

## Program Purpose

This program will introduce participants to owl adaptations, different types of owls, and owl pellets.

## Program Fee

The participants dissect owl pellets in this class. A fee of **\$3.00 per owl pellet** is charged. Depending on your preference, one to three students can dissect and take home one owl pellet.

## Length of Program

1 ½ hours

## Age

Grades 2<sup>nd</sup>-7<sup>th</sup>

## Maximum Number of Participants

15

## Objectives

After completion of all activities, students will be able to:

- List and explain four to five owl adaptations.
- Name four to five owl species that live in Wisconsin.
- Describe what an owl pellet is.
- Name two to three items that could be found in an owl pellet.

## Wisconsin Standards:

**C.8.1** Identify questions they can investigate using resources and equipment they have available

**C.8.6** State what they have learned from investigations, relating their inferences to scientific knowledge and to data they have collected

**F.8.2** Show how organisms have adapted structures to match their functions, providing means of encouraging individual and group survival within specific environments

**F.8.7** Understand that an organism's behavior evolves through adaptation to its environment

## Preparation

Before the class arrives:

- Locate and inventory owl ecology box.
- Ask the program director how many students will be working on each owl pellet (based on client's preference).
- Make sure you have enough owl pellets.
- Set up the slide projector and screen.

## Basic Outline

Introduction (5 minutes)

Owl Adaptations (20 minutes)

Owl Pellets (30 minutes)

Conclusion (5 minutes)

## Materials

Discovering Owls slide show

Slide Projector

15 owl flight feathers

15 hawk feathers

2 owl feet

Owl beak

3 owl wings

Yard stick

2 softballs

Owl feather simulation rope

"Orville" the stuffed owl or Stella

Owl pellets

Laminated owl pellet ID sheets

Nasco owl pellet study chart poster

Newspaper

Baggies

Owl pellet dissecting tools

Index cards

Glue

## Introduction

Before the class walks in, have the first owl slide projecting on the wall.

Introduce yourself and the class title. Ask the students to share with you what they know about owls (this will allow you to gauge what level of information you should share with the class). Does anybody like owls, dislike owls, why? Explain that today the students will be learning about different owls that live in Wisconsin, their adaptations, and then dissecting an owl pellet (they will find out very soon what an owl pellet is). Ask them to sit by you on the floor in a semi circle.

## Owl Adaptations

A slide show and hands-on items will be used to help the students learn about owl adaptations.

Ask the students to define what an "adaptation" is. An adaptation is something an animal has or does that helps it survive in its environment. Ask the students to name some adaptations humans have to help us live in our world (this is to make sure the students understand what adaptations are). Explain one of the best ways to learn

about owls is to learn about their adaptations. The following list describes each slide in the slide show and what should be taught while each slide is projected. It is also recommended to use "Orville" or Stella to illustrate the adaptations.

**1. Picture of Barred Owl (#36)**

- This picture should already be projected on the wall.

**2. Owl Flying (#2)**

- Ask the students what owls do and how they live?
- Answers may include they fly (mainly at night) and eat meat.
- Ask them what owls eat.

**3. Picture of Deer Mouse (#22)**

- Owls eat mice, but they also eat other things. What else could they eat?
- Snakes, skunks (Great Horn Owl), birds, insects (smaller species), fish and small mammals.
- What adaptations help them locate their prey?

**4. Close-up of two Barred Owls (#3)**

- Owls have many **adaptations on their heads** that help them locate their prey?
- Ask the students to name as many as they can.

**5. Close-up of Northern Saw-whet Owl (#9)**

- Owl **eyes** are very big; they have excellent vision that is used to catch prey.
- If our eyes were proportionally as large as owls, they would be as big as softball (hold two softballs up to your eyes).
- The large eyes help them see in very dim light; they have an unusually large number of light-sensitive receptor cells (especially rods).
- Both eyes are on the front of their head (unlike most birds). This allows owls to have binocular vision (like humans) that helps judge distances to their prey.

**6. Great Horned Owl with arrows at ears (#13)**

- Owls also have excellent **hearing** to help them locate prey.
- On a quiet night, an owl can hear a mouse softly scamper through the leaves a thousand feet away!
- Most species have large funnel-like ear opening on each side of the head.
- The ear openings are usually asymmetrical; this makes it possible for an owl to locate the source of a sound based upon subtle differences in arrival time or quality of the sound at each ear.
- Have the students use their fingers to point to where their "owl ears" would be.

