

barn owl

THE NIGHT HUNTERS OWLS

by Chuck Fergus

Bureau of Information and Education
Pennsylvania Game Commission



saw-whet owl

Owls are birds of prey, occupying by night the hunting and feeding niches which the hawks hold by day. Superb, specialized predators, owls are adapted to find, catch and kill prey quickly and efficiently. And they've been doing it for ages; owl fossils found in midwestern United States in rocks of the Eocene period date back about 60 million years.

Eight species of owls either live in Pennsylvania or visit the state in winter. Barn, screech, great horned, barred and long-eared owls are permanent residents; the short-eared owl is basically a winter resident, here from November to April; the saw-whet owl is a rare resident, seen most often from November to February; and the snowy owl is occasionally spotted in winter, especially in Pennsylvania's northern counties.

Taxonomists divide owls (order *Strigiformes*) into two families, *Tytonidae*--barn owls--and *Strigidae*, a family to which all other Pennsylvania owls belong. Our barn owl ranges over most of the world, with related species in South America, Europe, Africa, Asia and Australia. *Strigidae* have near-worldwide distribution, including most Pacific islands and the arctic.

The plumage of owls is dense and soft, making them look heavier than they actually are. Their drab-colored feathers blend into the background of shaded daytime roosts and the darkness of night; the feathers on owls' legs provide insulation and protect against bites by prey. Both sexes are colored essentially alike, but females are usually larger and heavier than males of the same species.

Some unusual and highly effective adaptations help owls survive. Extremely large retinas make their vision 50 to 100 times more efficient than human sight at distinguishing small objects in dull light. Also, the retinas are packed with rods (light-gathering cells). An owl can't distinguish colors well, but it possesses binocular vision: each eye views the same scene from a slightly different angle, thus improving depth perception. Eyes are fixed in the skull; to look to the side, an owl moves its head, and some species can twist their necks over 270 degrees--almost all the way around.

An owl's head is large and broad to accommodate two widely spaced and highly developed ears. Owls hear sounds

well below the threshold of human hearing; even in complete darkness a barn owl can catch prey by using its hearing alone. The conspicuous "ears" or "horns" of great horned, long-eared and screech owls are really tufts of feathers that have little effect on their hearing.

The leading parts of a night hunter's wings--which cut the air when the bird flies--have soft, serrated edges. These soft leading edges, lightweight wings and a large wing surface area let an owl fly and glide in total silence. As its flight is noiseless, an owl easily hears other sounds while hunting. It descends to its target in a silent, mothlike glide.

An owl grips and kills prey with its talons. Two of these strong, sharp claws branch off the front toes of the foot, and two off the back toes. If the prey is small enough, the owl swallows it whole; otherwise it holds the kill with its talons, tears the carcass apart with its hooked beak and bolts the pieces. The owl's stomach absorbs nutritious portions and forms indigestible matter (hair, feathers, bones, claws, insect chitin) into round pellets regurgitated about seven hours later.

Pellets, also called castings, can be found under daytime roosts or nighttime feeding stations. Generally, the larger the owl, the larger its pellets. Pellets can be broken apart and the hard bony parts separated from the fur and feathers. Close examination of the hard items gives insight into the owl's diet.

Most owls call to attract members of the opposite sex during mating season and to announce individual territory. They also call softly for short-range communication between mates or between parents and offspring. When cornered or frightened, owls hiss or make clicking noises by snapping their mandibles (upper and lower parts of the bill).

Owls don't build nests, preferring to take over abandoned crow or hawk nests or use holes in trees or banks. They may add lining material to existing nests. Early nesters, some even lay eggs in late winter; by the time fledglings leave the nest, offspring of other wildlife abound and are fairly easy prey for the inexperienced young owls.

Owl eggs are rounded, white and undecorated, usually 3-5 in number. Incubation is generally the female's

snowy owl



short-eared owl

barn owl



screech owl

responsibility, while the male hunts and brings food to the female. After the eggs hatch, both female and male feed the young.

Nestlings wear thick white or light gray down. Young found in the same nest are invariably of different sizes, because incubation starts as soon as the female lays the first egg (unlike most other birds, which begin incubating only after all eggs are laid), and therefore this egg hatches first. As much as two weeks may pass between the laying and hatching of the first and last eggs. Young hatched latest will die if the parents cannot find enough food in the area around the nest, as they can't compete with the larger, older nestlings. This natural check balances predator population with food supply and ensures that surviving fledglings are strong.

During the day, most owls stay in hollow trees or dark, dense stands of vegetation. They hunt mainly at night--occasionally at dusk or on cloudy days--quartering the ground in silent flight or scanning it from a convenient perch.

