

Let's Pray for the Preying Birds

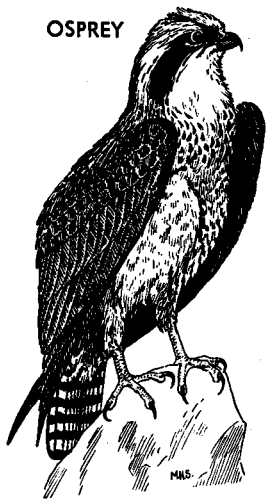
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Illustrated by Hope Sawyer



M.H.S.
BALD
EAGLE



OSPREY

SOME years ago, I attended a meeting of sportsmen where a collection of various birds of prey was displayed, completely surrounded by a great variety of hunting and fishing equipment. The man in charge explained that the equipment was for prizes to the sportsmen killing the greatest numbers of hawks and owls in a local "vermin" campaign. I asked if the hunters were advised to kill all hawks and owls and was told that only the harmful species would

count in the scoring, the dead useful birds being discarded.

Pursuing the subject, I asked the man in charge of the contest which birds of prey he considered harmful and which useful among those displayed before us. He pointed to a beautiful, huge, gray bird as one of the most useful—a goshawk, whose record may be seen in the accompanying charts. Asked which was a harmful species, he immediately pointed to a bird that the taxidermist showed attacking a pheasant. It was a species protected by law in the State. Yet, this man had set himself up as the arbiter of the



RED-TAILED
HAWK

fate of some of the most wonderful feathered creatures of his environment.

A few years later a Seattle paper gave display to a picture of an owl that had been shot near a game farm where the attendant said it was an enemy of the pheasants. It was a barn owl, killed by a state game official in a

state that protects the species by law. I examined its stomach and it contained not a feather, but was full of the bones and fur of small mammals mostly injurious to man's interests. Our preying birds need our prayers.

There are probably few groups of living things about which convictions are more set than the birds of prey. For generations, some farm families have been passing down the idea that the only good hawk is a dead one. For thousands of years men have trained hawks for falconry.

In the light of history, then, this article should summarize what the birds of prey should mean to the poet, the artist, the sportsman, the farmer, the fisherman, the student of biology, the student of folklore, the aviator, the lawyer, the minister, geographer, librarian and the Nature lover. These constitute a reasonable cross-section of our public in opinion and influence that should be unified to assure justice to our hawks.

Shakespeare, among the poets, mentions both hawks and owls. He even measures the love for a woman against the love some men have for their horses and falcons, with—

"Thy love is better than high birth to me—
Of more delight than hawks and horses be."



MARSH
HAWK



GOSHAWK

Scott, for all his gallantry, is not so complimentary to the ladies when he compares the apparent content of a captive peregrine with a dynamic dame. He says:

"We hold our falcon on our glove
But where shall we find leash or band

For dame that loves to rove."

Rupert Brooke in "The Great Lover" names "eagles" and "crying flames" as symbolizing the importance of certain things that he had learned to love, and now must leave.

Louis Fuertes, one of the greatest of our bird artists, loved the duck hawk above all other species. A hawk is often used by

artists to break the monotony of an open sky, and a dead tree stub is rarely pictured without a perching hawk or eagle.

Architects use eagles and other birds of prey as emblems of victory and of power. Those who design coins and stamps frequently use eagles, possibly as emblems of authority.

Probably the sportsman, fisherman and farmer take a more vigorous stand in their dealings with birds of prey than do most other citizens. For the most part, if they do not like something, they do their best to kill it; the guns of these people injure more birds

than do the words of the poets or the brushes of the artists.

In this discussion we must distinguish between the sportsman and the hunter. If we must make a distinction, we would have to consider the hunter as the man who kills without mercy, and the sportsman as the man who, on paper at least, gives the target a sporting chance.

Much has been written about the use of old-world hawks in falconry, and lately there has been a revived interest in this sport. One crack-pot proposal is for the capture and training of a thousand duck hawks that are to be trained to attack invading parachutists. Such a project would lead to nothing but the destruction of most of the nesting sites of these glorious birds.

A number of proverbs have used falconry as a theme. Among these, we find such expressions as: "Pride, like hooded hawks in darkness, soars"; "Hold fast, the first point in hawking"; and "With empty hand, no man should hawks allure."

The sportsmen and the hunters also differ on how hawks should be treated in the field. Aldo Leopold, in his *Game Management*,



COOPER'S
HAWK

advocates the killing of hawks and owls only under the most carefully controlled and selective conditions.

Some states, such as Pennsylvania, where hawks have been killed under a bounty system, have found it so expensive and ineffective that they have for the most part either abandoned it or so reduced the bounty that it offers little inducement to hunters who might shoot for financial profit. These same hunters are now in no small numbers trooping with the Nature lovers to Hawk Mountain Sanctuary merely to experience the joy that goes with observing a

h a w k

flight" in a protected area.

Bounty systems, coupled with the more voluntary "vermin campaigns" engaged in by the hunters and stimulated by the powder companies, defeat their purpose in a number of ways. Eaton's studies in New Jersey in 1931 showed that when the conspicuous hawks were shot off, their places were taken by the less conspicuous but usually more destructive types. In six years, the larger, more useful species of hawks in that state decreased 54 percent. At the same time the more destructive species increased 14 percent.

In spite of all the evidence collected through unbiased studies by the Federal government and by volunteer workers, powerful groups still press for destruction of birds of prey. Surely *they* are the enemies of wildlife and of a sound agriculture more than are the birds they seek to destroy.

