



Owls of Pennsylvania

Birds are special animals. They are the only animal that has feathers.

Owls are special birds because of their particular adaptations and features.

Owls live throughout the world on every continent except Antarctica. Scientists believe there are 164 owl species worldwide, with 21 species living in North America. These are listed in order of size: (1. Great Gray (2. Snowy (3. Great-horned (4. Barred (5. Barn (6. Spotted (7. Northern Hawk (8. Short-eared (9. Long eared (10. Boreal (11. Burrowing (12. Eastern Screech (13. Western Screech (14. Vermiculated (15. Northern Saw-whet (16. Whiskered Screech (17. Northern Pygmy (18. Ferruginous (19. Flammulated (20. Mountain Pygmy (21. Elf

The world's largest owl is the Eurasian Eagle Owl and the world's smallest is the Elf Owl, which is only found in North America.

There are 2 families of owls:

1. Strigidae – “typical owls”, weighing from 4.4 lbs. down to 1.4 oz. There are 130 species in this family. Stocky bodies, short necks, large round heads, round facial disks, large eyes, hawk-like beaks, and rounded tails. Most are nocturnal.
2. Tytonidae – “barn owls”. Of the 12 species of barn owls, only 1 life in North America. Barn owls are different because they have heart-shaped facial disks, dark eyes, smaller eyes, oval ear openings (instead of slits), long feathered legs, they do not hoot (they have a high-pitched call), their second toe is the same length as its first toe, and they are the most common owl family worldwide.

Physiology:

Owls have 4 toes; two can turn forward and the other two turn backward and are equipped with long, curved, needle-sharp talons. Once grasped, the prey seldom gets loose. A great-horned owls grip may be one of the strongest in nature and can snap the neck of a groundhog like a toothpick. Most owls kill by a bite at the base of the skull with their beak.

Owls can see very well in daylight and much better in dark. They have very large eyes for their size compared to humans (large pupil and cornea). Owls have binocular vision, which allows them to judge distance and size and speed of its prey. An owl can spot a mouse as far as 2 football fields away (600 ft). They can focus rapidly and have a protective nictating 3rd eyelid. Due to the tube (rather than rounded) shape of their eyes, an owl cannot move their eyeballs in their eye sockets, and so must turn its head to look in a new direction. Owls have generally little to poor color vision. This allows for more rods to gather light than cones which aid in color vision. Field of view is about 110 degrees; binocular vision is about 70 degrees.

Owls have 14 neck vertebrates, 7 more than most birds. This allows an owl to turn its neck 180 degrees to the right or left for a total of 270 degrees, and upside down and over backwards.

Owls have extra sensitive ears and some of the best in the animal world. Many species rely more on hearing than on eyesight. The great gray owl can hear a beetle running through the grass 100 feet away or the squeak of a mouse a half mile away. Most owls' ears are large slits hidden behind their large facial disks. The disks act to trap and funnel sound to the ears. The owl can move its facial disks to improve reception. The ears are asymmetrical and different sizes. The right ear hears sound best from below. The left hears best from above. In this way the owl can triangulate to locate unseen prey with pinpoint accuracy. Blindfolded owls can locate and capture prey it cannot see. The "ears" found on some owls have nothing to do with hearing; these tufts of feathers are used for decoration and non-verbal communication.

Like all birds, owls' bones are light and full of air pockets, but they are strong because they are cross braced with solid shafts.

All owls fly and have very well-developed flight muscles and very large, strong, broad wings. This makes it possible for them to fly away with prey that is heavier than them.

Owls are not fast fliers but are strong fliers. Most owls have specialized feathers which allow for silent flight, the soft fringes on the leading edge of their wing feathers diffuse air and sound. The feathers are generally brown, gray, and mottled to provide excellent camouflage to help avoid detection from other predators or from harassment while nesting or resting, and for hunting. Females of some species are darker or with more marking to aid in camouflage, particularly for nesting. Owls have "furry" feathers on their feet to help protect them from struggling prey and for cold weather. The specialized facial feathers aid in gathering sound to the ears.

As a predator, most owls are opportunistic hunters and will generally eat anything that is easy and plentiful. Depending upon the size and species, owls eat insects, worms, spiders, fish, frogs, snakes, birds, rabbits, squirrels, skunks, and crayfish, with rodents being generally preferred by the majority. Most owls will swallow small prey whole, headfirst. Larger prey is torn apart into bite size pieces before swallowing by standing on it and pulling pieces off with its strong curved beak.

Owls do not have crops as many birds, and cannot digest hair, feathers, or hard boney material. This undigested matter is regurgitated as pellets. Scientists can learn a lot by examining pellets as to the species of owl and of what it has eaten.

