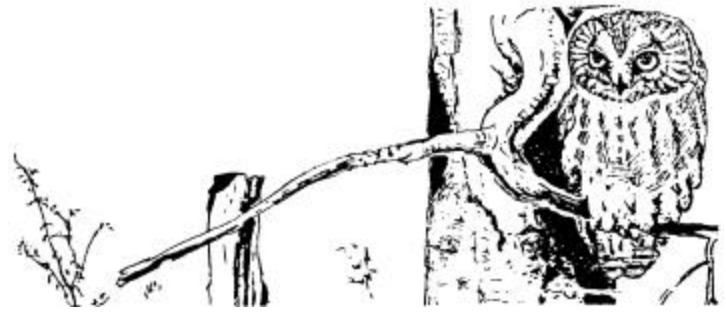


# Night Birds – Owls

Series 802



Owls have been a part of our history and have fascinated our imaginations for hundreds of years. Subject of many a myth and legend of the night, what is there about owls that intrigues us? What makes these birds of prey unique?

For one thing, owls are easy to identify. They look like nothing else but owls. Their nocturnal habits and distinctive appearance—large head, large eyes, short necks, soft feathers, chunky body—set them apart from other birds.

Owls do, however, come in a variety of shapes and sizes. Some, such as horned and screech owls, have noticeable ear tufts, while others, such as barred and short-eared owls, do not. One of the smallest owls is the elf owl, which is about 5 inches long, and has a wingspan of 15 inches. Found in our southwestern deserts, it lives in holes woodpeckers have drilled in saguaro cactus. In comparison, one of the largest owls is the great gray owl, which is up to 33 inches long with a wingspan of about 5 feet. Great gray owls live in the Rocky Mountains, and in the far north.

Owls differ in other ways, too. Each species of owl hunts in a certain type environment and preys on animals it is especially equipped to catch. In order to be successful at this, owls have developed special features. For instance, the little 11 inch burrowing owl, which lives in arid and treeless areas of our western states, has long legs and is adapted to the open desert where it can both fly and run over the ground hunting insects, mammals, and reptiles. Burrowing owls, which live in the abandoned burrows of prairie dogs, ground squirrels, and woodchucks can be seen during the day standing by their burrows.

We tend to think of owls as night hunters, but snowy owls—occasional winter visitors to West Virginia—hunt during the day, in accordance with their daylight hunting habits in the far north, where darkness is almost non-existent during the arctic summer. As winter visitors, snowy owls are found around open fields, again in accordance with tundra conditions where trees don't grow. Barred owls also

hunt on cloudy days, and at dawn and dusk, as well as at night.

Owls, as twilight and night (nocturnal) hunters, fill the ecological niche that hawks do as daytime (diurnal) hunters. Night feeding habits make owls especially valuable as they prey on rodents such as rats and mice active at night that escape predation by day.

Let's take a closer look at characteristics of owls that make them effective hunters.

**SPECIAL ADAPTATIONS FOR PREDATION**  
**Eyes and Ears:** Owls are well adapted for hunting and capturing prey at night. Their eyes are very large to allow them to see in limited light. Owls' eyes are also set close together in the head and face forward. This provides binocular, or three dimensional vision—that is, vision in which both eyes see the same scene, from slightly different aspects. This helps in depth perception.

Because their eyes are set so close together, owls have a narrow field of view, but this is compensated for by their remarkable ability to rotate their heads through about 270 degrees. A specialized set of muscles and 14 neck vertebrae provide this flexibility of movement. Owls can't swivel their eyes the way mammals do. Instead, they must turn their head and stare directly at an object. They are helped in doing this by their exceptional ability to rotate their head. This posture of staring directly at an object conveys a feeling of concentrated attention.

Owls supplement their excellent vision with equally exceptional hearing. Using their refined hearing, barn owls can capture prey in the total absence of light. Barn owls can perceive frequencies as high as 20,000 cycles per second, while 8,500 cycles per second is the highest available sound for humans. This acute hearing is made possible by adaptations in ear structure. Owls do not have small round ear openings, as do most birds, but instead have two long vertical slits in the skull. In many owls the two

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ear openings are actually different in size and shape from each other. The right ear opening may be higher than the left ear opening, and formed differently. These differences help the owl detect the distance and direction from which sound is coming more accurately.