Many of our hunters sanction a philosophy that calls for heavy shooting of species suffering from epizootics. The idea is that such a practice will eliminate the weak and permit the survivors to start with a clean slate. These are often the same people who would kill our birds of prey. Yet the birds of prey serve as excellent natural destroyers of the weak and of the cripples—victims of poor marksmanship on the part of the hunters. The birds of prey are more selective than the defenders of "heavy shooting" and, if there is anything to the philosophy, the birds of prey do exactly what these gunmen advocate, but do it more intelligently.

One might think that the closest relation between farmers and hawks and owls is the appetite of some birds of prey for chickens.



SHARP-SHINNED
HAWK



DUCK HAWK



RED-SHOULDERED
HAWK



SPARROW
HAWK

SNOWY OWL



Actually the important relation lies in the appetite of hawks and owls for mice and rats, the arch enemies of almost everything the farmer tries to raise. A swift glance through the food habits of these birds in the charts in this insert should convince anyone of their value in checking the multiplication of injurious mice.

Some species of hawks are of positive help to chicken farmers. An osprey, for example, will never kill chickens. It will not permit other species of hawks to nest in the territory it establishes as its home area. As a result, the osprey nest is a guarantee against hawk chicken killers.

The osprey also is involved in relationships between fishermen and birds of prey. This relationship can hardly be better expressed than in Alexander Wilson's "The Fisherman's Hymn", which runs:

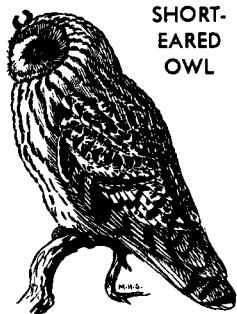
"She rears her young on yonder tree;
She leaves her faithful mate to mind 'em;
Like us, for fish she sails to sea,
And, plunging, shows us where to find 'em.
Yo, yo, my hearts! let's seek the deep,
Ply every oar, and cheerly wish her,
While the slow bending net we sweep,
God bless the fish-hawk and the fisher."

But the osprey has even more to hold our interest. Its weak cry sounds ridiculous from a bird of its size, but when we see one make a plunge for a meal, we watch breathlessly. There are authentic stories of ospreys being drowned by being dragged under water by a fish too large to be lifted.

After a bird has risked its life for a meal, it seems unfair that it might be forced to give it up by a larger bird. And yet this is what often happens when the osprey's territory is also within the domain of the larger and more powerful eagle. Those who have seen an eagle take a fish from an osprey cherish the experience.

For the most part, however, eagles are scavengers that feed on dead fish found along the shore. Most of the studies of the bald eagle emphasize this role of the bird. Selection of the eagle as our national bird must have been made because of its appearance in flight, but, whatever the reason, it is fortunate that it has protection. Even with this support, the range and numbers of the bird are probably

SHORT-EARED OWL



being lessened and there are and probably always will be powerful influences directed at continuing that limitation. When an eagle, or many eagles, are seen feeding on decaying salmon and the salmon "run" continues to drop from year to year, it is easy for some people to contend that the presence of the eagle is the cause of the decreased size in the run. Such logic overlooks entirely other influences such as overfishing by man. Laws have been passed to protect these birds but they must be enforced by an informed public opinion as well as by official police power.

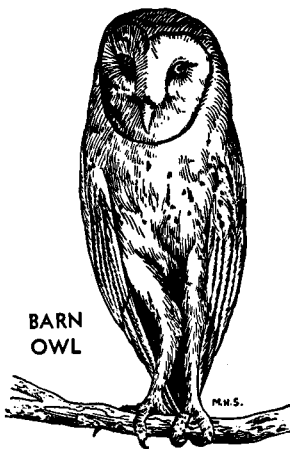
The legal profession has obligations in connection with birds of prey. There are national laws that deal with some of these birds and state laws that deal with others. A species that may be protected in one state may not be in an adjacent state into which it may migrate, and some of these birds migrate even between nations.

State's rights are all right, but state law makers are not equally well informed the country over. The Biological Survey and its successor the Fish and Wildlife Service for years collected data on the food habits of these birds. This information should be used to evolve a national and an international policy with regional modifications to fit different situations. This should call for united efforts of the legal profession and of the professional biologist.

If the lawyer has difficulty in applying laws to birds of prey, the clergyman has an even more difficult task in defining what his attitude should be towards the birds if he takes his *Bible* literally. In Leviticus, II, we find a rather general indictment of many birds of this group, most of which were declared to be unclean, and unfit for food, and "an abomination."

We find a more appreciative attitude towards hawks later in the *Bible*. In Job, we find the spirit of God directing the migrations of hawks when we read: "Doth the hawk fly by thy wisdom or stretch her wings towards the south?" When we read this, we know that some ancient must have witnessed, appreciated and marvelled at some autumn "hawk flight." The high and rapid (Concluded on p. 200)

