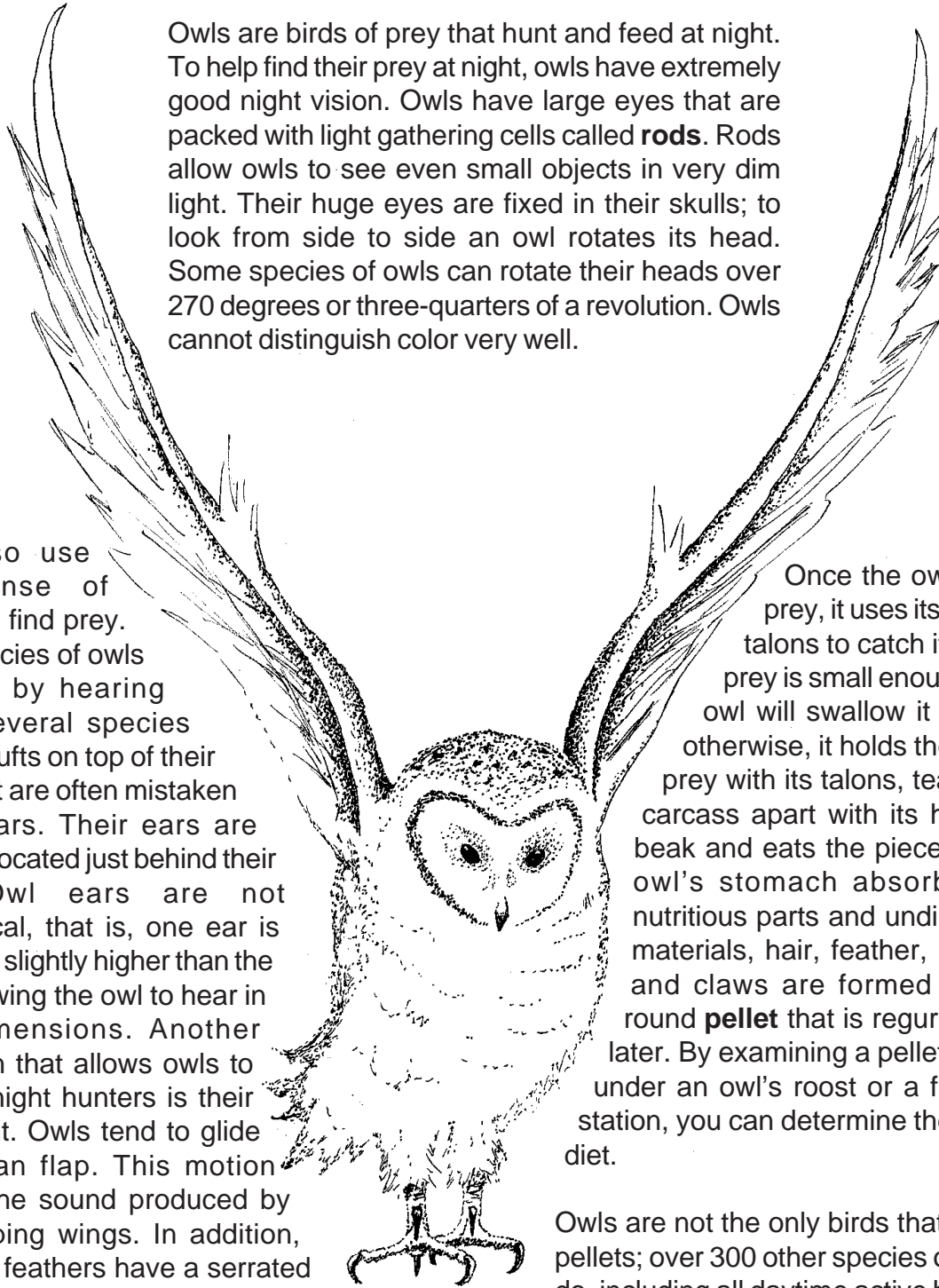


# Owls: Nocturnal Birds of Prey

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Owls are birds of prey that hunt and feed at night. To help find their prey at night, owls have extremely good night vision. Owls have large eyes that are packed with light gathering cells called **rods**. Rods allow owls to see even small objects in very dim light. Their huge eyes are fixed in their skulls; to look from side to side an owl rotates its head. Some species of owls can rotate their heads over 270 degrees or three-quarters of a revolution. Owls cannot distinguish color very well.

Owls also use their sense of hearing to find prey. Some species of owls can hunt by hearing alone. Several species have ear tufts on top of their heads that are often mistaken for the ears. Their ears are openings located just behind their eyes. Owl ears are not symmetrical, that is, one ear is positioned slightly higher than the other allowing the owl to hear in three dimensions. Another adaptation that allows owls to be good night hunters is their silent flight. Owls tend to glide rather than flap. This motion reduces the sound produced by their flapping wings. In addition, their flight feathers have a serrated leading edge that acts like a muffler reducing the sound of air moving over feathers.