In addition, the ear openings are surrounded by deep soft feathers, which the owl can move to control the size of the ear opening, thus enabling the owl to scan for sound, somewhat similar to the way mammals such as rabbits wiggle their ears. The forest which seems silent to the human listener, may to the owl be a chorus of nocturnal sound.

**Feathers:** Because this keen hearing would not be very useful if owls were noisy flyers and warned potential prey of their approach, owl feathers have special modifications in structure to allow silent flight. Owl feathers are long and soft, which helps eliminate noise. Also, the leading edge of their first flight feather has a soft, wavy edge, which reduces noise made by the passage of air over the wings. Owls are also lightweight and have a large wing area, which gives them a buoyant, effortless flight, and eliminates the need for noisy wing flapping.

**Toes:** Owls' legs and toes are usually covered with feathers, which helps add insulation in cold weather. Owls have four toes on each foot, and an owl may perch with either two toes forward, and two back, or with three forward, and one back, the way songbirds do. Owls strike prey on the ground or from the air with their powerful talons, and carry prey back to their roost and consume it.

**Sexual Dimorphism:** As is the case with most hawks and falcons, female owls are somewhat larger than males. This sexual dimorphism helps them exploit various food sources: the male owl can utilize his smaller size and ability to maneuver to catch smaller prey. The female is slightly stronger and can catch larger prey.

**Threat Displays:** Owls are efficient predators at the top of the food chain, but still must defend themselves against predators, including other owls. In the threat display pose, the owl lowers its head, and fans wings and tail. The extended wings and fluffed feathers make the owl appear threateningly large. Glaring eyes and bobbing head add to the ferocity of the threat display posture. If more action is called for, the owl can snap its bill by pulling the lower part of the beak under the hooked upper beak. Owls can hiss, also. The combination of threat display, bill snapping, and hissing, present a formidable aspect to a would-be attacker.

## BEHAVIOR

**Nesting:** Owls are not particularly efficient nest builders. Usually they appropriate an abandoned woodpecker hole or natural tree cavity, or an abandoned crow or hawk nest. Some owls begin nesting activities during the early winter months, and in West Virginia the great horned owl may begin courtship and nesting activities in January. An incubating horned owl may be coated with snow during a blizzard, but the long fluffy feathers of the owl keep the eggs warm. Barred and screech owls may also begin nesting activities in January and February. Owls are vocal during the nesting season, and may exchange courtship and territorial calls that both enhance the pair bond necessary to raise the young owls, and discourage other intruding owls.

There are reasons why nesting activities are begun so early. It takes owls a long time to grow up, Incubation requires about a month before the owlets emerge from the eggs. Owlets, covered with white down, are born (unlike hawks and eagles) with their eyes closed, and it may take two months before young owls can fly. Even then, the owl parents help feed the young until late summer and early fall when young have learned to hunt successfully on their own. It is perhaps necessary for the survival of these raptors that they begin nesting early enough so that the young owls will have the strength and hunting abilities to be well able to meet the demands of a harsh winter, or to migrate if necessary to find suitable habitat. Another reason for early nesting is that when the young owlets are hatched and especially as they grow, the food supply is increasing and becoming more plentiful with the return of spring.

**Young Owls:** Nestlings found in the same nest are different sizes. This is because the female starts incubation as soon as the first egg is laid, whereas most birds begin incubating only after all eggs are laid. As much as 2 weeks may elapse between the laying and hatching of the first and last egg. If the food supply is adequate, all the young owls will be fed by the parents.