BARN OWL



LONG-EARED OWL



GREAT GRAY OWL



COMMON NAME SCIENTIFIC NAME ORDER FAMILY	BALD EAGLE <i>Haliaeetus leucocephalus</i> Order Falconiformes. Family Accipitriidae.	RED-TAILED HAWK <i>Buteo borealis</i> Order Falconiformes. Family Accipitriidae.	RED-SHOULDERED HAWK <i>Buteo lineatus</i> Order Falconiformes. Family Accipitriidae.	MARSH HAWK <i>Circus hudsonius</i> Order Falconiformes. Family Accipitriidae.
DESCRIPTION	Male, length, 34 inches; wing-spread, 85 inches. Female, length, 37 inches; wing-spread, 90 inches. Weight, to 11.5 pounds. Female, larger than male; young, often larger than adults, nearly black, without white head, neck and tail, which is characteristic of the adult. Conspicuously white and brownish black.	Length, to 2 feet; wing-spread, to 56 inches. Weight, to 4 pounds. Heavy appearing, with broad wings. Tail of adult, red above and little rounded. Dusky gray above, with lighter wings; yellow white, beneath. Band across belly, brown-streaked. Appears less uniformly colored from beneath than red-shouldered. Male, smaller than female.	Length, 23 inches; wing-spread, 44 inches; tail, 9.7 inches. Female, often larger than the male. Weight, to 3 pounds. Gray brown, with reddish brown underparts. Reddish shoulder feathers, and tail with 4 or 5 cross bars. Appears uniform from beneath but shows a white spot just behind a dark streak, near wing-tips. Young streaked beneath.	Male, length, 20 inches; wing-spread, 45 inches. Weight, 1 pound. Female, length, 24 inches; wing-spread, 54 inches. Weight, 21 ounces. Adult male, light blue-gray back, with black wing-tips, conspicuous white rump, high wing angle, and long tail and wings. Adult female and immature, brown above; beneath, buff, streaked with brown.
CLASSIFICATION AND RANGE	Range of two subspecies: breeds through Alaska to Ungava and south to British Columbia and the Great Lakes. Winters, south to Washington and Connecticut. Southern subspecies winters and breeds through United States, to southern Lower California and central Mexico. Known from Pleistocene.	Breeds from southeastern Canada through United States to northeastern Mexico in the plains, merging with western species which ranges through United States and north to tree line in Canada. Winters, from Kansas to New York and south through eastern Mexico; occasional, in England. Known from Pleistocene of Florida and California.	Breeds from Nova Scotia to Prince Edward Island and south almost to Gulf of Mexico, with other close relatives extending range into Mexico. Winters in above range and on into Mexico. Usually seen soaring high and slowly, or on some conspicuous high perch near the open.	Breeds, from northeastern Siberia to Prince Edward Island, south to northern Lower California, and to Florida. Winters southern British Columbia and southern New England south to Florida, Cuba and Colombia. Also in Hawaii and the Barbados. Known from Oregon and California Pleistocene.
LIFE HISTORY	Courting male loops in air before female and chases her. Nest, huge pile of sticks, added to each year, in tall tree or on high ledge. Eggs, 3 to 4, buff white, with brown and cinnamon spots, 2.12 by 1.16 inches. Incubation, by both parents, for about 35 days. Young, blind, downy and helpless, when hatched. One annual brood.	Courts by soaring and calling, begins in February. Mates for life. Nest, of coarse sticks thrown together, 30 to 40 feet above ground in tree, or on cliff. Eggs, 2 to 4, dull white, irregularly marked with cinnamon brown, 2.50 by 2 inches. Incubation, 28 days, by female. Young, blind, slightly downy, helpless when hatched. One annual brood.	Nest, bulky pile of sticks, used year after year, in tall pine, elm, birch, maple or beech. Eggs, 3 to 5, dingy or bluish white, with brown spots, 2.15 by 1.65 inches. Incubated, by female, 27 to 28 days. Young, blind, slightly downy, and helpless when hatched; assume adult plumage by 18 months. Young with tail-bars less clear.	Male, courts by soaring high, followed by tumble and rattling screech. Nest, on ground, in marshes and made of twigs and grasses. Eggs, 4 to 6, dull, bluish white, 1.75 by 1.4 inches. Incubation, by both parents, begins before full set is laid, normally 26 to 31 days. One yearly brood. Young, blind, helpless when hatched, getting mature plumage by 2 or 3 years.
FOOD AND ENEMIES	Food; animal matter, often carrion and old fish. Stomachs of 80 showed: 35, with wild vertebrates; 12, with poultry. It is in some ways a scavenger. Unable to lift anything weighing over 15 pounds. Soars majestically, high in air. Young, get white feathers of head and tail, in fourth or fifth year, when they mature.	Food; mainly mice, rabbits, insects and snakes. Individuals may develop chicken-killing habit when other food is not available. Poultry and game constitute probably not over 10% of total food. One of the most valuable checks on mouse infestations and the name "hen-hawk" is a most unfortunate and inappropriate misnomer. Temperature, 106° F.	Food; about 65% mice, and other small ground animals; rarely poultry, though this is one of the so-called "hen hawks" so commonly killed as vermin. Of 444 stomachs examined, 287 contained mammals; 7, poultry or game; and 25, other birds. When mice and ground squirrels are abundant, a surplus may be piled around nest with the young.	Food; animal matter. Stomachs of 418, showed 250 contained mammals; 176, other birds; 11, insects; 10, poultry or game. This is the "marsh harrier" which flies, alternately flapping wings and soaring, back and forth, relatively close to the ground. Call, a screeching, "cac, cac, cac," in breeding area, from March to November.
RELATION TO MAN	This is our national bird. As such, and because of its generally harmless nature, is protected by national law and specifically by many states as well. Individuals may uncommonly develop habit of killing sheep and young pigs. Most reports of depredations are probably false. Provides a thrilling sight in flight.	Essentially useful species, except possibly around game farms. Protected by law in many states; should be in all. A shy hawk, but has habit of perching in a conspicuous place from which it may be shot easily. In flight, shows conspicuous white area on breast, with streaks to rear, and unbanded tail in adult.	Possibly most useful mouse and rodent destroyer of all hawks, therefore one of most useful species to man, though one of those most tormented. Numbers of hawks increase with numbers of mice and ground squirrels usually unless they are shot off. This species is protected by laws in 24 states and should be everywhere.	Divided about equally, as a useful species and as a destroyer of other useful species. It is rarely injurious to poultry; commonly a great destroyer of mice, but at all times an interesting bird to watch. It is protected by law in many states. Conspicuous enough with white rump to be recognized by most people as being different from other hawks.