Owls generally kill what's easiest to catch or find. As with most predators, they are blamed for killing more game and poultry than they actually do. In reality, they are beneficial birds that prey on many pest species. Mice and wood rats form a major part of the larger owls' diets; smaller owls eat insects and small mammals. All Pennsylvania owls are protected by the Game Law and federal regulations.

Barn Owl

The barn owl is a long-legged, light-colored bird with a white, heart-shaped face. It is sometimes called the monkey-faced owl. A barn owl is 15-20 inches in length with a 44-inch wingspan; females weigh about 24 ounces, males up to 20 ounces. Both sexes have whitish or pale cinnamon underparts and buffy or rusty upper plumage.

A barn owl has neither of two characteristics often associated with owls: "horns" or hooting-type calls. Its calls include a long, drawn-out whistle, loud hisses and snores.

Barn owls nest in barns, church towers, hollow trees, old buildings, silos and ventilating shafts. They do not build nests, although castings may form a base for the eggs. They usually nest in March, April or May and lay from 3-11 eggs (generally 5-7) at two- to three-day intervals. Incubation takes about 33 days.

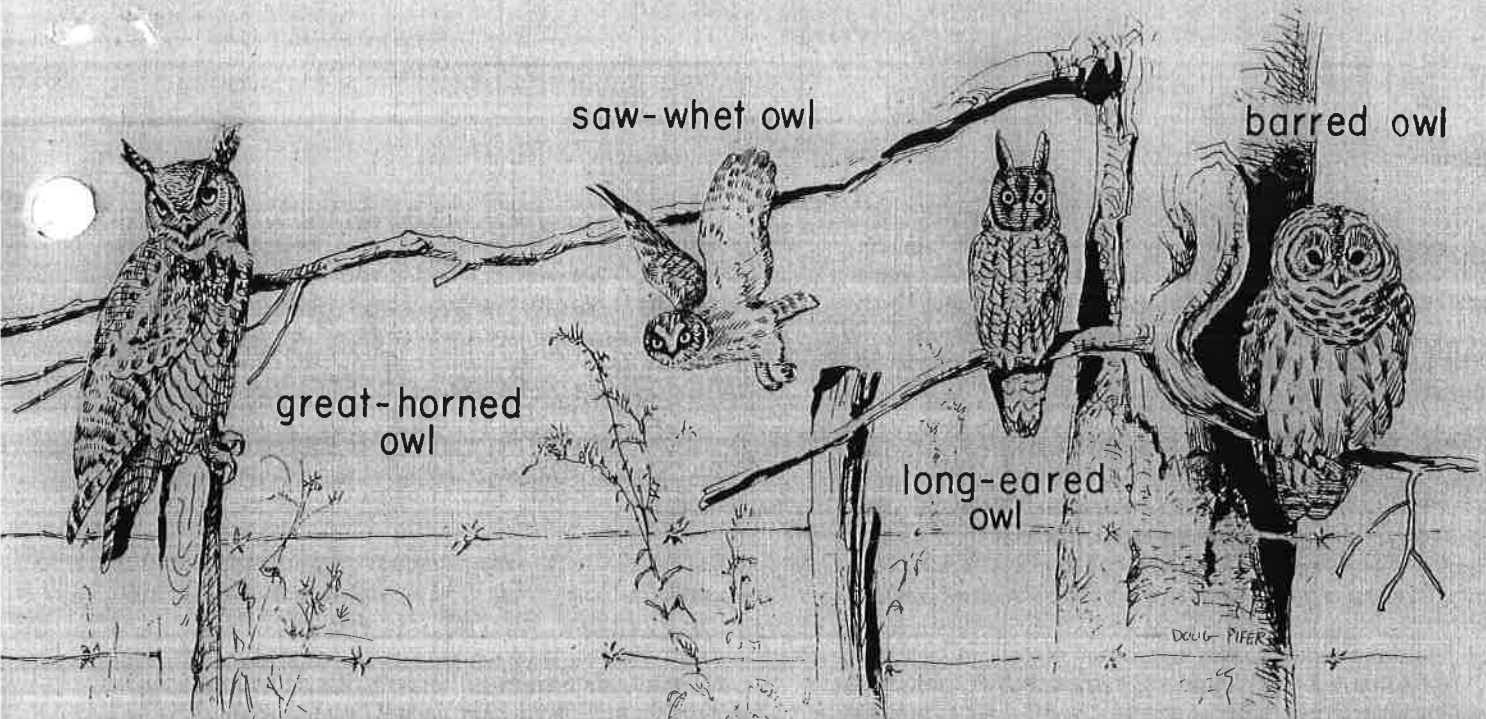
After the eggs hatch, both parents feed the young. Nestling barn owls can eat their weight in food every night. Young leave the nest at 9-12 weeks, after flight feathers develop.