## HOW TO LOCATE OWLS

**Owl Pellets:** Owls can sometimes be found by finding pellets, or castings, around nests or roosting areas. Owls regurgitate remains of their prey in the form of pellet, which (for a large owl) is a couple of inches long and is a grayish mass of bone, fur, and feathers. Pellets can easily be broken apart and the contents identified. Since owls have weak stomach muscles, pellets contain intact skeletons of the owl's prey, and the skeletons can be identified, thus

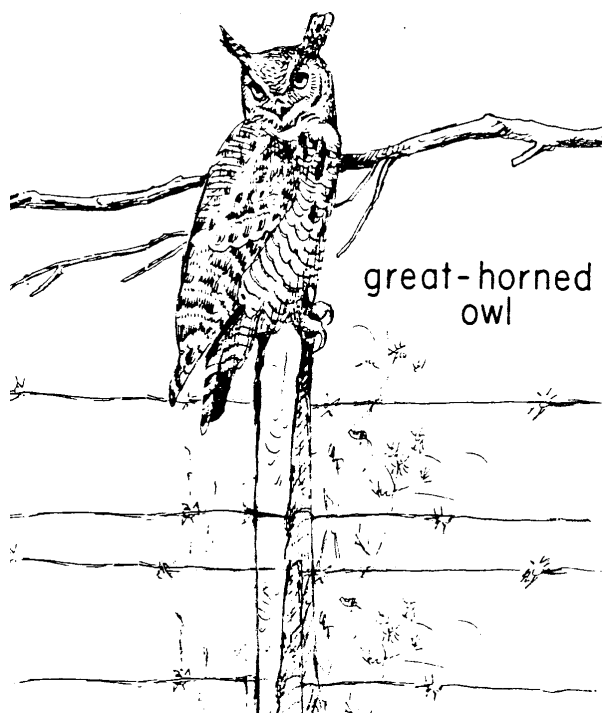
indicating the owl's diet. We know from examining pellets that owls consume many insects and rodents and thus serve as an important natural control on many pests.

In addition to pellets, owls can sometimes be located by imitating their calls, or the calls of small birds and other animals they prey on. A curious owl may come in fairly close to investigate the calls. Another way to locate owls is to observe the behavior of other birds. Crows and jays will mob or chase owls, thus giving a clue to the presence of the raptors. One reason for this mobbing behavior may be to warn other birds of the close proximity of a hungry owl.

### WEST VIRGINIA OWLS

Eighteen species of owls reside in North America; the greatest number occur in the northern part of our country where long nights and semi-darkness are suitable to this nocturnal hunter. Eight species of owls occur in West Virginia: great horned, barred, eastern screech, saw-whet, long-eared, barn, snowy, and short-eared.

The great horned, barred, and screech owls are fairly common in West Virginia and you might reasonably expect to hear or see them in an evening trek through the woods.



### GREAT HORNED OWL

**Range:** From boreal forests in Alaska to rain forests in South America; most widespread owl in western hemisphere.

**Description:** this is the common large "eared" owl, twice the size of a crow. Male, length to 23 inches, wingspan, 52 inches; female larger, length to 25 inches, wingspan to 60 inches. Ear tufts are prominent and widely spaced, dark gray-brown upper parts mottled with white-gray, white throat, and barred underparts. Eyes yellow. Call is distinct hoo, hoo, hoo; calls of male and-female are different in pitch. Flight speed to 40 mph. This is our fiercest and most aggressive owl.

**Habitat:** Woods, with suitable trees for nest and roost sites; can occur in city parks and suburbs.

**Nest:** Horned owls don't usually build or repair nests and often select a red-tailed hawk, crow, or squirrel nest to use for their own, or select a hollow tree; they will use a nest platform. Trees which offer cover, such as white pine, beech, or oak, where the leaves remain over the winter, are preferred.

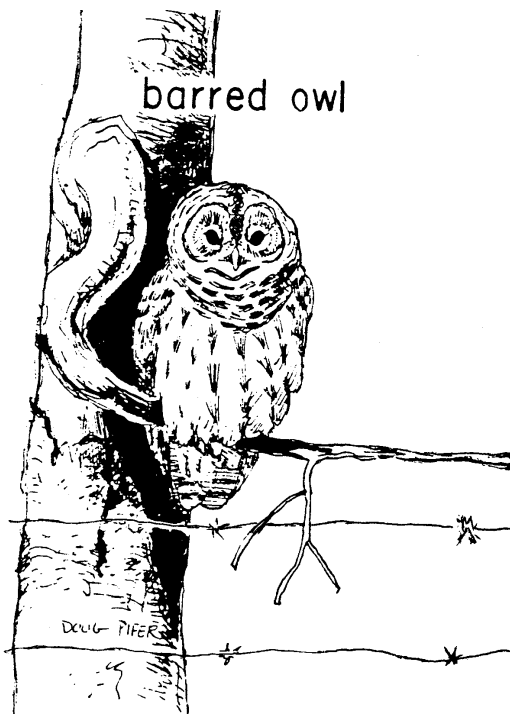
**Eggs:** Usually 2 to 3, but up to 6; color is white (all owl eggs are white). Incubation possibly by both sexes, 26 to 35 days.