GOSHAWK <i>Astur atricapillus</i> Order Falconiformes. Family Accipitriidae.	COOPER'S HAWK <i>Accipiter cooperi</i> Order Falconiformes. Family Accipitriidae.	SHARP-SHINNED HAWK <i>Accipiter velox</i> Order Falconiformes. Family Accipitriidae.	DUCK HAWK <i>Falco peregrinus</i> Order Falconiformes. Family Falconidae.	SPARROW HAWK <i>Falco sparverius</i> Order Falconiformes. Family Falconidae.
<p>Length, 22 inches; wing-spread, 44.5 inches; tail, 10 inches; wing, 13 inches. Weight, to 4 pounds; female, larger. Tail, gray- or white-tipped. Wings, with 4 or 5 dark bands. Upper parts, bluish slate. In flight, appears like a short-winged, long-tailed, blue-gray hawk, with light gray breast; larger than a crow. Young, brown instead of slate.</p>	<p>Length, to 20 inches; wing-spread, to 3 feet. Female, much larger than male. About size of crow, but more slender. Tail, long, distinctly rounded, as contrasted with square-tipped tail of smaller Sharp-shinned Hawk. Wings, stubby. Flight, alternate flapping and sailing. Average Cooper's, weighs twice average female Sharp-shinned.</p>	<p>Length, to 12 inches; wing-spread, to 23 inches; tail, 7 inches. Female, slightly larger, with length to 14 inches. Weight, male, 3.5 ounces; female, 8.25 ounces. Larger and slimmer than Sparrow Hawk or Pigeon Hawk. Tail, long, slender and <i>square-tipped</i>, rather than rounded as in the larger, longer-winged Cooper's hawk.</p>	<p>Male, length, to 18 inches; wing-spread, 43 inches. Female, length to 20 inches; wing-spread, 46 inches. Female larger than male. Tail, with 6 or more, narrow, black bars; almost pointed. Lower half of head, conspicuously black and white. Male, with browner face and more conspicuous tail-bars. Contrasts of black and white on face, conspicuous.</p>	<p>Male, length, 10.6 inches; wing-spread, 22 inches. Female, length, 12 inches; wing-spread, 24.5 inches. Weight, 4 ounces. Female, usually larger than male. Crown, ash-blue; conspicuous black patch on side of head. Back, chestnut or cinnamon and black-barred. Tail, bright red-brown, with narrow black bars. Only small hovering hawk.</p>
<p>Woods or in open. Breeds, from northwestern Alaska to northern Ungava, and south to New Mexico and Pennsylvania. Winters, in southern part of nesting range and south to Virginia, Texas, northern Mexico and southern California. Also in Idaho, Arizona, Florida, and Ireland and England occasionally. In California Pleistocene.</p>	<p>Breeds, from southern British Columbia, to southern Quebec and south to northern Mexico. Winters, from southwestern British Columbia and Washington to California, New York, southern Maine to Costa Rica. Active, in daytime, following the migrations of smaller birds and taking its toll of them.</p>	<p>Breeds, from northwestern Alaska to Newfoundland and south to northern Florida and southern British Columbia. Winters, from southeastern Alaska to New Brunswick and south to Panama and Guatemala. Related races in Cuba, Haiti and Porto Rico. Known from Pleistocene of California. Essentially, a woodland species.</p>	<p>Breeds, from Alaska to central Greenland, and south to central Lower California, Texas, Tennessee, Pennsylvania and Connecticut. Winters, from Vancouver Island to southern New York, and south to California and Panama. Occasional in England and South America. Known from the Pleistocene of California.</p>	<p>Four subspecies; include the Eastern, the Desert, the San Lucas and the Little Sparrow Hawks. Breeds, from upper Yukon to Newfoundland and south to California and Lower California and Florida. Winters in southern part of range and on to Panama and Mexico. From Florida and California Pleistocene.</p>
