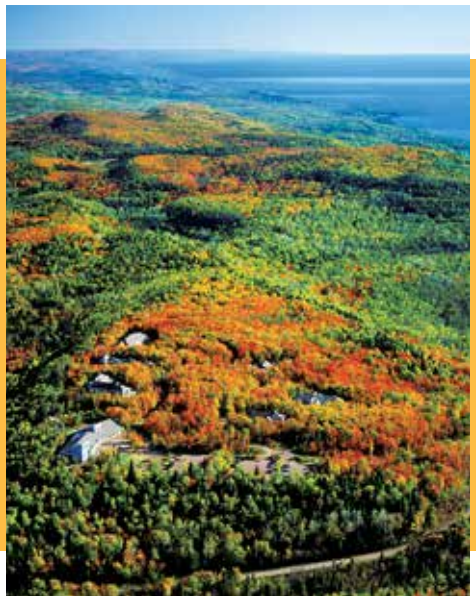
To investigate owl pellets by dissecting a pellet and sorting bones.

CONCEPTS

1. Structure and function - owl adaptations.
2. Patterns - bone shapes.
3. Systems and models - food webs.

CORE IDEA(S)

• Life Science



WOLF RIDGE℠
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Our mission is to develop a citizenry that has the knowledge, skills, motivation and commitment to act together for a quality environment.

6282 Cranberry Road | Finland, MN 55603-9700 | www.wolf-ridge.org

OWL PELLETS

Revised April 2024

Equipment

- full lesson plan
- "Ridge" notes
- owl pellets 1 per 2 students
- 10 Owl Pellet Mystery booklet
- 1/2 sheets of paper and index cards
- 20 tweezers
- 20 dissecting needles
- 6 glue bottles
- paper
- 20 pencils
- 3 erasers
- 3 sample skeletons
- owl food web poster
- food web poster
- varied thrush poster
- bone sorting poster
- vole/shrew/mole poster(s)
- owl wing in Riker mount

Appendices

- Glossary
- Additional Information
- Optional Activities
- References
- Sources

Set-up (10 min.)

- Classroom/class prep description
- Safety Management

I. Introduction (20 min.)

A. Greeting
B. Class Overview
C. Assess Learner Level

II. Owl Adaptations (5 min.)

III. Owl Pellets (75 min.)

A. Dissecting a Pellet
B. Building a Skeleton
C. Story Writing

IV. Conclusion (5 min.)

Clean-up (10 min.)

INSTRUCTOR NOTE
Each table should be set up with the following supplies:
- *6/7 owl pellet mystery booklets*
- *2 glue bottles*
- *3 owl pellets (enough for there are 1 pellet for every 2 students).*
- *6/7 dissecting needles*
- *6/7 tweezers*
- *14-ish pieces of paper*
- *1 eraser*
- *7 pencils*

Set-up (10 min.)

Classroom/class prep description

Arrange tables so that pairs of students can work together on one pellet. At each table, lay out the table materials (see sidebar). In the front of the classroom, display the 3-4 posters. Hang the owl wing on the wall. Sample skeletons should be set out on each table. If using the video, roll in the TV/DVD and get the DVD ready to go. Read through the background information on pellets, to help answer questions the students may have.

Safety Management

Adhere to and be familiar with all general safety practices designated by Wolf Ridge. Be aware of any student's special needs (medical, etc.) and adjust the activities as needed to maintain safety.

- First aid kit is located in the kit room.

Unsterilized owl pellets may carry the risk of salmonella; our pellets are heat sterilized. It is suggested, however, that all participants wash their hands and table tops with soap and water at completion of class.

I. Introduction (10 min.)

Greeting/Grabber

As students enter, have them seat themselves in pairs at a table. The foil-covered owl pellet and dissecting tools at their tables will get them excited about the activity to come. It is all very mysterious!

Overview of the Class and Outcomes

Students will sit tight for the first 10 minutes while the role and adaptations of owls are discussed. After a brief demonstration, students will be given an hour to dissect their pellets and reconstruct skeletons. Finally they will consider the interaction of owls and their prey, and write a short story about it.