General behavior: Most owls are nocturnal. Exceptions are barred, short-eared and snowy, with others outside of PA. Most owls are non-social, monogamous, and generally non-migratory. They are relatively long-lived in the wild, living up to 40 years for some. The longest-lived owl known was an African eagle owl that lived to be 68 years. Owls are sexually mature at between 2 and 4 years. Courtship is lengthy and involves a lot of vocalizations, body posturing, food offerings and preening. Usually, an owl will mate for the life of each individual. It is documented that a wild pair of barred owls stayed together for 26 years. Males set up territory in the summer/early fall and are most vocal in late fall through early winter as they court and reaffirm or establish territory. Owls rarely build their own nest – rather, they use abandoned nests of hawk, crow, squirrel, heron, or natural cavities in trees from decay or woodpecker. Cavity nesters will sometimes use manmade structures (buildings) or nest boxes. Some owls are subterranean in that they use old burrows from other animals; others are ground nesters, using grass clumps. Little is done to improve the nest itself. Owls are usually very quiet during nesting season. Depending upon the species, owls will lay between 2 and 11 eggs, which are incubated primarily by the female from 21 to 34 days. The male brings food to the female during this brooding period and then later to the young after hatching. Chicks stay at the nest from 30 days to 10 weeks. Some species will wander great distances (disperse) from their fledge location as juveniles; others may travel no more than a few miles from their hatch site.

Predators – In PA, other owls, raccoons, coyote, bear, snakes, humans (shoot, poison, trap, automobiles, power lines, pesticides).

Owl species in Pennsylvania – Ranked in order of population.

1. Great-horned – Year-round resident. Most common in PA. Largest in PA, second largest in North America. 18 to 25 inches, 50.7 to 65.7 ounces. Wingspan 35 to 55 inch. Resides in a wide range of habitats. Uses old hawk nests or in cavities. Lays 2-3 eggs in mid-January to mid-March. Incubation 25 to 35 days. Fledge by 10 weeks. Hunts and eats anything up to 4 lbs.
2. Eastern Screech – Year-round resident. Common throughout PA. 7 to 10 inches, 7 to 7.8 ounces. Wingspan 18 to 24 inches. Adaptable to many habitats. Nests in natural cavities and manmade structures. Lays 4-5 eggs. Incubation 26 to 28 days. Young fledge by 4 weeks. Preyed upon by other owls. Scarce above 2,000 feet in elevation. Not found in extensive forest habitats. Eats insects and any other small item. Populations have suffered due to cutting of nesting trees and pesticide use.
3. Barred – 16 to 24 inches, 14 to 23 ounces, wingspan 28 to 50 inches, year-round resident, has brown eyes. Prefers extensive wetland forests. Enjoys fish, crayfish, snakes, and frogs. Nests in natural cavities, old crow, hawk, or squirrel nests, and manmade structures in old growth forests. Lays 2 eggs in mid-March. Incubation 28 to 32 days. Fledge by 45 days. Populations are low in area where there are high numbers of great-horned owls. Exhibits diurnal behavior.
4. Barn – World-wide distribution. Relatively uncommon in PA. 14 to 21 inches, 13 to 17.5 ounces, wingspan 43 inches, has brown eyes. Nests can be tree cavities or human-made; nest boxes, barns, steeples, abandoned buildings. Nests any time of year if food supply is abundant. Lays 5 to 11 eggs. Incubation 32 to 34 days. Fledge by 10 weeks. Voles are the most preferred food. Populations dependent upon mainly agricultural areas or natural open areas. Populations are decreasing as agriculture is disappearing throughout the state and from modernized farming. Due to its quiet, secretive nature, it is probably under-reported. It is listed as an endangered species in 9 states, and a species of special concern in 9 states, including PA.
5. Northern Saw-whet – Smallest. 7 to 8.5 inches, 3.6 to 4.3 ounces. Wingspan 17 to 21 inches. Lives in a variety of woodlands and wetlands with dense undergrowth (to avoid predators). Rarely found below 1,000 feet in elevation. Eats mice and other small animals. Nests in woodpecker holes. Lays 5 – 6 eggs. Incubation is 25 to 30 days. Young fledge by 5 weeks. Northern individuals migrate south in winter.
6. Long-eared – 13 to 16 inches, 9 to 11.7 ounces. Wingspan 36 to 42 inches. Very secretive. Woodland areas near open country, strictly a mouse eater. Nests early, in old crow or hawk nest. Lays 3-5 eggs. Incubation 21 to 28 days. Fledge by 35 days by the end of May. Migrate south in winter.
7. Short-eared – 13 to 17 inches, 10 to 15 ounces. Wingspan 38 to 44 inches. Diurnal behavior. Lays 4 to 7 eggs in shallow scrapes on the ground. Often found in reclaimed strip mines. Incubation 24 to 35 days. Fledge by 35 days. Migrate south in winter.
8. Snowy – Winter migrant to PA. 21 to 30 inches, 3.5 to 4.4 pounds. It is the heaviest of North American owls. Diurnal behavior. Prefers lemmings but will eat anything up to and including fox. Large white owl.