<p>Nests, in large tree. Nest, a huge pile of sticks. Eggs, 3 to 5, white or pale blue, 2.3 by 1.7 inches. Incubation, by female, about 28 days. Young, at first blind, naked and helpless, eating animal matter from the first. Assumes adult plumage by 1.5 years, but is not fully mature until autumn of third season. One brood a year.</p>	<p>Nests, usually in tall tree. In low-tree country, may nest on ground. Nest, a loose pile of coarse sticks. Eggs, 3 to 6, pale, bluish white, often brown spotted, 1.5 by 1.9 inches. Incubation, by female, 24 days. Young, blind, slightly downy, and helpless when hatched but soon covered with gray down; molts similar to those of Sharp-shinned.</p>	<p>Nest, usually high in tree, of loose sticks, about size of crow's nest, about 6 inches deep; sometimes bark-lined. Eggs, 3 to 6, bluish white to cream, spotted with chocolate, 1.55 by 1.2 inches. Incubated, 21 days, by female. Young, downy, blind, helpless, when hatched, assuming adult plumage in 2 years. One brood a year.</p>	<p>Mates, as early as March. Nest, on a high ledge or in a tall, hollow tree, made of sticks. Eggs, 3 or 4, buff to reddish brown, 1.7 by 2.1 inches. Incubation, by both sexes, 28 days. Young, white, downy and helpless when hatched. Adult plumage assumed gradually, after the first winter, when juvenile plumage is molted.</p>	<p>Courting male, hovers over mate and dives. Nests, in bird house or hollow tree. Nest, chip-lined or bare. Eggs, 3 to 7, white to brownish, with finely shaded areas, 1.4 by 1.12 inches. Incubated, by both sexes, 29 to 30 days. Young, blind, downy and helpless when hatched, but attain adult plumage when about 18 months old. Probably mates for life.</p>
<p>Of 881 stomachs examined, 441 contained poultry and game; 233, mammals, largely mice; 49, other birds. Usually wait in some tree or thicket where it is inconspicuous and flies suddenly into open to attack prey which is caught so quickly that frequently, slower flying, more conspicuous species get the blame. Active in day time.</p>	<p>Food; largely birds. One of worst enemies of small birds and poultry. Of 422 stomachs examined, 78 contained game birds and poultry; 146, other birds; 65, mammals; 6, other animals. Powerful enough to kill ducks, rabbits and grouse. Call, a "cuck, cuck."</p>	<p>Food; largely birds and insects. Over 1000 stomachs examined showed, 884 containing other birds; 16, poultry; 45, insects; and 28, mammals. Known to kill large numbers of grasshoppers and moths. Brave, in attack, even on larger birds. Flight, with quick wing beats and alternate sailings. Call, a repeated, "quee."</p>	<p>Food; animal matter. Of 102 stomachs, 70 contained other birds; 11, poultry; 12, insects. These are all caught by pursuit in a truly phenomenal manner which wins admiration for the bird by most bird lovers. Prey caught by dropping from great height with incredible speed or outflown and outdodged. Flight speed, 200 (?) miles per hour.</p>	<p>Food; principally mice and insects. Of 427 stomachs examined, 147 contained mammals; 69, birds, mostly sparrows; 269, insects; 29, spiders; 13, reptiles or amphibia; and 29 were empty. One contained remains of a bobwhite which may have been a wounded bird. The young birds remain in the nest about 3 weeks.</p>
<p>Probably the most destructive of hawks. Pennsylvania, with a \$5 bounty, killed 80 in 1929, and 1,090 in 1937 demonstrating ineffectiveness of bounty system. Goshawks are protected in 10 states and they seem to increase as the more valuable and more conspicuous species are killed off by ill-advised "vermin" campaigns.</p>	<p>Possibly, best entitled of all hawks to title of "vermin" and is not usually protected by law. Still it probably serves a rôle in eliminating weak and wounded birds and mammals but usually because of its sly ways lets other species pay for its sins.</p>	<p>Not protected by law ordinarily but probably is less destructive than is assumed by many. Profits by "vermin campaigns" against more conspicuous hawks by having competition removed. Probably, may be considered as "vermin" if the name must be applied to so small a bird.</p>	<p>Food habits make it unpopular with many sportsmen but very popular with sportsmen who follow falconry because this is a most important bird for use in this sport. Male is called a "tiercel," or "thirdling" implying that the third egg produces a male. Protected by law in at least 15 states. Temperature, 106° F.</p>	<p>Undoubtedly, a useful species; destroys large numbers of mice and insects. Makes an excellent pet but a license to keep them captive is necessary in many states. It is protected by law in 23 states. Not "vermin" in any sense. Our representative of the European "kestrel." Temperature, 107° to 108° F.</p>