**Young:** Young leave nest at about 5 weeks old, and fly 63 to 70 days after hatching. Parents continue to feed them for several months.

**Territory:** Given suitable habitat, including nest and roosting sites, adequate food supply and wooded areas, horned owls winter and nest in the same vicinity year after year. One or both adult birds maintain a home range, until one dies and the survivor attracts a new mate, or other owls move in. Owls may be paired in early winter; great horneds are thought to mate for life. Courting and nesting may begin in January. The owls select and defend a nesting territory close to or identical with winter hunting and roosting areas. The feeding range is usually within a quarter mile of the nest. Depending on available food and habitat, there may be one pair of owls per 6 square miles (open country and woods), or given more optimal habitat, 1 to 3 pair per square mile.

In captivity, one horned owl lived to be 29 years old.

**Food:** Rabbits, squirrels, mice, rats, woodchucks, skunks, opossums, snakes, bats, songbirds, crickets, grasshoppers, frogs, and fish. Horned owls will use a feeding roost near their nest site where larger prey will be torn up and eaten.



### BARRED OWL

**Range:** From Canada to Guatemala; eastern United States and Quebec to Florida.

**Description:** A large gray-brown "earless owl," length to 24 inches, wingspan to 50 inches, female heavier than male. Plumage is gray-brown, barred and spotted with buff, brown, and white. Eyes brown. Call is very distinct, a series of hoots that translates into "who cooks for you, who cooks for you-aa." East of the prairie states, one of the commonest owls of deep woods. These owls are quite vocal and can sometimes be heard in the late afternoon.

**Habitat:** Deep woods, but will hunt in open areas.

**Nest:** Hollow trees, or sometimes barred owls will appropriate an old hawk or squirrel nest, usually in densely wooded, wet areas.

**Eggs:** Usually 2 or 3. Incubation, 21 to 28 days, mostly by female.

**Young:** Young leave the nest at 4 or 5 weeks old, and fly about 42 days after hatching. They are probably fed by the parents during the summer. At about 4 months old, young still have juvenile plumage, but by early fall have full winter plumage.

**Territory:** These owls tend to be permanent residents in suitable habitat and may use the same nest spot and territory year after year. They may have a feeding roost or nest to which they carry prey. Courtship activities may begin in January; eggs are laid January to February.

Barred owls may come from 50 yards away in response to squeaking, mouselike sounds or distress calls.

In captivity, a barred owl lived to be 28 years old. **Food:** Mice, rabbits, red and gray foxes, flying squirrels, mink, opossums, shrews, bats, songbirds, smaller owls, snakes, snails, beetles, may go into water after fish.

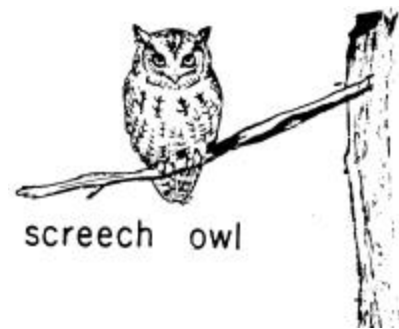
### EASTERN SCREECH OWL

**Range:** East of the Rocky Mountains

**Description:** This is a small, "eared owl." Length, 10 inches; wingspan, to 24 inches. It has 2 color phases, red and gray, not related to age or sex. Red phase is more common in the southern states. Primary feathers are barred, underparts white with streaks. White spots on wings sometimes visible. Toes are feathered. Eyes yellow. Call is plaintive trill, not a screech.