Assess Learner Level
During the introduction find out what the students already know about owls and their habits. Ask questions to determine what students know about food webs and why and how owls form pellets.

INSTRUCTOR NOTE:
Use the barn owl posters, wing and pellets as props during your introduction.

II. Owl Adaptations (5 min)

Owls, like other birds of prey, catch and eat other animals for their food. Unlike other birds of prey however, many owl are nocturnal, or active at night, and stay here all winter long (they have feathered feet to stay warm).

Since many owls hunt at night, their eyes contain only rod cells, which gather more light than cone cells, but cannot distinguish colors. So owls see only in black and white, but they could read a newspaper a mile away by the light of a candle (if they could only read). Owl eyes take up so much room in their heads that there is no room for muscles, so owls cannot move their eyes to look around. That is why they turn their whole heads, and can see all the way behind themselves. They cannot, however, turn their heads in a complete circle (only about 3/4 of the way.)

An owl's ears are so sensitive that they can hunt in complete darkness where even they cannot see. The feathered facial disk gathers sound waves, and uneven ears hear sounds at slightly different times, which helps the owl determine exact distance and direction of sound. Silent wings, with soft feathered edges to glide noiselessly through the air, allow them to sneak up on prey as well as hear while they are flying.

Owls hunt mostly small mammals, birds and invertebrates like insects and worms, which they usually swallow whole. Bones are not digestible, and would puncture the soft, curved intestines of the owl if passed through the digestive tract. So the bones, along with fur or feathers, are formed into a ball or pellet by the gizzard muscles and passed back up the tough, straight esophagus to be cast out twelve hours later. Pellets (or "castings" to falconers) may include bones, teeth, hair, feathers, scales or insect skeletons. They also provide homes for clothes moths, carpet beetles and fungi. You may even find droppings, cocoons or exoskeletons from these animals.

These pellets are collected in the wild from Barn Owls (*Tyto alba*), which do not live in northern Minnesota. (They are most likely from northwestern Washington state.) Barn owls feed in open fields and often roost in barns, steeples or caves where pellets can be easily

collected. These pellets are then dried and heat sterilized, and shipped to Wolf Ridge for you.

Assessment Concept 1 - Structure and function - owl adaptations.

III. Owl Pellets (75 min.)

A. Dissecting a Pellet

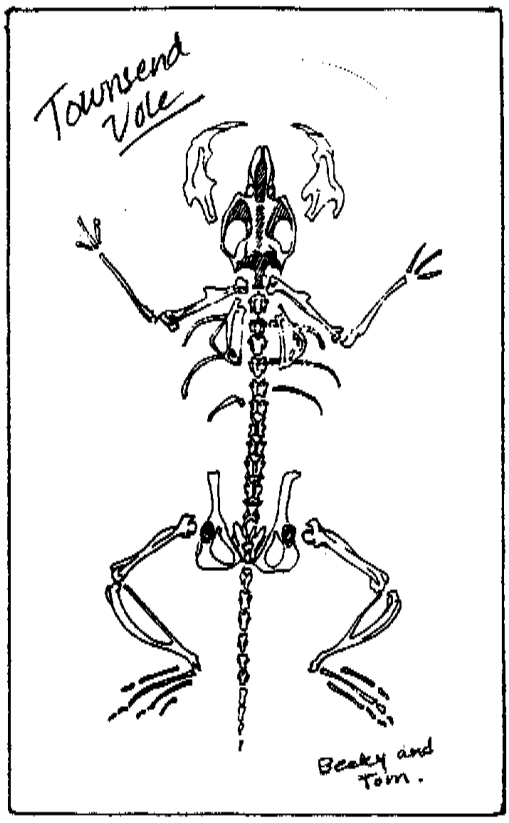
Direct students to work together in pairs to discover what is hidden in their pellets. Using fingers, tweezers and the dissecting needles, carefully separate the bones from the soft material in your pellet. Sort the bones into piles according to type, and put all the hair fluff in another pile.

As students dissect their pellet, help them answer the following questions:

- Do owls chew their food?
- How can you tell?
- What is the soft material?
- How many animals did your owl eat?
- What kinds of animals were eaten?