COMMON NAME SCIENTIFIC NAME	OSPREY <i>Pandion haliaetus</i> Order Falconiformes. Family Pandionidae.	BARN OWL <i>Tyto alba</i> Order Strigiformes. Family Tytonidae.	GREAT GRAY OWL <i>Scotiaptex nebulosa</i> Order Strigiformes. Family Strigidae.	GREAT HORNED OWL <i>Bubo virginianus</i> Order Strigiformes. Family Strigidae.
DESCRIPTION	Length, to 24.5 inches; wing-spread, 72 inches. Female, larger than male, but less difference than in most hawks. Weight, male, to 3 pounds, 4 ounces; female, to 4 pounds, 10 ounces. Dark brown above, sometimes with white on top of head, but not on back of neck; usually, white below. Wings appear bent in flight. Hovers and plunges feet-first.	Length, to 21 inches; wing-spread, to 47 inches; tail, to 7 inches. Weight, female to 24 ounces; male, to 20 ounces. In pairs, female usually larger but not always. Lightest colored of our owls, with face like a great white heart. Sexes colored alike. Young, like adults even in juvenile plumage. Temperature, 103° F.	Length, to 33 inches; wing-spread, to 60 inches; tail, to 15 inches; bill, to 1.75 inches. Weight, to 2 pounds, 14 ounces. Largest of our owls. Marked much like the Barred Owl, but with no conspicuous cross bandings on breast and with eyes yellow rather than nearly black. No ear-tufts. Size and round head usually sufficient identification.	Length, to 23 inches; wing-spread, to 52 inches; tail, to 9 inches; bill, to 1.6 inches. Female, length 25 inches; wing-spread, 60 inches. Weight, male, 3.5 pounds; female, to 4.5 pounds. Conspicuous, feathered ear-tufts, powerful talons and beak. Great round, yellow eyes. Feathers, loose; flight, quiet. Temperature, 105° F.
CLASSIFICATION AND RANGE	The single species breeds, from northwestern Alaska to Labrador and Newfoundland, south to Lower California and Florida Keys. Winters from Florida and Gulf States through Lower California, Mexico, Central America and in Peru, Chile, Paraguay, Greenland, Europe, Asia, Australia through closely allied species. Known from Florida Pleistocene.	Resident from Washington to New York and south to southern Mexico, Nicaragua and the Gulf States. Of occasional occurrence in British Columbia, Manitoba, Minnesota, Ontario, Vermont and Massachusetts, with allied races in Europe, Asia and the West Indies and elsewhere.	The typical great gray owl breeds from north central Alaska tree-limit to Ontario and south to central California and probably to Utah, and winters through southern Canada south to New Jersey. Lighter colored individuals taken in western Alaska are referred by some to a migrant race from Siberia.	Ten subspecies occupying most of wooded North America include, besides the typical form, the Arctic, the Labrador, the Montana, the Saint Michael, the Northwestern, the Dusky, the Pacific, the Western, and the Dwarf. Horned owls known from Pleistocene of Oregon and California. Birds move south in winter, the Arctic form even to New York.
LIFE HISTORY	Nests, year after year, in same site, adding to old nest on pole, tree or ground, to make huge pile of coarse sticks. Eggs, 2 to 4, dull white, or buff, with chocolate-brown markings, 2 by 2.45 inches. Nest defended by both parents. Incubation, chiefly by female, 28 days. Young, blind and helpless, when hatched require 18 to 30 to mature.	Breeds in hollow trees, banks, towers, deserted buildings, but makes no nest. Eggs 5 to 8, or even 11, chalky white, or tinged with yellow, 1.97 by 1.5 inches; more pointed than usual owl egg. Incubation, beginning with the first egg laid, 21 to 24 days or longer, mostly but not solely, by female. 1 or 2 broods.	Nests usually over 20 feet up, in tall tree. Nest of sticks, plant or feather-lined. Eggs, 3 to 5, white, smooth, 2.3 by 1.8 inches. Incubation, by female, for unknown time. One annual brood. Young, downy and helpless when hatched, brownish white, but darker across upper parts. Young, hatched in April, appear like adults by October.	Nests in gorges, in caves or in heavy timber, rarely in hollow trees, but more commonly by remodelling nest of crow or hawk. Eggs, 2 to 5, dull white, granular, 2.3 by 2 inches. Incubation, by both sexes, for from 21 to 30 days. One annual brood. Young, downy white when hatched, but apparently adult by first winter.
FOOD AND ENEMIES	Food fish only; never takes birds, and so is desirable about poultry yards as it drives away species that might do so. Catches fish by spectacular plunge, and may be robbed of its meal by the more powerful eagles. Sometimes drowns when it becomes attached to fish too large to be lifted. Individuals cooperate against enemies.	Family of 7 young owls requires daily or nightly 150 rats, mice or other small mammals. One half-grown owl known to eat 9 mice one after another, though the tail of the last could not be downed. Stomachs of 39 showed; 17, with mice; 17, with rats and other small mammals; 4, with insects.	Food consists largely of mice, rabbits, and small birds. Of 9 stomachs examined, contents showed 7 with mice; 4 with other mammals; 1 with a small bird. Other reliable reports show that northern hares and red squirrels are commonly taken; one had eaten 13 redpolls, and another killed and carried away a domestic fowl.	Food; a variety of small animals, particularly rabbits and rats. Of 127 stomachs examined, 13 had mice; 65, other mammals; 31, poultry; 17, were empty; 10, insects; 1, fish; 1, scorpion; 8, other birds. One nest had 113 freshly killed rats on it. Animals are swallowed head first.
RELATION TO MAN	Entirely useful to poultrymen and of little damage to interests of fishermen. Guides fishermen to good fishing grounds and so helps them. Few records of osprey doing any damage to game. Protected by law in at least 28 states and worthy of further protection. A thing of beauty over any large body of water.	Probably the most useful of all wild birds as an enemy of rats and mice and should be protected at all times; illegally sold in pet shops as "monkey-faced owls" even though in the same state it may be illegal to keep barn owls in captivity.	This owl is not as aggressive as the Great Horned Owl. Considering that the great gray is found mainly in wild places, one must conclude that the general statement that owls are the most beneficial of all birds probably applies to this species.	Of neutral value in a wilderness area, since it lives on animals, and on their enemies as well. About game farms, and about poultry yards, it may well be a menace not only to the species being raised, but to the rats that prey upon them, as well as on the weasels that may prey upon the rats.