**7. Close-up of Common Barn-Owl (#12)**

- In the Common Barn-Owl, the **facial disk** is very apparent; all owls have facial disks.
- The disc helps the birds locate sounds by collecting incoming sounds and focusing, concentrating, or funneling them at each ear.

**8. Great Grey Owl with head turned backwards (#38)**

- Now that we know how the owls eyes, ears, and facial disk work, how does an owl use all of them together to find its prey? (Wait for some answers).
- Owls can not move their eyes (they are fixed within their sockets). Ask the students to make circles with their hands and place them around their eyes (like pretend binoculars). This is how owls see. In order to look left or right, owls must move their entire head.
- Owls can not turn their head in a complete circle, but they can come close. Have the students make a circle with their thumbs and pointing fingers, then have them bend in the first knuckle of the index fingers. This is a circle of about 270 degrees. That's how far an owl can turn its head.
- An owl can first locate its prey with its hearing or sight, then it uses its other senses to target in on the prey. The owl's sight and hearing direct the head to look directly at the prey and locate it exactly.

**9. Great Horned swooping (#70)**

- Now that the owl has found its prey, it needs to catch it.
- What adaptations help an owl catch its prey?

**10. Close-up of owl feather (#17)**

- Do you think it's easy for owls to sneak up on a small mouse? Is it easy for you to sneak up on a mouse or frog? It is easy for owls because they can fly almost silently.
- Pass around one owl feather and one hawk feather to each student.
- Ask the students to look at each feather and notice why the owl feather is different (the serrated edges).
- Those velvety edges muffle the sound of the wings beating. Ask the students to flap the hawk feather. Then ask them to flap the owl feather. They should notice a difference.
- To further explain this point, have a student spin the rope over his/her head. First spin the shredded end and then the smooth end. There should be a noticeable difference in sound.
- It's very easy for owls to silently sneak up on their prey.
- Collect the feathers.

**11. Talons (#18)**

- Owls and other raptors have very sharp talons and very strong feet muscles, which allow the owl to keep a firm grip on struggling prey.
- Owls also use talons to defend themselves.
- Pass around the owl feet; warn the students to carefully pass them and only very lightly touch the talons.
- Once an owl catches prey, it needs to eat it.

**12. Beak close-up (#19)**

- Owls have strongly hooked beaks that are used for ripping and tearing large prey into good-sized pieces.
- The owl then swallows the pieces whole or will swallow an entire small animal whole.
- Ask the students if they think swallowing bones, feathers, hair, and exoskeletons (from insects) are good for the owl? Do humans eat chicken bones? Why?
- The owl must regurgitate all of the parts of its food that it can not digest.

**13. Owl pellet (#21)**

- This is what comes up, an owl pellet. It is made up of all the indigestible parts of owl prey (fur, feathers, bones, and exoskeletons).
- Scientists collect owl pellets and dissect them. They do this to find out what an owl has eaten.
- This is what you'll be doing in a short time!

**14. Burrowing Owl ejecting pellet (#20)**

- Here is a burrowing owl regurgitating a pellet.
- Burrowing Owls live in the western United States and are not found in Wisconsin.

**15. Elf Owl in camouflage (#7)**

- The last adaptations we are going to talk about is ways that owls protect and defend themselves.
- We already talked about the talons. How is this owl protecting itself (camouflage)?

**16. Great Horned Owl with tufts up (#15)**

- What are those feathers for on this owl's head? We already know that they are not its ears, but they look like ears!
- Some owls have these tufts and have the ability to raise and lower them. Some scientists think that they mimic animal ears, making the owl's face look something like the face of a mammal (lynx, fox, or marten). A predator, suddenly confronted with a mammal-like face, might withdraw in fear.

**17. Short Eared Owl in defensive position (#56)**

- Other times, when threatened by a potential predator, owls may exhibit a defensive posture in which they spread their wings and tail feathers to make themselves look formidable.

- Owls may also exhibit "bill-snapping" behavior when frightened or angry.

If time allows, talk about the different types of Owls found in Wisconsin. See Appendix A.

**Owl Pellets**

Find each student or group of students (depending on the client's choice) a place to work. Instruct the students not to touch anything they receive until they have listened to all of the instructions. Hand out a piece of newspaper to work, one owl pellet, a variety of dissecting tools (choose appropriate tools for the age group; tweezers are all that's needed for younger students), and a bone identification sheet to each group or student.

Instruct the students to slowly and carefully start dissecting the owl pellet. Once all of their bones are clean, they should use the identification chart to decide what kind and how many animals the owl ate. If there is time, they can try to lay the bones together to form a flat skeleton replica. You may wish to hand out the index cards so the students can glue their completed skeleton to the cards.

