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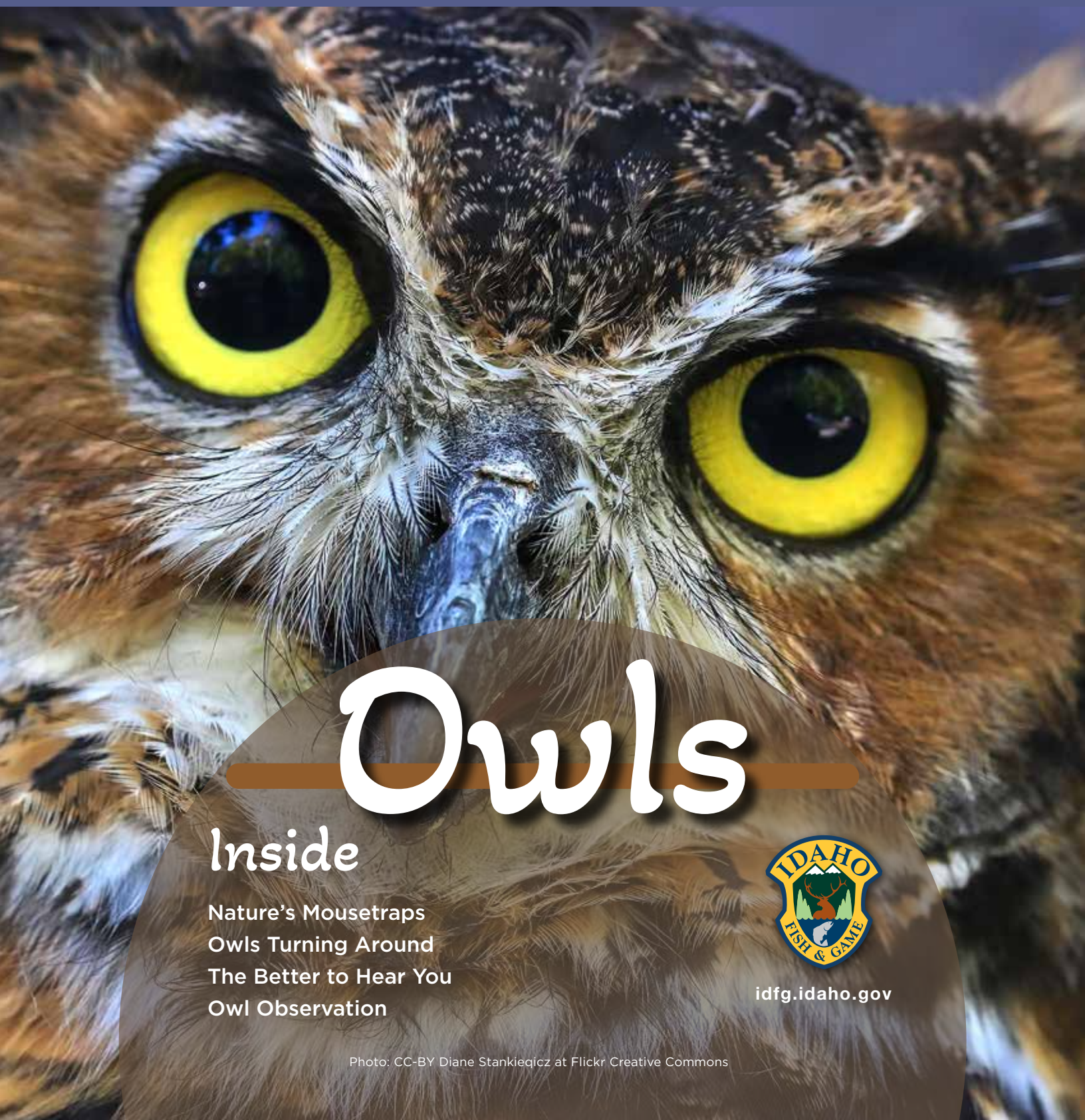

Owls

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Owls

Owls are birds of prey or “raptors.” A raptor is a bird that has a sharp beak and sharp claws, called talons. Raptors use these to catch and eat prey. Members of the raptor group include hawks, eagles, falcons and owls. Unlike other raptors, owls are mostly nocturnal, hunting at night when the other raptors are sleeping. Because of this, owls and other raptors can share a territory and not compete with each other. It’s kind of the raptor version of day shifts and night shifts. During the day, the owl snoozes and the hawk hunts for prey. At night, the owl takes over, hunting nocturnal animals.