BARRED OWL <i>Strix varia</i> Order Strigiformes. Family Strigidae.	SNOWY OWL <i>Nyctea nyctea</i> Order Strigiformes. Family Strigidae.	LONG-EARED OWL <i>Asio wilsonianus</i> Order Strigiformes. Family Strigidae.	SHORT-EARED OWL <i>Asio flammeus</i> Order Strigiformes. Family Strigidae.	SCREECH OWL <i>Otus asio</i> Order Strigiformes. Family Strigidae.
<p>Length, to 24 inches; wing-spread, to 50 inches; tail, to 10 inches; bill, to 1.5 inches. Weight, to 2 pounds. Female, averages heavier than male. A large, gray "earless" owl, with bars cross-ways on the breast, and streaks lengthwise on the belly. Eyes, large, nearly black. Feathers, loose and fluffy.</p>	<p>Length, to 27 inches; wing-spread, to 66 inches; tail, to 10.5 inches; bill, to 1.6 inches. Weight, female, to 5 pounds; male, smaller. Pure white, or with reddish brown or grayish brown fleckings on the feathers. Female, with more dark markings than male. Young, even darker. Legs, well feathered. Eartufts, lacking.</p>	<p>Length, to 16 inches; wing-spread, to 42 inches; tail, to 6.5 inches; bill, to 1.1 inches. Eye, yellow. Appears about the size of a crow, or like a small great horned owl with lengthwise streaks rather than cross bars. Grayer than short-eared owl, which it otherwise resembles in flight. Weight, 11 ounces; female, the larger. Temperature, 103° F.</p>	<p>Length, to 17 inches; wing-spread, to 44 inches; tail, to 6.6 inches; bill, to 1.2 inches. Weight, female, 13 ounces; male, 17.5 ounces. Slightly smaller than crow, with shorter "horns" than Long-eared Owl; generally lighter and more yellowish. Chiefly, white undersides; wings and tail, dark. Call, a "toot, toot, toot" and high pitched shrieks.</p>	<p>Length, to 10 inches; wing-spread, to 24 inches; tail, to 3.7 inches. Female, weight, to 7 ounces; male, to 6 ounces. Two color phases, a gray and a reddish, each with feathered ear-tufts and generally streaked plumage, which is loose and easily fluffed to make bird appear unnaturally large. Eyes, large, yellow and round.</p>
<p>Three subspecies recognized, the Northern, the Florida and the Texas. The species breeds from central Alberta to Newfoundland and south to Florida and Texas. Found in fossil form in the Pleistocene of Florida.</p>	<p>Breeds from Bering Sea to Greenland, and south to central Mackenzie and northern Ungava; also, in northern Russia and Siberia. Winters, from the Arctic coast south, even to Georgia and California. Found also in Germany, Russia, Scotland and the Shetland Islands.</p>	<p>Breeds from central British America to Newfoundland and south to southern California, northern Texas and Virginia. Winters, from southern Canada to Florida and central Mexico. Prefers evergreen forests, but may live anywhere, particularly in migration. Rarely seen doing daylight hunting. Found in California Pleistocene.</p>	<p>Breeds from northern Alaska to Greenland and south to California and New Jersey; also in Europe and Asia. Winters, from British Columbia to Massachusetts and south to Cuba and Guatemala. Known from Pleistocene of California. Roosts on ground, usually in open country, and often active in daytime as it flies with steady beating flight.</p>	<p>Resident. Fifteen subspecies recognized, including the Eastern, the Southern, the Florida, the Texas, Hasbrouck's (Texas), Aiken's, the Rocky Mountain, MacFarlane's, Kennicott's, Brewster's, California, Pasadena, Mexican, Sahuaro, Xantus's—these covering most of the United States, Mexico and wooded Canada.</p>
<p>Nests, usually in dense woodlands or wooded swamps in tall timber. Nest, in hollow tree, or in a rebuilt nest of crow or hawk. Eggs, 2 to 4, white, somewhat glossy, and slightly rough, 2 by 1.75 inches; laid in late February. Incubation, to 28 days, probably chiefly by female. One annual brood. Young, yellow and downy, when hatched.</p>	<p>Nests, in open country, only rarely where there are trees. Nest, a depression in the soil or on a rocky shelf. Eggs, 4 to 11, white, with smooth surface, 2.5 by 1.9 inches. Incubation, about 32 days, by female, and but one yearly brood. Young, blind and helpless when first hatched. Grow lighter in color with age.</p>	<p>Nests, usually in a coniferous tree, from 10 to 30 feet up. Nest, usually remodelled nest of heron or crow. Eggs, 3 to 7; egg-weight, .82 ounces, white and smooth; 1.75 by 1.5 inches. Eggs, laid on alternate days but incubation begins with laying of first. Incubation, 21 to 30 days. Young, in nest 25 days. One annual brood.</p>	<p>Nests, on ground, in open, merely by tramping down the vegetation or bringing in a few sticks. Eggs, 4 to 7, white or creamy, smooth, 1.6 by 1.3 inches, laid in May or June. Incubation, believed to be 3 weeks, and mainly by the female. One brood commonly, but possibly two as is the case in Europe.</p>	<p>Nests, in bird boxes, or hollow trees, favoring orchard trees. Nest, straw-lined. Eggs, 3 to 7, weight .58 ounces each, white, usually smooth, 1.55 by 1.35 inches. Incubation, for 21 to 25 days, by one sex or by both. One annual brood. Young, white and fluffy when hatched, but feathered practically like adults by first fall.</p>
<p>Food; chiefly mice, and other rodents. Of 109 stomachs, the contents were; 48, with mice; 18, with other mammals; 20, empty; 9, with crawfish; 7, with small owls; 5, with other small birds; 14, with insects; 4, with frogs; 4, with game birds or poultry, including 1 ruffed grouse.</p>	<p>Food; essentially small animals. Stomachs of 38 birds, 33 of which were taken in the United States showed; 18, with mice; 12, empty; 9, with non-game birds; 2, with game birds, and 2, with mammals other than mice; the birds taken were sea birds. It may kill a few domestic fowl.</p>	<p>Food; almost exclusively mice and other small mammals. Stomachs of 23 examined showed: 22, with mice, and the other, with a small bird. Of 107 examined, 84 contained mice, and 15, small birds. Excess and waste is regurgitated as pellets; 225 showed 187 containing small mammals, mostly mice.</p>	<p>Food; as follows; 101 stomachs showed: 77, with mice; 11, with small birds; 7, with moles or shrews; 7, with insects; 14, empty. One stomach had 30 huge grasshoppers in it. It usually prefers territory where there is an abundance of mice and, where there is such an infestation, short-eared owls may be expected to move in.</p>	<p>Food; stomachs of 255 showed: 100, with insects only; 21, with mice; 38, with other birds; 43, empty; 21, with lizards; 9, with crawfish; 7, with miscellaneous matter; 5, with spiders; 4, with frogs or salamanders; 2, with earthworms; 2, with scorpions; 1, with poultry. Eight stomachs contained 2,976 insects and 2 mice.</p>
<p>Economically, it is obviously beneficial in spite of the fact that it may catch chickens forced to roost in trees at night. Its preference for mice indicates its primary service to man which is obviously not always appreciated. A barred owl calling in the vicinity of a summer camp has made a whole vacation memorable to many a youngster.</p>	<p>Serves as an important check on mice and lemmings, which, without check, would destroy most of the vegetation of the north country. In the north, then, the bird is practically essential to a balanced environment. It may be a serious pest around game farms and, if poultry is left unprotected, during the cold weather.</p>	<p>One of the best of all the mouse-catching owls. Therefore, worthy of every measure that may be employed to protect it. It is undoubtedly killed by many hunters carrying on "vermin campaigns" under the impression that it is a great horned owl. Partly because of this, such campaigns are generally wholly ill-advised.</p>	<p>This owl is essentially useful as a mouse check and because of its daytime activity it is frequently killed by ill-advised hunters carrying on the foolish "vermin campaigns" sponsored by many groups. Farmers should prosecute anyone killing this important friend of their interests.</p>	<p>For economic importance, their record is written in stomach contents as listed above. That they are essentially useful and deserving of protection should seem obvious to any fair-minded person unless he loves mice, because mice destroy crops needed by man. Known from Pleistocene of Tennessee, California and Florida.</p>