Once the owl sees prey, it uses its strong talons to catch it. If the prey is small enough, the owl will swallow it whole; otherwise, it holds the dead prey with its talons, tears the carcass apart with its hooked beak and eats the pieces. The owl's stomach absorbs the nutritious parts and undigested materials, hair, feather, bones, and claws are formed into a round **pellet** that is regurgitated later. By examining a pellet found under an owl's roost or a feeding station, you can determine the owl's diet.

Owls are not the only birds that "cast" pellets; over 300 other species of birds do, including all daytime active birds of prey. Smaller birds like robins and tree sparrows also form pellets.

# Identifying Owls

There are 19 species of owls in North America. Eight occur in Pennsylvania. Seven species nest in Pennsylvania while one species visits only in winter. Nesting species include the Barn Owl, Eastern Screech-Owl, Great Horned Owl, Barred Owl, Long-eared Owl, Saw-whet Owl and Short-eared Owl. The Snowy Owl is a winter visitor.

Owls can be identified through differences in plumage, size, diet and call.

## Great Horned Owl (*Bubo virginianus*)



*Plumage:* Brown back, light gray barred underparts; white throat patch

*Size:*

Length: 20-23 inches

Wing span: 48 inches

Weight: 56 ounces

*Nesting site:* Does not build its own nest but occupies crow, heron, hawk nests or cavities or hollow stumps

*Diet:* Rabbits, woodrats, mice, hares, grouse, squirrels, smaller owls, skunks and birds

*Call:* Deep loud hoots (hoo-hoohoo-hoo-hoo). Sounds like, “who’s awake, me too..”

## Barred Owl (*Strix varia*)

*Plumage:* Grayish brown with white speckled back and whitish or grayish underparts with barring on chest; dark eyes

*Size:*

Length: 16-24 inches

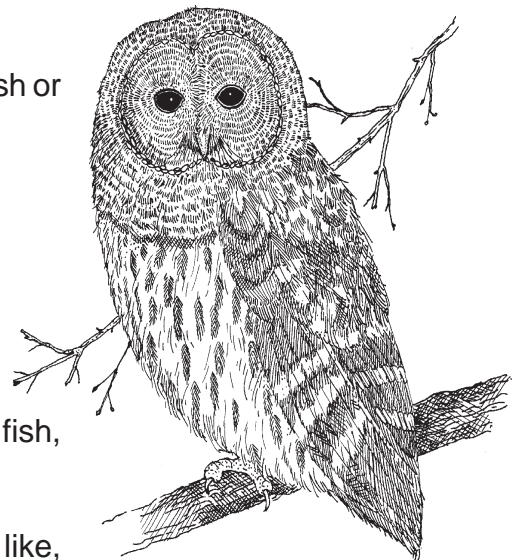
Wing span: 44 inches

Weight: 29 ounces

*Nesting site:* Almost always in hollow cavities of trees

*Diet:* Rodents, birds, lizards, small snakes, salamanders, fish, mollusks and insects

*Call:* Hoots, hoohoo-hoohoo-hoo-hoo-hoohooaw. Sounds like, “who cooks for you, who cooks for you all.”



# Identifying Owls

continued ...

Topic  
Page

## Saw-whet Owl (*Aegolius acadicus*)



*Plumage:* Dull chocolate brown back with spotted white underparts

*Size:*  
Length: 8 inches  
Wing span: 18 inches  
Weight: 4 ounces

*Nesting site:* Deserted woodpecker holes, squirrel holes, hollow trees, stumps, nesting boxes

*Diet:* Mice, insects, frogs, bats, voles, shrews and small birds

*Call:* Repeated mellow whistle

## Barn Owl (*Tyto alba*)

*Plumage:* Rusty back with whitish or pale cinnamon underparts

*Size:*  
Length: 15-20 inches  
Wing span: 40 inches  
Weight: 24 ounces

*Nesting site:* Uses hollow trees, church towers, old buildings, barns, silos and ventilating shafts

*Diet:* Rodents, shrews, occasional birds, bats, amphibians, reptiles and fish

*Call:* Loud hisses, snores and long drawn out whistle



## Eastern Screech-Owl (*Otus asio*)

*Plumage:* Gray and red morph (gray 10 times more common). Also very rare brown phase

*Nesting site:* Unlined cavities of hollow trees; abandoned holes of pileated woodpeckers; bird houses

*Size:*  
Length: 10 inches  
Wing span: 22 inches  
Weight: 6-7 ounces



*Diet:* Large insects, including grasshoppers, mice, shrews, small birds, crayfish, frogs and flying squirrels

*Call:* Two call types, quivering whistle call huhuhuhu...; a whinny and staccato whistle

# Identifying Owls

Continued ...