Owls have been around for a long time. Owl fossils have been found that are 70 – 80 million years old. Scientists believe that almost 155 different kinds of owls live throughout the world today. In North America, 19 different kinds of owls can be found. Here in Idaho, 12 kinds of owls have been recorded nesting. Two other species of owl, the snowy owl and the northern hawk owl, have visited Idaho, but do not nest here.

Owls can be very small like the five-inch elf owl, or pretty big like the over two-foot tall great gray owl. They all look stocky with large heads and soft feathers. Owl feathers tend to be tan, brown, gray, reddish-brown, and white. These muted colors help owls camouflage themselves against tree trunks and branches. Unlike most raptors, many owls have feathers on their legs and toes. Owls have large eyes that face forward like your eyes. Around the eyes are the facial disks that give the owl a “face.” Their wings are long and broad, and their tails are usually short.

Owls are predators. They eat many different kinds of prey depending upon their own size. Northern pygmy owls and saw-whet owls are small so they usually hunt for large insects, shrews and mice. Larger owls also capture bigger prey like voles, woodrats, rabbits and squirrels. Great horned owls will even catch and eat skunks-----yuck! Other animals on the owl menu include scorpions, lizards, snakes, frogs, toads, birds, bats and even fish.

Nature's Mousetraps

Owls pretty much eat whatever they can get their talons on. But the most common prey animals are small rodents, such as mice and voles. These little mammals are important food sources for many animals. They can also be serious pests for people. Farmers can lose huge amounts of crops and stored grains to rodents. Lost crops mean lost money for the farmer and less food for livestock and people. Owls play an important role in keeping these potential pests under control. And they do it all for free!

Consider the following:

- The average lifespan of a barn owl is approximately 10 years.
- A barn owl needs to eat three to four ounces of food a day.
- The average weight of a mouse is one ounce.

If you do the math, you will find that one barn owl needs to eat about 73 pounds of mice a year. During its 10-year lifespan, that turns out to be around 730 pounds of mice. That is about 11,000 individual mice! Each of these mice needs to eat approximately 10 percent of its body weight each day. And 11,000 mice will eat almost 26,000 pounds (13 tons) of food each year. Wouldn't you like to have a few barn owls living on your farm?

Scientists determined these figures by studying barn owls and their prey. One thing they relied upon to find out what the owls were eating was owl pellets. Pellets are the non-digestible parts of an owl's meal: the hair, feathers, and bones. Just like you, owls cannot eat this stuff. So, instead of nibbling around bones and pulling off fur or feathers, they swallow their food whole. The non-digestible stuff is formed into a pellet. Pellets are formed in the muscular part of the stomach, called the gizzard. Six to twelve hours after its meal, the owl will spit up or cast a pellet. Scientists collect the pellets and pull them apart to see what they contain. This may sound gross, but it is a fascinating way to look at an owl's diet. It is also an accurate way to count how many prey animals the bird ate. Owl pellets are a lot of fun to dissect. See if you can talk your teacher into doing an owl pellet dissection in class.

Eye See You!

When you see an owl, what do you notice first? It's usually their eyes. Owl eyes really stand out because they are often very large compared to an owl's head. If your eyes were the same size as an owl's, they would be the size of tennis balls! Their eyes allow owls to navigate through their habitat in the dark. Owls that hunt during the daytime use their eyesight to find food.