(Continued from page 195)

flight of eagles is commented on in Proverbs, Jeremiah and in Obadiah. The speed of vengeance is compared in Deuteronomy with the speed of the eagle's flight, and Nebuchadnezzar's "high command" attempted to impress someone with the speed of his march on Jerusalem by saying that his horses were "swifter than eagles."

Some of the Biblical references to birds of prey must have been based upon superstitions. In the 103rd Psalm, David speaks of the eagle renewing its youth presumably by the technique of eating its young. But the eagle's concern for its young is considered exemplary in Exodus, 19, and in Deuteronomy, 32, where it is cited as comparable to God's providential care for Israel.

More modern references to birds of prey are numerous—and contradictory. The owl in the legend is the "wise old owl" that "lived in an oak." Yet another proverb says: "The gravest bird is an owl and the gravest man is a fule."

Churchill uses the owl to describe misfortune when he says: "Misfortune, like the owl, avoids the light", and another writer uses a bird of prey to describe hope when he says: "Our hopes, like towering falcons aim, at objects in an airy height."

Anyone who has read Samuel Scoville's "The Raven's Nest", or some of Charles G. D. Roberts' more imaginative eagle stories, or who has seen the movies of the Englishman, Captain Knight—and heard him lecture with his birds sailing over the heads of excited audiences—knows that there are humans who love these birds for themselves.

Such beautiful books as John May's *The Hawks of North America*, and such popular bulletins as Leon Hausman's *Hawks of New Jersey*, all add their bit to the folk-lore about birds of prey. We hope these will be representative of the efforts of our generation in the years to come. We need a richer literature that will combine Scoville's glib humor; May's scholarly presentation of detail; the touch of the romance of Roberts, and the showmanship of Knight.

We need to use every vehicle for public education to present honestly the important role of these birds. We must avoid such fallacies as that of eagles carrying away children. We need careful scrutiny of news items by outdoor writers to avoid stories cooked up to be as dramatic as possible. A recent newspaper clipping told of a man who saw his child attacked by an eagle. He ran into the house, got his rifle and, when it was a hundred feet in the air, wounded the bird in such a way that it brought



SCREECH OWL



BARRED OWL



GREAT HORNED OWL

the child safely to the ground. Then the man spent some minutes beating the bird to death. Such a story is obviously so full of absurdities that its only place in a newspaper is on the comic page.

The soaring hawk taught much to early designers of airplanes. I well remember when I first went to college seeing college professors experiment with stuffed birds suspended by strings from the bridges that span the gorges of Ithaca, and under which wind currents had a more or less constant speed and direction. These primitive wind tunnels have, of course, given way to more precise methods, but bird models contributed to our modern flying fortresses and trans-oceanic air liners.

Soaring birds help gliders locate otherwise hidden rising columns of air. We need more such animals to aid observers who provide the data for weather prediction. And we need more observers intellectually sensitive to animal behavior and appreciative of both the biological aspects and physical science.

We might include other people to whom birds of prey appeal. There is much in the geography of these creatures; much that is interesting about the seasonal variations in habits and in distribution. We could elaborate on the findings of the professional biologists, telling how they know that there seems to be a relationship between the number of preying birds produced in a family and the abundance of the species on which they prey.

This would emphasize the fact that in most birds of prey incubation begins with the laying of the first egg. As a result, the first bird to hatch is older by at least a day than his brother or sister.

Because of this, he is better able to get his share of the food. If the food is scarce, he thrives while his younger brothers and sisters starve. If, then, there is much food, there are many birds of prey; if there is little food, there are few birds of prey. This, of course, is as it should be. It is merely a part of that phenomenon which we call the balance of Nature.

If this article helps to rationalize the adjustment between man and birds of prey, it will fulfill the mission to which the author committed himself. If efforts such as this are not helpful in developing a real appreciation of the birds, if legislation fails, and if prejudice, lust for killing, and stubborn narrow-mindedness prevail in our dealings with the birds, then, truly, we will have to fall back largely on the prayers of some of us to save the birds. In this, we will undoubtedly need wholehearted cooperation of others, therefore the title given this article.