## Long-eared Owl (*Asio otus*)

*Plumage:* Rusty face, grayish brown body

*Size:*

Length: 16 inches

Wing span: 40 inches

Weight: 11 ounces

*Nesting Site:* Dense conifers in abandoned crow's or hawk's nests

*Diet:* Mice, shrews, occasional bird, insects and frogs

*Call:* Hoo-hoo-hoo; occasional bark and screeches



## Short-eared Owl (*Asio flammeus*)

*Plumage:* Streaked, buff brown back with pale boldly streaked breast

*Size:*

Length: 13-17 inches

Wing span: 42 inches

Weight: 15 ounces

*Nesting site:* Slight depressions in the

earth in field sparsely lined with grasses, weed stalks or feathers; bushes or clumps of weeds

*Diet:* Mice, shrews, rats and small birds

*Call:* Bark, keaw, keaw or boo-boo-boo

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## Snowy Owl (*Nyctea scandiaca*)

*Plumage:* Pure white or white variably barred with grayish brown or black

*Size:*

Length: 24 inches

Wing span: 60 inches

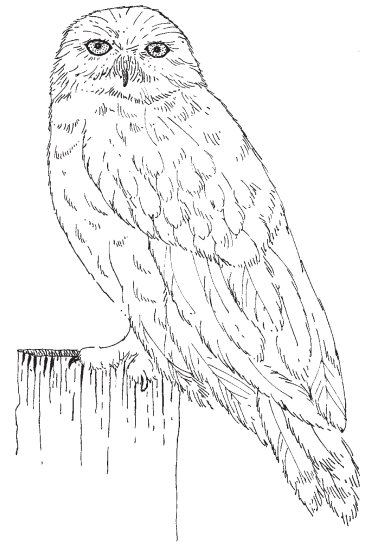
Weight: 80 ounces

*Nesting site:*

(Winter migrant)  
Nests on ground

*Diet:* Rodents, ground squirrels, wood rats, rabbits and hares

*Call:* Usually silent; loud repeated krow-ow when breeding



# Owl Food Habits

*Activity  
Page*

**W**hen an owl eats an animal, everything is digested except the fur, feathers, and bones. Undigested parts are coughed up as a small “pellet,” usually about 12 hours after feeding. Because the pellet contains the remains of food items, one can identify the prey species by studying pellets. Owl pellets can be found at the bases of trees where owls nest or roost.

## **Note to Teacher:**

Commercial supplies of quality owl pellets can be obtained from several sources including:

**Acorn Naturalists:** Phone (800) 422-8886, [www.acornnaturalists.com](http://www.acornnaturalists.com),

**Nature’s Classroom:** Fax (800) 291-7691, [www.owlpellets.com](http://www.owlpellets.com)

**Pellets, Inc.:** Phone (888) 466-OWLS, [www.pelletsinc.com](http://www.pelletsinc.com)

## ***Owl Pellets: What’s For Dinner***

1. Working over a sheet of white paper, use toothpicks to pull apart your owl pellet gently. Write down what you did and found \_\_\_\_\_

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2. Group the contents and use some glue to stick them onto the paper in the space below. Label the type of bones. (Use the “**Owl Pellet Bone Sorting Chart**” on page 22). Also label other remnants such as fur, feather, insect carapace, etc.

# Owl Food Habits

continued ...

3. What do the bones tell you about the owl's diet? \_\_\_\_\_

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4. Are there bones from more than one animal? \_\_\_\_\_

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5. Make a list of animal species that might have been consumed. \_\_\_\_\_

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6. Assuming one pellet is produced each day, about how many animals does the owl eat in a year?

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7. Based on your discoveries, where did your owl hunt and what role does the owl play in the foodchain? \_\_\_\_\_

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# Owl Food Habits

continued ...

*Activity  
Page*

**B** Biologists at Hawk Mountain studied more than 2,000 owl pellets to determine what Great Horned Owls eat in Pennsylvania. The following is a list of the prey found in the owls' pellets and the relative proportion (percentage) of each in their diet. An interesting note is that the miscellaneous category represents about 30 different kinds of animals.

