

Owls and Owl Pellets

(from Ward's Natural Science Teacher Resources: resources.wardsci.com))

Barn Owls (*Tyto alba*) are found throughout the temperate regions of the world. This worldwide range categorizes the Barn Owl as a cosmopolitan species. The Barn Owl traditionally lived and hunted in open grasslands and nested in large, hollow trees or caves. This still holds true today, but as man cleared land for agricultural use the Barn Owl has been able to adapt and expand its territory, taking advantage of the millions of acres now used for raising crops and grazing cattle. Even the man-made structures in these areas are often exploited by Barn Owls as nesting sites. These include lofted barns, silos, grain bins, fire towers, duct work in abandoned gins and factories, culverts, and occasionally even wells.

As with most other raptors (a collective term for all hawks, falcons, eagles, and owls), the Barn Owl feeds primarily on mammals and other birds. The types of mammals and birds that Barn Owls choose make their pellets ideal for classroom study. Favored among Barn Owl prey are the insectivores (shrews and moles), small rodents (mice, voles, and rats), and small birds (sparrows, blackbirds, and starlings). These prey animals all commonly thrive in the areas where Barn Owls live. This is because insectivores, small rodents, and many birds feed on the naturally occurring vegetation, as well as agricultural crops and insects that feed on these crops.

Barn Owls are masters at the art of hunting. Their nocturnal (night time) skills are second to none. They are specially adapted with large, saucer-like facial disks around each eye. These facial disks act like satellite dishes, concentrating light into the eyes and sound into the ears. Such physical characteristics allow Barn Owls to hear the footsteps of a tiny mouse under the leaves while flying overhead and spot a mouse nearly 100 meters away while in the pitch dark. This combination of low-light visibility and pinpoint accuracy in locating the slightest noise ranks Barn Owls among the deadliest of predators for mice, shrews, and other potential prey. To make matters even worse for their prey, Barn Owls have a special feather at the leading edge of each wing that allows them to quietly approach their prey. The edge of these feathers resembles a comb with short, soft teeth that filter the air going over the wing surface and prevent the wings from "whistling". This gives the Barn Owls silent flight so that their prey never even hears them coming. The prey then are clasped with the Barn Owl's feet which are modified into sharp nailed, claspings talons. The Barn Owl's beak has a special notch in the upper mandible that fits over the spine at the neck of the prey. A quick pinch from the beak breaks the neck of the prey and the hunt is over.

Some large owls, like the Great Horned Owl (*Bubo virginiana*), feed on relatively large mammals including rabbits, skunks, and opossums. Great Horned Owls locate and capture prey in much the same way as Barn Owls. Once captured,

these large prey are stripped of their flesh, much like we strip the meat from a chicken leg before eating it. Few bones are consumed, and those that are only represent a small portion of the prey animal's skeleton. In contrast, the Barn Owl generally swallows prey whole. The entire carcass is swallowed head first, in one large gulp. When a Barn Owl swallows a rat, it is comparable to a 100-pound person swallowing a 25-pound ham in one bite! Barn Owls may do this 2-3 times each night. However, if smaller prey is being captured, the owl may feed more frequently.

Predators such as wolves and cougars chew their meals. This chewing grinds the bones so that they can pass through the digestive tract. Since owls do not have teeth, the bones of their meals cannot be ground up and passed. Instead, they are expelled in a much more intriguing way: Once swallowed, the owl's meal passes through the esophagus and comes to rest in a glandular stomach where digestive enzymes break it down. Fleishy portions (meat, organs, and fat) are passed along through the muscular stomach for digestion. The indigestible parts (bones, claws, and hair or feathers) remain in the glandular stomach. Here they get mashed into a slick bolus that is then regurgitated. (Figures 1-3). This bolus is what we call a "pellet". Since Barn Owls feed on small animals that are generally swallowed whole, their pellets contain complete skeletons and are ideal for classroom investigation. They also are invaluable for field biologists who study the dynamics of prey populations and their availability to other predators in a given area.

Most students will dissect pellets produced by Barn Owls. Pellets from this species are used for two reasons. First, the Barn Owl is often associated with man-made structures in agricultural regions, thus making the pellets more readily available. Second, the feeding habits of the Barn Owl generally produce pellets that contain complete skeletons, a must for classroom studies that will investigate not only food-web aspects, but also general and comparative skeletal anatomy.