**Habitat:** Woods, orchards, towns, suburban areas.

**Nest:** Tree cavities in woods, orchards, usually 15 to 20 feet off the ground. Also nests in bird boxes and purple martin houses. Tolerates close human proximity.



**Eggs:** 3 to 7 eggs, but usually 4 or 5. Eggs are laid at intervals of 2 or more days. Incubation, about 26 days, usually by the female, male provides food.

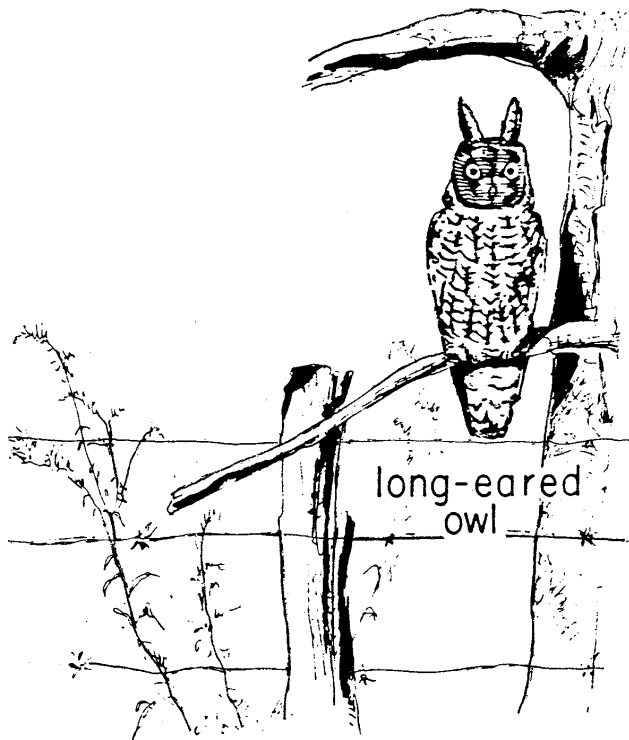
**Young:** Young are fed by the parents until they are 5 to 6 weeks old.

**Territory:** Males tend to maintain a territory for about 10 months of the year; size of the territory varies.

Males may be solitary, September to winter, or may be loosely paired in early winter. Courtship begins around February. The female may select one of the winter roosting cavities-usually there are 1 or 2 winter roosts-as a nest site. Screech owls tend to be permanent residents and occupy their home range in much the same manner as horned owls.

**Food:** Mice, insects (including cockroaches and beetles), cutworms, spiders, snails, reptiles, rats, bats, shrews, chipmunks, pigeons, lizards, earthworms. Screech owls drink water freely, like to bathe, and may bathe at night in backyard birdbaths.

The long-eared, saw-whet, barn, short-eared, and snowy owl do occur in West Virginia, but are not common.



### LONG-EARED OWL

**Range:** British Columbia and Quebec to Northern Mexico. In West Virginia, rare local permanent resident; may be winter visitant. Nesting records from Ohio River counties and other areas where there are pine thickets.

**Description:** This slender, crow-size owl, 16 inches long with a 40 inch wingspan, has ear tufts set close together and long wings that extend beyond the tail. The facial disk is orange-chestnut. Breast is brown gray with irregular white spots. Eyes yellow. Flight is buoyant and erratic, like a butterfly. The dove-like hoo, hoo, hoo call is repeated every 3 seconds or so. In breeding season, utters low-pitched hoots; also shrieks, whines; weck-weck-weck alarm note.

**Habitat:** Conifers and pine forests, usually in old crow or hawk nest.

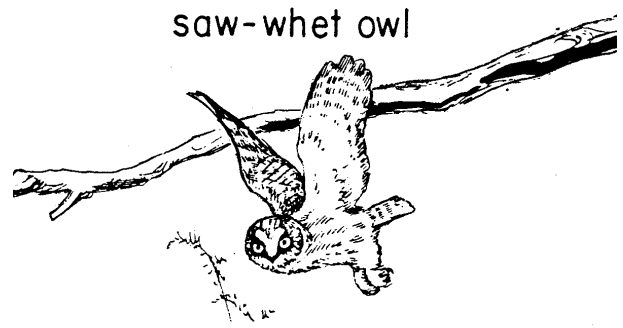
**Eggs:** 3 to 8 eggs; incubation, 25 days, by female.