B. Reconstructing a Skeleton

Have students choose one of the skulls from their pellet. They should reconstruct a skeleton of that animal, using the skeleton/bone sorting chart in the Owl Pellet Mystery Booklet to help them find the correct bones and locations. They should glue the bones in place on an index card. Have students write their names and the kind of animal on the card. Students can draw in any missing bones with their pencils.



Assessment Concept 2 - Patterns - bone shapes.

C. Story Writing

Students should use the food web poster to help them determine the predator/prey relationship of the owl and their animal. Each pair of students should write a story about their animal's life and death, and the importance of both of them to the ecosystem.

> The unlucky moles, Fred, and his friend, Claw, went for a walk in the woods one day. It was nearing sundown when they got lost. Suddenly, the woods went quiet but they didn't think anything of it. They were getting worried and scared. Without warning something swooped overhead. Fred ducked but the owl, yes owl, got him. Claw started to run, but it wasn't fast enough. The owl got Claw, too. Claw was surprised to be swallowed whole. A couple hours after being swallowed, Fred and Claw were regurgitated, or puked out in an owl pellet. Someone was walking through the forest and picked the pellet up. Their bones are now glued to a piece of paper and not put together right. Oh, well! No one's perfect.
>
> Lori and Kristi's story

Assessment Concept 3 - Systems and models - food webs.

IV. Conclusion (5 min.)

Offer students a chance to read their stories if they want. Discuss what was learned today about the adaptations and roles of owls and their prey.

At the end of the conclusion, students should help the instructor clean up and put the equipment away.

Clean-up (10 min.)

Each student should carry left over bones and hair to the wastebasket. Tools must be cleaned and placed in their containers. Replace all items neatly in bin. Return to kit room along with posters and TV.

Wash hands and table tops with soap and water after class. Stack tables and chairs and close windows.

Appendices

Glossary

bird of prey - *A bird which catches other living animals to eat.*

cone cells - *Light receptor cells in the eye which detect color, but are not very sensitive to low light.*

esophagus - *The thick, straight, muscular tube down which food passes from the mouth to the stomach.*

gizzard (stomach) - *The muscular first part of a bird's stomach, which often contains gravel to help digest food.*

nocturnal - *Active at night.*

pellet - *A compact ball of indigestible material, formed in and cast up from the stomach of a bird, which contains bones, teeth, claws, exoskeletons, etc from animals which the bird ate.*

proventriculus (pre-stomach) - *Glandular second part of a bird's stomach, containing gastric enzymes that break down proteins such as meat.*

rod cell - *Light receptor cells in the eye which are extremely sensitive to low light, but which do not detect colors.*

Optional Activity

Barn Owl Video

While students are dissecting their owl pellets, you may choose to show the video on Barn Owls, which is located in the kit. It is 20 minutes long.

References

- *Owl Pellet Kits, Acorn Naturalists*
- *Audubon Society Encyclopedia of North American Birds, @ 1980, ISBN 0-394-46651-9*

Sources

- *Barn owl pellets, kits, posters - Carolina Biological Supply*
- *Barn owl pellets, kits, posters, books, etc. - Acorn Naturalists, 17300 East 17th St, #J-236, Tustin, CA 92680, 1-800-452-2802*

They Just Have Big Eyes

By Jessamy Schwartz

Owls aren't wise,
They just have big eyes
That takes up the space
Of most of their face
But what's stellar and neat
Is the way that they eat.

They swallow it whole
Either mouse or vole.
No need to tell it
To cough up that pellet
Containing some pieces
Of the yummy "mieces."

Only the bones and fur
Gave a stir,
For it wasn't yummy
Sitting in their tummy.
And this owl's lunch
Finished before we had brunch,

For they hunt at night
And can't always rely on their sight.
Good thing their facial disks are round
To channel the sound
Made by the feet
Of their potential meat.

With their silent wings they fly
And sneak up on that mouse they try.
And with one talon's smack,
That mouse becomes snack.
Don't ask owls for help with school,
But remember they are no fool.

They have a good set of ears and sharp sight
And on big appetite!
But seek not the owl for advice,
Their only interest is hunting for mice
So if anyone asks if owls are wise
Simply say, "They just have big eyes."