Barn owls hunt open fields, flying low over the ground in search of prey. Ornithologists studied 200 disgorged pellets from a pair of barn owls that nested in a tower of the Smithsonian Institution Building in Washington, D.C. The pellets contained 444 skulls, including those of 225 meadow mice, 179 house mice, 20 rats and 20 shrews--all caught in the city. Other studies have confirmed mice and shrews as this owl's main prey items. Small birds, insects, flying squirrels and rabbits occasionally are taken.

Great Horned Owl

This large owl is sometimes called the tiger of the air; it is our fiercest, most powerful and aggressive owl. It weighs up to 3½ pounds, is 20-23 inches in length and has a wingspan of nearly five feet. Females are slightly larger than males. A great horned owl has soft brown plumage above, mottled with grayish-white; undersides of light gray barred with dark; a "collar" of white feathers on the upper breast; a rust-colored face; and prominent ear tufts, the so-called horns, up to two inches long.

The great horned is known as the hoot owl for its call, 3-8 (usually 5) deep, booming, uninflected hoots: *hoo-hoo-hoo hoo hoo*. These owls hoot to stake out territory and as part of the species' mating activity; which in Pennsylvania takes place in December or early January.



Great horned owls are believed to mate for life. They nest in crow, heron or hawk nests, tree cavities or hollow stumps and are the earliest nesters of all owls. A mated pair cleans debris from an appropriated nest, and the female then partly lines a central hollow with feathers. She lays two or three eggs at several-day intervals, usually in February, and may temporarily get covered with snow while incubating.

Horned owls, especially incubating or brooding pairs, defend nests and young viciously and have even attacked humans who got too close. Eggs hatch in about a month; nestlings are downy-white, weak and blind. The young cannot fly until they're almost three months old and contour feathers have grown.

Great horned owls prey on rabbits, wood rats, mice, birds, hares, domestic poultry, grouse, squirrels, smaller owls, foxes, skunks (this species' defensive spray apparently does not deter the great horned owl), domestic cats, weasels, muskrats...in short, most animals other than the large mammals.

Favored habitats are heavily forested land, large woodlots and remote wilderness areas; the species ranges over much of North America. Horned owls aren't often found in populated areas, apparently needing solitude for nesting. In Pennsylvania, the great horned owl is an uncommon resident in all seasons.

Snowy Owl

Rare and irregular visitors to the Keystone State, snowy owls show up mainly from November to January. If food is scarce on the arctic tundra, large numbers may migrate south. Population crashes of lemmings and hares--and the accompanying owl migrations--usually occur at 4- or 5-year intervals. Immatures, which are darker in color, go farther south than the adults.

Plumage of the snowy owl is white barred with grayish-brown; its feet and legs are heavily feathered. Full,

soft feathering keeps the bird warm during periods of inactivity between winter hunting forays.

The snowy owl is as large as the great horned owl, with a 24-inch body length, 60-inch wingspan and body weight up to five pounds. It is a bird of open fields--not woodlands--which resemble its tundra home. It often perches on a fencepost to look for mice, ground squirrels, wood rats, rabbits and hares. The snowy owl is crepuscular (most active in twilight) but is forced to hunt in the day during the long arctic summer, when darkness is almost non-existent. In Pennsylvania, the snowy owl continues these habits and often hunts during the day. It does not call south of its arctic breeding grounds.

Barred Owl

The barred owl is a large bird of the deep woods. It has a rounded head, no horns and brown eyes (it's the only brown-eyed Pennsylvania owl except the barn owl; all others have yellow eyes). The barred owl ranges over the eastern United States, its distribution often coinciding with that of the red-shouldered hawk.

A barred owl weighs up to two pounds, with a 44-inch wingspan and body length up to 20 inches. It has gray-brown plumage with white spots on the back; whitish or grayish underparts are barred with buff or deep brown, the barring crosswise on the breast and lengthwise on the belly.

The barred is the most vocal of our owls. Its hoots are more emphatic than those of the great horned owl's, but not as deep or booming. The barred owl's call is eight accented hoots, in two groups of four hoots: *hoo-hoo-hoo-hoo . . . hoo-hoo-hoo-hooaw* (described as "Who cooks for you, who cooks for you all?"). It usually calls early in the night, at dawn, and occasionally on cloudy days.

Barred owls almost always nest in hollow trees, laying 2-4 eggs that hatch in 28-33 days. Pairs may show strong attachment to the same nest area, returning year after year.