**Young:** Young leave nest 23 to 26 days after hatching; fly when about 34 days old. Parent birds defend young with weird piercing screams and will try and lure an intruder away with the "crippled-bird" act. Frequently give threat display if disturbed at nest.

**Territory:** By day, these owls roost in dense groves, pines, or vine covered trees and thickets. They hunt over open ground and are mainly nocturnal.

In captivity, a long-eared owl lived to be 27 years old.

**Food:** Meadow and house mice, Norway rats, shrews, moles, bats, squirrels, rabbits, birds, insects, snakes.



### SAW-WHET OWL

**Range:** Resident from Alaska to Quebec and Ontario, California and Pennsylvania, winters to Carolinas and Mexico. In West Virginia, rare and local permanent resident and winter visitant. Breeding records from Cranesville Swamp, Preston County; juveniles have been seen in Pocahontas-Randolph counties, and at Morgantown.

**Description:** Smallest of the eastern owls, the saw-whet is 8 inches long with an 18 inch wingspan. Plumage is chocolate brown, spotted with white; Undersides are white-spotted with dark brown. Head, eyes, and facial disk are relatively large. It is the only tiny owl with NO ear tufts. Juveniles have a white triangular patch on the forehead. This bird is tame, for an owl, and can be picked up at winter roosts. Voice is a series of toots or whistles, 2 to 3 notes per second. The saw-whet call is heard during the breeding season.

**Habitat:** Dense woods, or swamps, prefers conifers.

**Nest:** In abandoned woodpecker or flicker holes, or natural tree cavity. Will nest in flicker sized nest boxes attached to large tree at edge of woods.

**Eggs:** 4 to 7; incubation by female, 38 days.

**Young:** Fly 27 to 34 days after hatching.

**Territory and Food:** Insects, small rats, birds, bats; hunts over areas where these prey species occur.

### BARN OWL

**Range:** Barn owls are found throughout the United States, primarily in warmer areas; they are especially numerous in California. In West Virginia, barn owls are uncommon permanent residents.

**Description:** Barn owls (family TYTONIDAE) are different from typical owls (family STRIGIDAE) in that barn owls have a facial disk that is triangular or heart shaped (not round), long legs, and inner edge on the claw of the middle toe is serrated. The barn owl is a light colored bird with a white, heart-shaped face, up to 20 inches in length; wingspan, 44 to 47 inches. Calls include a frightening array of hisses, snores, and whistles.

## barn owl



**Habitat:** Barn owls prefer open country to woods, and hunt with silent, mothlike flight over meadows, roads, barns, and buildings in towns and cities.

**Nest:** Eggs, usually 5 to 7, can be in barns, hollow trees, old buildings, silos, and church towers. Nesting is from March to May.

**Young:** Incubation is about 33 days; both parents feed the young, which can eat their weight in food every night. Young leave the nest at 9 to 12 weeks old.

**Food:** Mice, rats, shrews, small birds, insects, and rabbits.

### SHORT-EARED OWL

**Range:** One of the most widespread owls in the world, they occur on every continent except Australia. In West Virginia, a rare migrant and winter visitant. No known nest records in West Virginia, but does nest in Pennsylvania, and could possibly be found here.

**Description:** This crow sized owl-13 to 17 inches long, up to 42 inch wingspan-varies in color over its wide range, from brown to gray, and may have two color phases. Upper plumage is streaked and tawny or buff brown, with large buffy areas on upper wing surfaces; the breast is pale, boldly streaked with brown. Tawny facial disks have dark centers; eyes yellow. The small ear tufts are difficult to see. Appears big-headed and neckless in its buoyant,



moth like flight. The male performs spectacular aerial courtship displays and flies high, then swoops while clapping his wings together, concluding the display by a series of downward somersaults.

**Habitat:** Open areas including marshes, moorland, grasslands, fields, and tundra.

**Nest:** Nest is usually in a slight depression in earth or sand, lined with grass, weed stalks, and feathers, in a field or marsh. They may nest in colonies, starting in March.

