



## **ASTOUNDING OWLS: SEE WHAT OWLS EAT**

Teacher Resource Guide  
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Barn owls are one of the most common owls, worldwide. It has long wings with a short tail. Barn owls can range from 13-15 inches tall and from 11-17 inches wide. The typical wingspan of a Barn owl is from 31-41 inches.

The Barn owl's head and upper body can vary between pale brown and some shade of grey. Some are purer, richer brown instead, and all have fine black and white speckles. The heart-shaped face is usually bright white.

Barn owls do not hoot. They produce a characteristic shree scream, a long drawn out shriek. Males in courtship give a shrill twitter. Both young and old can hiss like a snake to scare away intruders.

Like most owls, the barn owl is nocturnal, relying on its sensitive hearing when hunting in complete darkness. It often becomes active shortly before dusk and can sometimes be seen during the day when relocating from one roosting site to another.

The barn owl flies silently. There are tiny serrations on the leading edges of its flight feathers and a hair-like fringe to the trailing edges help to break up the flow of air over the wings, reducing turbulence and the noise that accompanies it. Hair-like extensions to the barbs of its feathers, give the owl a soft feel while minimizing noise produced during wingbeats.

The diet of the barn owl has been highly studied. The items consumed can be identified from the prey fragments found in the pellets that the bird regurgitates.

The barn owl has acute hearing, with ears placed asymmetrically. This improves the detection of sound position and distance. This also allows the owl to hunt in total darkness. The facial disc plays a part in this process. Hunting nocturnally, the Barn owl can target its prey and dive to the ground, penetrating its talons through snow, grass or brush to seize small creatures with deadly accuracy.

Barn owls are usually monogamous, sticking to one partner for life unless one of the pair dies. Only then is a new partner sought.

Predators of the barn owl include large possums, and the common raccoon, as well as eagles, larger hawks and other owls. The American record age for a wild Barn owl is eleven and a half years. In captivity, they can live to be about 20 years old.

If you stop and think about the structure of most modern birds, you will see that they don't have teeth. You and I take for granted that our food is first broken down by our ability to chew. Without this ability, most birds have a specialized organ called a crop, which holds the food so that it can be consumed later. From the crop, food then passes to the gizzard, the equivalent of a stomach in a bird, for chemical digestion. There, the food is chemically broken down. Unfortunately, owls don't have a crop, so food passes directly from the mouth to a temporary digestive organ called the proventriculus. From the proventriculus, the food then passes to the gizzard, or ventriculus. The digested meal will pass from the gizzard to the small and large intestine, where nutrients are absorbed and the waste is excreted.

Most of us are familiar with the white, liquid consistency of bird droppings. Much of this liquid is actually urea, an acid that is essentially a combination of urine and fecal waste. This waste then passes through the owl's combination reproductive and excretory opening, the cloaca, and out of the body. What about the bones, fur, scales or feathers left undigested?

These are harder to digest and, without teeth or a crop, owls can't break these tough materials down. The undigested food remains in the gizzard, blocking digestion for about ten hours. So, although unpleasant to you and me, they throw up, or regurgitate, the undigested fur and bones in a tightly packed oval known as an owl pellet. Owl pellets are one of the coolest things to dissect and observe. When an owl regurgitates an owl pellet, that's a good sign that the owl is ready to eat again.

## Owl Food Chain

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A food chain in general, is the transfer of energy from one living thing to another. This energy is passed along in the form of food. A food chain simply illustrates what eats what in a particular ecosystem.

All food chains begin with energy from the sun transferred to plants known as producers. Producers are called producers because they make their own food. They provide energy for the rest of the food chain. Primary consumers are those that eat only producers. For example an insect that eats only plants, and are known as herbivores.

Secondary consumers are carnivores. That means that they eat only meat, usually a primary consumer, such as an insect or small rodent. Finally, the tertiary consumer is the top consumer of a food chain. This means that they eat the secondary and the primary consumers. Their role is crucial in keeping an ecosystem balanced. For example, if we didn't have owls, there would be a huge number of mice and rats in the environment. They would eat all of the grass, plants, fruits, etc. in their environment and their entire ecosystem would collapse. Owls have very few predators, and are usually the top of their food chain.

Barn Owls swallow small prey, like a rodent or a bird, whole. As soon as the prey is swallowed, the owl pellet begins to form inside the digestive system. The digestive juices, called enzymes, break down the prey's body tissues but leave the bones, fur, feathers and hair undigested. The good nutrients are collected from the soft tissues and sent to the rest of the owl's body. Owls don't have teeth to grind up the bony parts. Because these skeletons are undisturbed, it is common to find claws, scales, beaks, and even insect exoskeletons inside an owl pellet. The strong stomach muscles pack these body parts in the indigestible hair and fur and then "gagged" or regurgitated from the system. We call it an owl pellet.

### Dissect the Owl Pellet

You will need:

- A Barn owl pellet (Don't worry! It has been heat treated to kill all bacteria.)
- Bone chart of common prey
- Two wooden probes to loosen the hair from the bones
- Forceps (tweezers) to gently put apart the owl pellet
- A magnifying glass or a microscope to identify the bone types

1. Use the wooden probes to loosen the hair on the outside of the owl pellet. As you discover a bone, continue to loosen it until you can gently pull it out with your tweezers.

2. Place the bones on the sheet of black paper as you find them. If you are lucky enough to find a skull intact, try to keep it whole, but gently pull out the hair and fur.

3. Once you have found all of the bones, you can begin to identify the bones by using the bone chart and either the magnifying glass or a microscope if you have one. Not only will you discover which animal it is from, you will know where in the body it is from. If you want, you can glue the bones onto the bone chart as you find them.

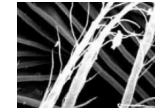
### Tip

Remember, if the owl ate a large animal, it may have had to regurgitate several owl pellets to discard the remains. Because of that, you may not find a whole animal of any kind inside your pellet. Hope you enjoy dissecting the Barn owl pellet!

Owls have very few downy feathers. Most of their feathers are specially designed to support the owl's lifestyle. The feathers on the facial disc are stiff and bristly. The facial disc shape itself helps funnel sounds to the asymmetrical ears on each side of the owl's eyes. The wings of an owl are extraordinarily designed. They are virtually silent. The leading edge of the owl's wing feathers are covered in hooks and bows that break up the air into very small bursts.



These smaller bursts of air then pass back to the trailing end of the feather, which is fringed, further breaking up the air.



Whatever sound is produced by what little air turbulence is left is quickly absorbed by the down feathers on the owl's legs and under feathers.

The eyesight of a barn owl is very keen. They can see equally as well during the day as they can at night. Unlike you and me, the owl cannot move its eyeballs. Instead they rotate their head from side to side to see the world around them. Contrary to popular thought, owls cannot turn their head all the way around, 360 degrees. They can turn an impressive 270 degrees ensuring that there is no view that is out of their vision.

Have a question or comment?

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