When there is only ten minutes left in the class, instruct the students to start cleaning up. Hand out baggies for them to take the bones home in (if they want to). Ask them to sit on the floor with their group members for the final activity.

**Conclusion**

With the students situated, ask them to share what they found in their owl pellets.

Finish the program with some review questions.

- What are some owl adaptations that help owls catch food?
- Why do owls have silent flight?
- How many Wisconsin owl species can you name?
- What type of food do owls eat?
- How do owls defend themselves?
- How much do owls usually weigh?

**References**

Lang, E. (1985). The owls of North America. Ithaca, NY: Cornell Laboratory of Ornithology. Parry-Jones, J. (1998). Understanding owls. France: David & Charles.

The Owl Pages. Owls of North America. [http://www.owlpages.com/n\\_american\\_owls.html](http://www.owlpages.com/n_american_owls.html)

Revised by Sue Bannan, Naturalist

## Appendix A Wisconsin Owls

Explain to the students that now that they know all about owl adaptations, they will have a chance to see and hear owls that live in Wisconsin. Continue to sit in the semi-circle and view the final frames of the slideshow. For each species you may, talk about fun species facts, illustrate the average size of the owl using the yardstick, and play the owl's call for the species we have recordings of (see species notes).

Ask the students why it's important to have owls in Wisconsin (keep rodent population down and maintaining the food chain). Ask the students to make and owl sound? Yes, owls do "hoot," but they also make other strange noises as well.

1. **Saw-Whet Owl (#44)**
  - Smallest Wisconsin owl
  - Lives in old Woodpecker cavities
  - Its name came from one of its vocalizations, which sounds like someone sharpening a metal saw.
  - Weighs about 3 oz.; 7 in. tall
2. **Eastern Screech Owl (#58)**
  - Nest in cavities
  - Eats small rodents and insects
  - Can be eaten by larger owls
  - Have a red and gray phase
  - Only weighs about 7 oz.; 8 in. tall
3. **Long Eared Owl**
  - This owl was named after its very long ear tufts that look like ears.
  - Weighs 9-10 oz.; 13-15 in. tall
4. **Short Eared Owl (#50)**
  - One of the only diurnal owls; it will hunt in the day and night.
  - Nest together in the winter; a communal winter roost of over 200 Short Eared Owls has been documented.
  - Weighs almost 1 lb.; 13-17 in. tall
  - Nests on ground
5. **Barn Owl (#52)**
  - Many barn owls live in old barns and silos.
  - Many ghost stories probably started from Barn Owls; their call sounds like a screaming woman and they would scare people by silently flying over their heads.
  - Weighs about 1 lb.; 13 ½ -15 ½ in. tall
6. **Barred Owl (#67)**
  - The name of the Barred Owl arrived because of the "bars" on its chest. Notice how the top ones are horizontal and the lower bars are vertical.
  - When the Barred Owl hoots it sounds like "Who cooks for you? Who cooks for you all?" Ask the students to imitate a Barred Owl call.
  - Weighs just over 1 lb. to 2.3 lbs.; 16-25 in. tall
7. **Great Horned Owl (#61)**
  - Great Horns are very aggressive and have been known to eat skunks, woodchucks, and porcupines.
  - Their name arrives from the tufts that look like horns.
  - Nests in abandoned eagle, hawk, crow, or heron nests as well as in tree cavities.
  - Most common
  - Weigh 2-4 lbs.; 18-25 in. tall
8. **Great Grey Owl (#39)**
  - Only migrates to Wisconsin from Canada during short periods in the winter.
  - Because it lives in mostly snowy areas, its hearing is so acute that it can hear mice under the snow pack!
  - 24-33 in. tall; weight about 3 lbs.
9. **Snowy Owl (#8)**
  - One of the largest North American owl species.
  - Only live in Wisconsin when they migrate from Canada during very cold winters.
  - Nests on a bed of feathers or grasses in a shallow depression on top of an elevated mound.
  - Weighs about 3.5 lbs.; 20-27 inches tall.
10. **Great Horned Owl chicks (#54)**
  - What should you do if you find owl chicks on the ground? Nothing. Owl chicks commonly fall on the ground or a lower branch when they are learning to fly.
  - The owl chicks' parents will feed them on the branches.

Remember owls have sharp talons and beaks, so don't ever touch them!

*WI Standards*

*Science*

*Science Inquiry*

*C.4.4, C.4.5, C.4.6, C.4.7, C.4.8*

*Environmental Education*

*Questioning and Analysis*

*A.4.2*

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