**Eggs:** Up to 14, but usually 4 to 7. Incubation is by female, about 23 days.

**Young:** Fly about 36 days after hatching, and remain in vicinity of nest for around 42 days.

**Territory:** These owls roost on the ground, often in large colonies, and may also hunt over marshes and fields in large numbers, and hunt in afternoon as well as night. They avoid woodland, and prefer open lands and fresh and saltwater marsh.

**Food:** 75% of the diet of these owls consists of mice; also eat shrews and birds.

### SNOWY OWL

Snowy owls are inhabitants of Alaskan tundra. In West Virginia, they are occasional winter visitants. If prey is scarce on the arctic tundra, large numbers migrate south, in search of food, and a few may enter West Virginia. Snowy owls are nocturnal predators of open country. Large, with a 24 inch body length and 60 inch wing span, adults are white, barred with gray brown.

## snowy owl



### OWL HABITAT

Perhaps the greatest threat to owls is loss of habitat. Owls are adapted to live in certain environments and if a particular environment is disturbed, the animals and the nesting areas are also disturbed or destroyed and the wildlife dependent on such areas for survival may be threatened. Loss of habitat has in some cases resulted in lower owl populations.

Owl population can be decreased by illegal shootings, toxic substances, or by the removal of old trees which can create a shortage of nesting habitat.

Something can be done to help increase owl populations-screech owls in particular. Screech owls nest in urban and suburban locations where they prey on small mammals and insects. They get along well with human activity. But they do require nest cavities in trees-or if trees have been cut down, then putting up nest boxes in suitable areas can replace, lost habitat.

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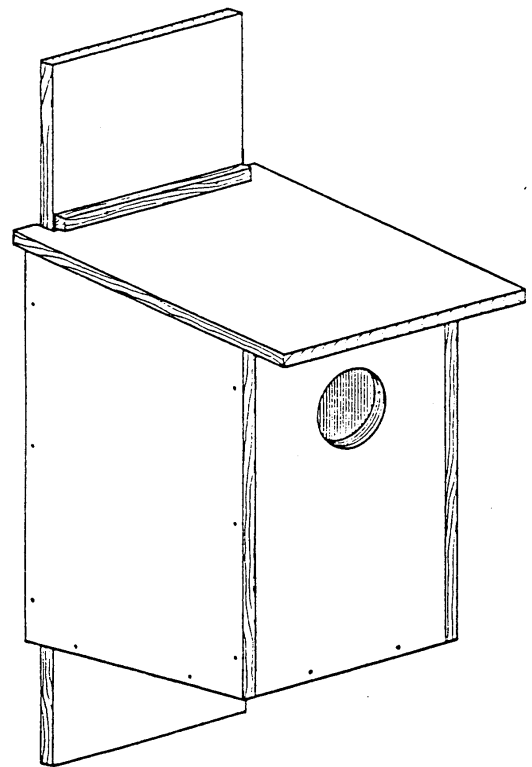
### PLANS FOR SCREECH OWL NEST BOX

The screech owl box should be:

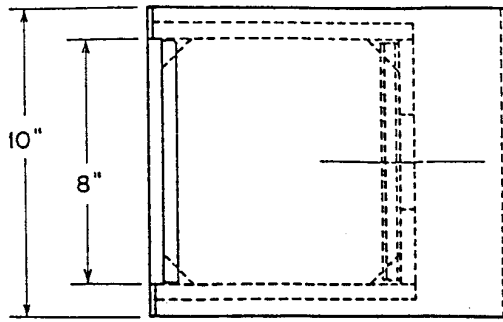
- built of fir (exterior plywood), or cedar, and not painted or stained unless absolutely necessary
- at least 15 to 20 feet up in the tree
- put in hardwood tree, only put in conifer if there are no obstructing branches
- easy for the owl to fly in and out; no obstructing branches
- facing away from prevailing winds
- put up no later than mid-January as screech owls begin courting and nesting in January and February; easier to put the boxes up in the fall when the weather is good
- cleaned once a year before nesting season (Squirrels will use the boxes and their nesting materials will discourage the owls.)