Seeing well in the dark is the major job of an owl's eyes. This is where those big eyes come in handy. Because the eyes are so big, they have a large surface area to collect light. Light hits specialized cells in the eye that help animals see in low light levels. These cells are called rod cells. Owls have many more rod cells than other animals. In addition, owls have a structure called the tapetum lucidum (tay-PEE-tum LEW-sid-um) at the back of each eye. Light goes into the owl's eyes and hits the rod cells. It then bounces off the tapetum lucidum to hit the rod cells again. This lets the owl see the light two times instead of just once. For an owl, this turns the night into day. You can see the tapetum lucidum when you shine a light at an animal at night. That glowing yellow or green eyeshine you see is the tapeta bouncing the light back into the animal's eyes.

Turning Around

Owl eyes are well protected by large bony sockets in the skull. However, these sockets prevent an owl from moving its eyes around. While you can roll your eyes and move them back and forth without moving your head, an owl cannot. This gives owls a fairly narrow field of vision---about 110 degrees. Compare that to your field of vision which is 180 degrees or half a circle. This would seem to be a disadvantage for owls. But these birds have a trick up their feathers to help them see their surroundings.

As it turns out, owls can turn their heads approximately 270 degrees of a circle. And they can do it very quickly. The speed of their neck turning has led people to believe that owls can turn their heads all the way around. Of course, this is impossible, but how can owls turn their heads so far?

If you feel the back of your neck, you can feel some bumps. These are your cervical vertebrae. Their important job is helping support your head. They also protect some important vessels in your neck that carry blood to your brain. We have seven of these vertebrae. Owls, on the other hand, have 14 cervical vertebrae and they are very flexible. In addition, the canal in the middle of an owl's cervical vertebrae where the vertebral arteries are found, is large. It has 10 times more space than ours. It is also filled with an air sac. Both of these things help protect the important vertebral arteries that carry blood to the owl's brain when an owl turns its head. Being able to turn their heads so far lets owls get objects in their visual field so they can see them well. They are some of the many adaptations that make owls such fascinating animals.

The Better To Hear You

Because owls have big eyes, you might think they hunt by sight. Amazingly, owls hunt mainly by sound. Could you find your dinner by listening for it?

Owl ears are not on the top of their head. The "ears" you see on some owls are feathers called "ear tufts." Owl ears are hidden under feathers on the sides of their heads. Several things work together to give owls excellent hearing.

The first are the facial discs. Facial discs surround the bird's face giving owls their distinctive look. They are made of several kinds of specialized feathers that help collect sound around the owl's head. This lets the facial discs act just like a satellite dish does when it collects signals for your television. Another adaptation is asymmetrical ear placement. This means that owl ears are not directly across from one another on the bird's head. If you put your fingers in your ears and look in a mirror, your fingers will both be at the same height. If an owl puts its talons in its ears, one talon would be higher on its head than the other talon. This ear placement means that sounds reach the owl's ears at different times. As the owl moves, it can hold its head so the sound reaches both ears at the same time. When this happens, the source of the sound is directly in-line with the owl's face. Some species of owl have moveable ear flaps that they can use to increase or decrease the sound coming to their ears.

So, how well can owls hear? A great gray owl sitting on a fencepost 60 feet away can hear a vole running in a tunnel under 18 inches of snow. A barn owl can capture prey when blindfolded. For owls, when it comes to finding food, listening is definitely better than looking!

Great gray owls

Listening to the subnivean

Some of Idaho's forests are home to the amazing great gray owl. These large, beautiful, gray owls live deep in pine and fir forests. They are one of the tallest owls in North America, about two and one-half feet tall. Even though they are tall, they only weigh a few pounds. As it turns out, they are big balls of feathers. These feathers are the key to their success at hunting for small mammals, like voles, under the snow, in a place called the subnivean zone. This zone is the hollow space that forms between the snow and the ground. It gives many small animals a place to hide during the winter. As it turns out, great gray owls have some cool adaptations to help them hunt in the subnivean zone.

Most owls have serrations on the leading edges of their flight feathers. These are like the teeth on your comb. The air moves through the serrations, giving owls nearly silent flight. Another cool adaptation for this silent flight is a thick, velvety coating on the feathers. Great gray owls have the longest feather serrations and the thickest layer of velvety coating of any species of owl. This makes them quieter than any other kind of owl. Some scientists think this helps prevent prey animals from hearing the owl as it flies. This is called the mouse ear hypothesis. Other scientists are beginning to think differently. Instead, they think silent flight helps prevent the bird from hearing its own wings as it flies. This is called the owl ear hypothesis.