rats - 24%

miscellaneous species - 30%

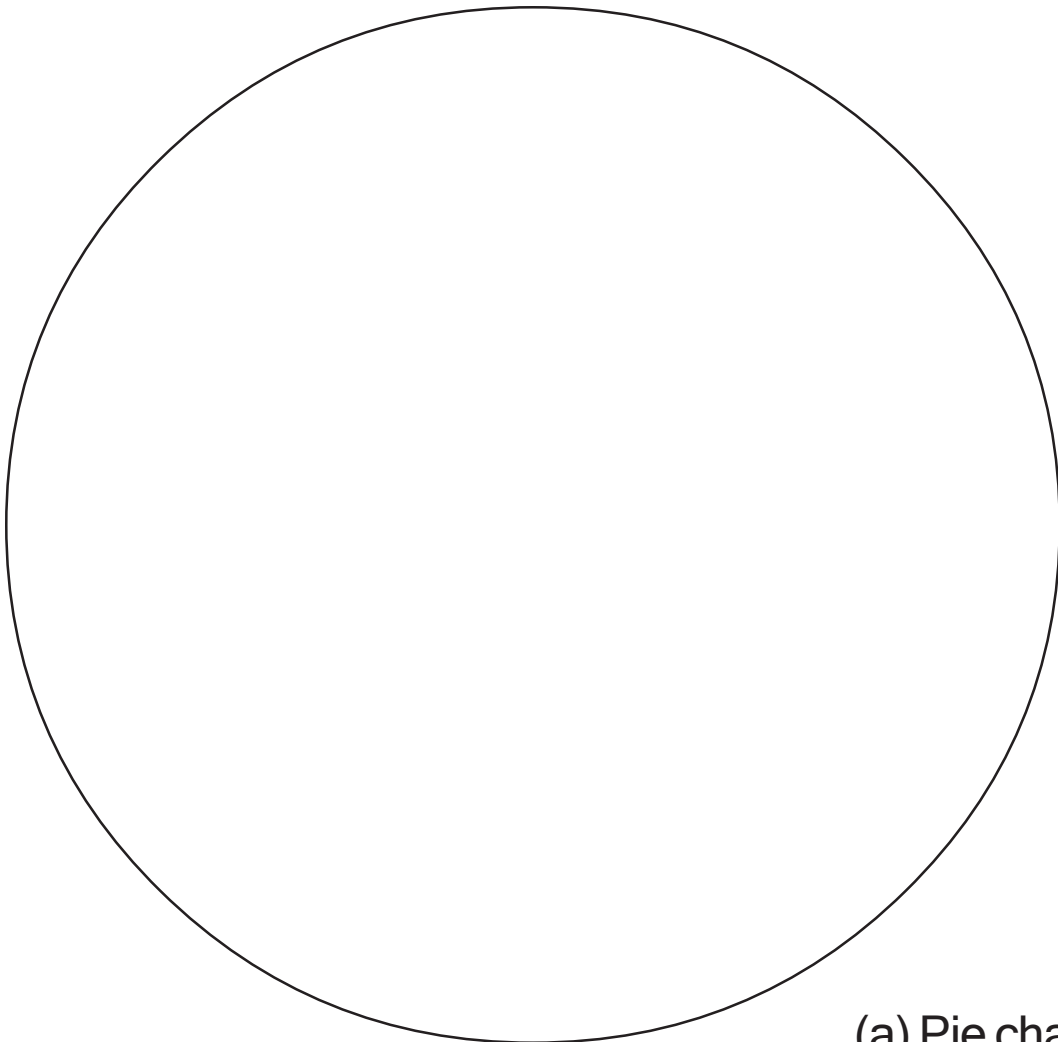
mice - 20%

opossums - 7%

rabbits - 15%

pheasants - 4%

1. In the circle below, draw a pie chart to show what percentages of prey make up the diet of the Great Horned Owl. Show the same relative proportions in a bar graph in the area provided on the following page. Label all items.



(a) Pie chart

# Owl Food Habits

continued ...



(b) Bar graph

Answer the following:

2. If one of the owl's prey species was not available, what do you think the owl would do?

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# Owl Food Habits

continued ...

*Activity  
Page*

3. Why might it be a good idea for the owl to eat many different kinds of foods?

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4. The owl gets different amounts of energy from different animals. For example, an opossum is much larger than a rat and provides more food by actual weight than a rat does. The weight of food provided by each prey item is called its biomass. The following is a list of percent biomass each prey item provides in the great horned owl's diet:

rabbits - 28%  
rats - 12%

opossums - 33%  
other animals - 21%

pheasants - 6%

5. On a separate piece of paper, draw a pie chart and bar graph to illustrate biomass in the owl's diet and answer the following questions:

5a. Which animal provides the most biomass in the owl's diet? \_\_\_\_\_

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5b. Which prey animal does the owl eat the greatest numbers of? \_\_\_\_\_

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5c. Explain how these are different. \_\_\_\_\_

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*Activity  
Page*

# Owl Pellet Bone Sorting Chart

	<u>Rodents</u>	<u>Shrews</u>	<u>Moles</u>	<u>Birds</u>
<u>Skulls</u>				
<u>Jaws</u>	  Loose Teeth			
<u>Shoulder blades</u>				
<u>Front legs</u>				
<u>Hips</u>				
<u>Hind legs</u>				
<u>Assorted ribs</u>				
<u>Assorted vertebrae</u>	