The male screech owl does not nest with the female owl. However, he does like to be nearby. Therefore, put up another box for him in a nearby tree. Screech owls prefer separate his and hers nest boxes.

If you do not wish to nail the nest box to the tree, then run strong wire through a hose and tighten the wire with turnbuckles. This will protect the tree.



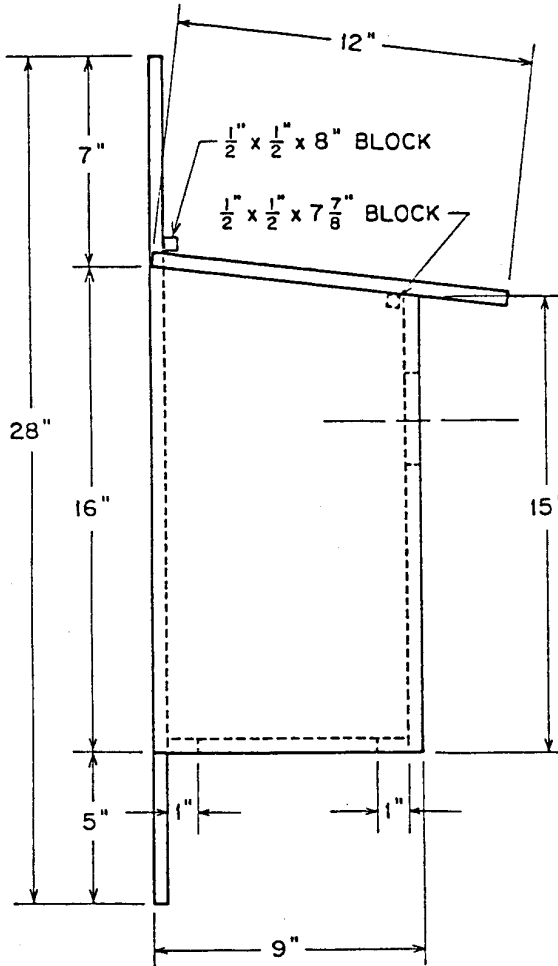
Plans for Screech Owl Boxes Designed by Michael Kridle, Drafting Specialist, Center for Extension and Continuing Education



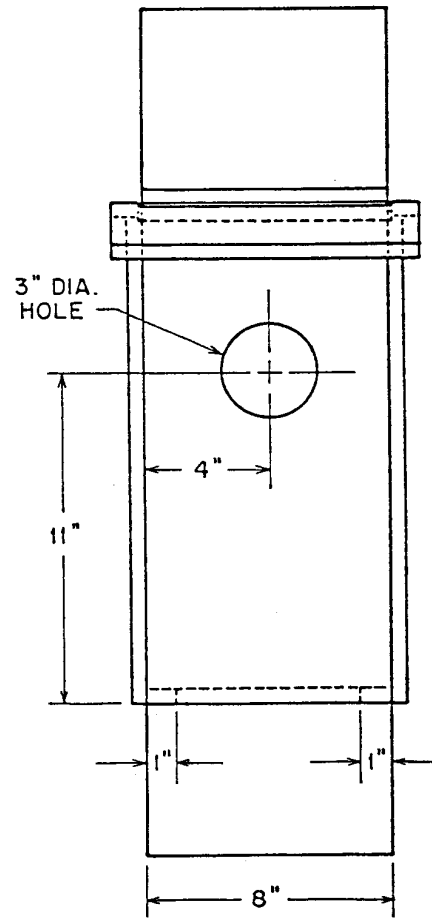
TOP VIEW

NOTES

1. BUILDING MATERIAL TO BE 1/2" EXTERIOR PLYWOOD
2. ROOF DESIGNED TO LIFT AND SLIDE FORWARD FOR EASY REMOVAL
3. CUT CORNERS OF BOX BOTTOM TO PROVIDE VENTILATION

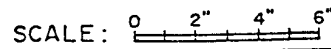


SIDE VIEW



FRONT VIEW

SCREECH OWL BOX DETAILS



Printing Cost 90¢

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