In order to understand why such silent flight is so important for the great gray owl, you have to know a bit about snow. It muffles sound. This makes it harder to hear the sounds of prey animals in the subnivean zone. In addition, high and low frequency sounds pass through snow in different ways. Snow can also bend or refract sound. This means that a sound that seems to come from one place is actually coming from another. It creates what is called an acoustic mirage. This is kind of like when you put a pencil in a glass of water. The part of the pencil under the water looks like it has separated from the part above the water, moving away from it.

A great gray owl hunting over snow must be able to pinpoint the sound of its prey under the snow and not get confused by the acoustic mirage. Their huge facial discs are a perfect adaptation to gather the low frequency sound a vole makes as it moves under the snow. Being able to hover silently over the snow, makes it possible for the owl to hear only the sound of its prey. Plunging feet-first, great gray owls can catch prey that is under 18 inches of snow. They are strong enough to break through a snow crust hard enough to support a 175-pound person! Great gray owls need to eat about seven voles each day. Being able to hunt successfully in the winter by catching prey under the snow, helps these owls survive Idaho's harsh winters.

Be Outside
Owl Observation

Because of their nocturnal habits, owls can be hard to observe. Some owls, however, are more common than you might expect. The four species listed below are some of Idaho's most frequently seen owls. Look for them when you enjoy time outdoors.

BE OUTSIDE
IDAHO CHILDREN IN NATURE

Barn Owl

- Strictly nocturnal.
- Named for its habit of nesting in buildings, including barns. Also nests in cavities in trees and cliffs.
- Lives in open habitats like grasslands, agricultural fields, deserts, rangelands and marshes.
- Often described as ghostly due to its light coloration.
- Has exceptional night vision, allowing these birds to hunt by sight in the dark.
- Eats small mammals such as mice, voles and rats.
- Its distinctive heart-shaped facial disc gives this species its nickname, monkey-faced owl.
- Unfortunately, are often hit by cars when hunting along the edges of highways at night.

Burrowing Owl

- A small, long-legged owl ranging from seven to just over nine inches tall, living in open habitat such as grasslands.
- Mottled brown and white with distinctive white eyebrows and throat.
- Hunts during the daytime and at night.
- Gets its name because it nests in burrows made by other animals such as ground squirrels, prairie dogs or badgers.
- Eats insects, lizards and small rodents.
- Adult burrowing owls place animal scat around their burrow entrance. The scat attracts dung beetles and other insects, which the owls eat.
- Can be seen in southern Idaho but migrates farther south in winter.