Long-Eared Owl

The long-eared is one of the most efficient mouse-catchers of the Pennsylvania owls. This slender, crow-size owl has long wings which make it appear larger in flight than it actually is; a long-eared has a 16-inch body length, a 40-inch wingspan and weighs about 11 ounces. This uncommon Pennsylvania resident gets its name from two prominent ear tufts.

While it looks a bit like a small version of the great horned owl, the long-eared can be told from its larger relative by a streaked belly--rather than barred--and closer-set ears. Like the great horned, the long-eared has a rusty face and grayish-brown plumage. The long-eared owl's call is a low, moaning, dove-like *hoo, hoo, hoo* repeated every three seconds or so.

Long-eared owls usually nest in dense conifers, frequently in old crow or hawk nests. Females lay 3-8 eggs (normally 4-5). Only the female incubates; incubation period is around 25 days, and the oldest owlet may be 8-10 days old when the last egg hatches.

Long-eared owls feed mainly on mice and shrews, occasionally taking birds, insects and frogs. They are probably the most nocturnal of our state's owls. Prime habitat is dense or open coniferous and deciduous forests.

Short-Eared Owl

Also called the marsh owl, the short-eared visits Pennsylvania mainly in winter. It is a crow-size owl (body length 13-17 inches, weight 15 ounces) with long wings (up to a 42-inch wingspan). Its upper plumage is streaked and buff-brown, with large buffy areas on the upper wing surfaces; the breast is pale, boldly streaked with brown. The short-eared owl's ear tufts are small and hard to see, but its ear openings are large and its hearing excellent.

The short-eared is fairly diurnal (active in the day). It hunts over open country, and its irregular, flopping flight resembles that of a nighthawk or large moth. The short-eared is a fairly silent owl but occasionally sounds an emphatic, sneezy bark, *keaw, keaw*, or a hooting call described as *boo, boo*.

At winter's end, most short-eared owls leave Pennsylvania and head north. Some remain in our state to breed, nesting in slight depressions in the earth or sand sparsely lined with grasses, weed stalks and feathers. Bushes or clumps of weeds often hide the nest. The female lays 4-7 eggs and incubates them about 21 days until they hatch.

Mice form over 75 percent of this owl's diet, but it also preys on shrews, rats and small birds. The short-eared depends mainly on its sense of hearing to locate mice. This owl avoids woodland; it is found in open country, fresh or saltwater marshes and boggy land.

Screech Owl

The screech owl is the only small Pennsylvania owl with ear tufts. It is 10 inches long, with a 22-inch wingspan and a 6-7 ounce body weight. The species is dichromatic, i.e. exhibiting two color phases--gray and red--independent of age or sex, consistent from first plumage to old age and frequently found in a single brood. Gray phase birds are a dappled brownish-gray; red phase individuals are chestnut-red, also dappled. The pale breast and belly are streaked with dark gray or chestnut, depending on the color phase. In Pennsylvania, the gray phase is probably ten times more common than the red phase.

A screech owl's call is termed a "quavering whistle," "mournful wail" or "long, descending whinny with tremolo, repeated at irregular intervals" (*huhuhuhuhu*, etc.).

Screech owls nest in unlined cavities of hollow trees, in abandoned holes of flickers and pileated woodpeckers and even in birdhouses. In March, the female lays 4-5 eggs; incubation takes 26 days. After hatching, young remain in the nest for one month.

Large insects such as grasshoppers, moths and beetles, mice, shrews, small birds, crayfish, frogs and flying squirrels form the screech owl's diet; most non-insect food is taken during winter. Screech owls hunt by flying low and swiftly over fields. Common in our state, they live in farm woodlots, orchards, stream edges and wooded areas of towns and cities.

Saw-Whet Owl

With a body length of eight inches and an 18-inch wingspan, the saw-whet is the smallest Pennsylvania owl. Its plumage is dull chocolate-brown above, spotted with white, and its undersides are white spotted with dark reddish-brown. Juveniles are a rich chocolate-brown over most of their bodies. This species has no ear tufts.

The saw-whet's call is a mellow, whistled note repeated mechanically, often between 100 and 130 times a minute: *too, too, too, too, too*, etc. This sound suggests the rasping made when sharpening a saw--hence the bird's name. The saw-whet is nocturnal and seldom seen. By day, it roosts in young, dense hemlocks or thickets.

Saw-whet owls breed from March to April; they nest in deserted woodpecker and squirrel holes, hollow trees or stumps and nesting boxes. Females lay 4-6 eggs that hatch after 21-28 days. Immatures leave the nest when about a month old. Saw-whets feed on insects, mice, frogs, bats, voles, shrews and small birds. In turn, they are preyed upon by barred and great horned owls.

Text reviewed by Dr. David L. Pearson, Assistant Professor of Biology, Penn State University.