Photo: CC-BY Catherine Zinsky

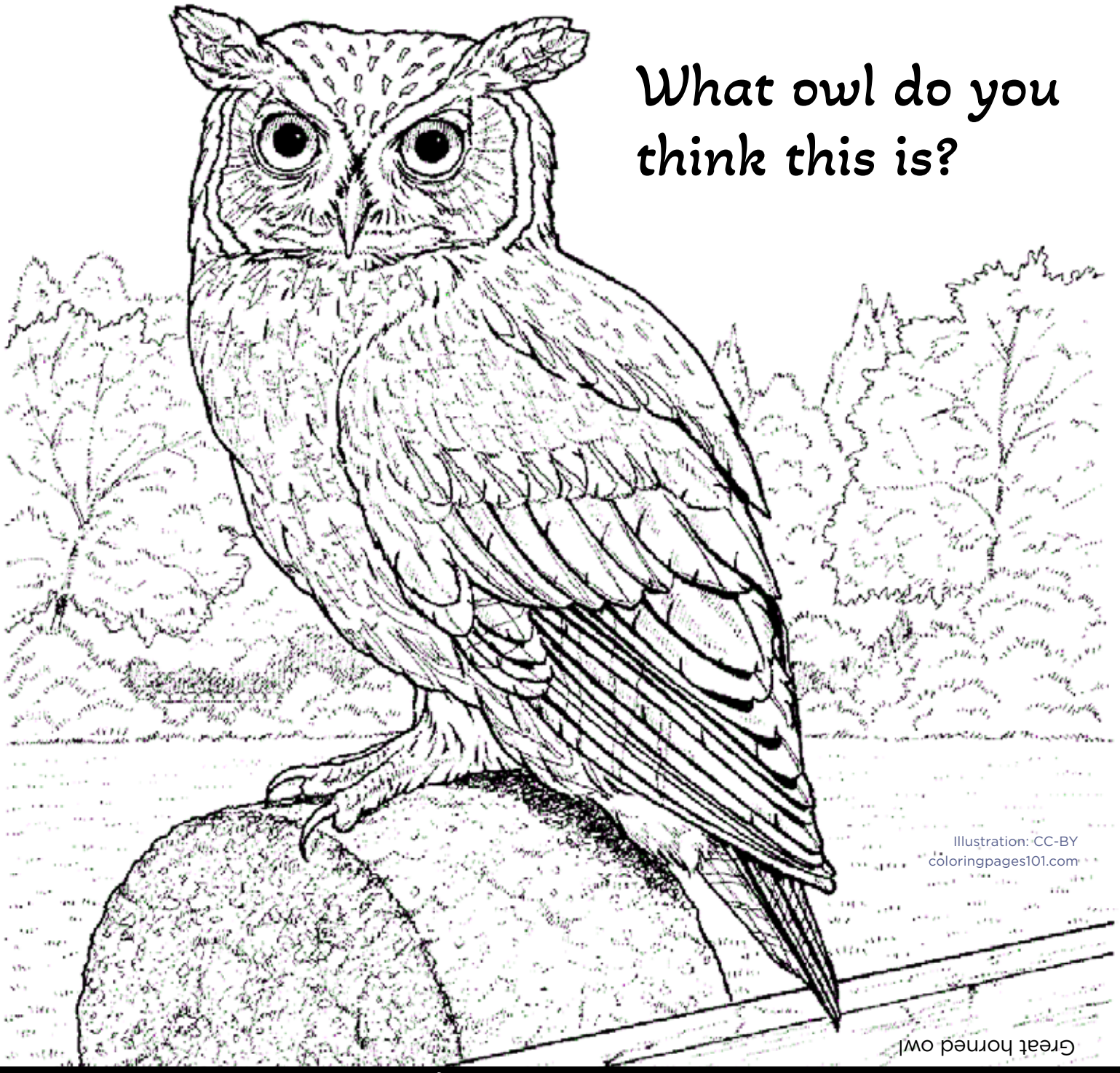
Great horned Owl

- One of the most common owls found in North America.
- Large, averaging two feet tall with a nearly four-foot wingspan.
- Hoots to communicate. The male has a lower pitched voice than the female, making it easy to identify them when they are hooting together.
- Mottled browns with gray and white give this owl excellent camouflage.
- Found in most forested habitats, including in neighborhoods and city parks.
- Will eat anything they can catch from small rodents to skunks and, unfortunately, wandering house cats.
- Nests in old nests abandoned by hawks, crows, ravens, or herons. Parents fiercely defend their nestlings.
- Roosts during the day in thick cover often next to a tree trunk where it blends in with the bark. Crows will mob great horned owls if they find them roosting, trying to drive the owl out of their territory.

Western Screech-owl

- This stocky, robin-sized bird is one of Idaho's smallest owls.
- Live in a range of forested habitats, including neighborhoods and backyards in the western United States and Mexico.
- Well-camouflaged with mostly gray with white and brownish streaks.
- Eats a wide variety of prey including large insects, small rodents, crayfish and worms.
- Nests in cavities in trees or cliffs and will also use nest boxes.
- Nocturnal.
- Song is not a screech but a series of hoots that sound like a bouncing ball.

Photo: CC-BY Eric Zhou at Flickr Creative Commons



What owl do you think this is?

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WE WOULD LIKE TO HEAR FROM YOU!

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