

SNOWY OWL

CARD 11

GROUP 2: BIRDS

ORDER
Strigiformes

FAMILY
Strigidae

GENUS & SPECIES
Nyctea scandiaca



The snowy owl is one of the world's largest owls. It hunts mainly during the twilight hours in the desolate and bitterly cold Arctic tundra that is its home.

KEY FACTS



SIZES

Length: 21-26 in. Females larger.
Wingspan: 60-65 in.



BREEDING

Sexual maturity: 2 years.
Breeding season: May-Sept.
No. of broods: 1.
Incubation: 30-33 days.
Fledging period: 43-50 days.



LIFESTYLE

Habit: Hunts mainly at dawn and dusk. Basically solitary.
Diet: Lemmings, small mammals, ducks, other birds.
Call: Breeding males, a loud, booming hoot. Both sexes, a harsh bark when defensive.
Lifespan: Up to 15 years in the wild, 28 years in captivity.



RELATED SPECIES

No owls are closely related.



Range of the snowy owl.

DISTRIBUTION

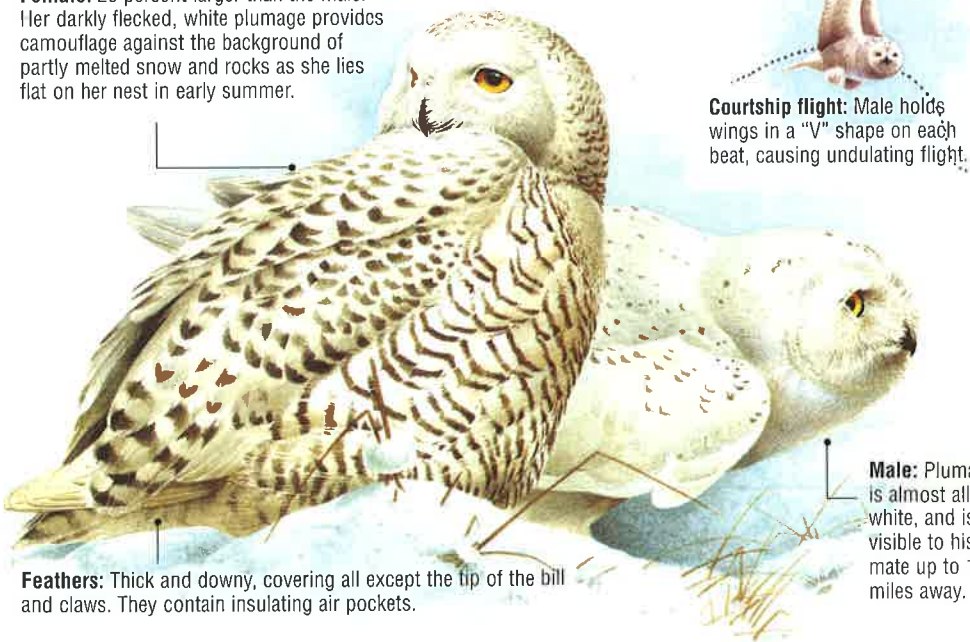
Breeds throughout the Arctic region, from Iceland and Scandinavia to Siberia, Alaska, Canada, and Greenland.

CONSERVATION

Despite its protected status, the snowy owl is often threatened when in contact with humans. Its population fluctuates, so its numbers are hard to estimate.

A COMPARISON BETWEEN THE SEXES

Female: 20 percent larger than the male. Her darkly flecked, white plumage provides camouflage against the background of partly melted snow and rocks as she lies flat on her nest in early summer.



Courtship flight: Male holds wings in a "V" shape on each beat, causing undulating flight.

Male: Plumage is almost all white, and is visible to his mate up to 1¼ miles away.

Feathers: Thick and downy, covering all except the tip of the bill and claws. They contain insulating air pockets.

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The snowy owl lives mainly on lemmings.

When these tundra rodents are in short

supply, and when the Arctic winter is

exceptionally severe, this great white owl

migrates south in search of food.

CHARACTERISTICS

The snowy owl is the largest bird in the Arctic region. The male snowy owl is almost entirely white, with a few dark markings among his feathers. The female has more dark feathers than the male, which are concentrated into barred

markings on her wings, breast, and underside. She also has longer claws and can be as much as one-fifth larger and one-third heavier than the male. This marked difference in appearance between the sexes is unique among owls.

BREEDING

The male snowy owl has a large territory, and, when mating, his cries can be heard six miles away in the thin Arctic air. In protecting his territory, he will sometimes chase and fight with another male in midair. A female, too, will defend territory or a potential mate against others of her own sex.

The female makes a nest in a hollow in the ground. Like other species of owl, the female snowy owl will stagger her egg-laying. This gives the older, stronger chicks the advantage in periods when

food is in short supply. They eat most of the food their parents bring to the nest, and they may even kill and eat their young, weaker nest mates.

The owlets hatch after a 30-day incubation period, using a



Right: There are no trees on the tundra, so the nest is just a depression in the ground.

Left: A temporary "egg tooth" helps the chick chip away at the shell.

FOOD & HUNTING

In the Arctic, the snowy owl feeds mainly on lemmings, and an occasional mouse. Elsewhere, it will eat rabbits, hares, and birds. Unlike most other owls, the snowy owl rarely hunts at night. It seeks its prey in the twilight of early morning and evening. It seizes its prey with its sharp claws, called *talons*.

The long Arctic winter brings many hours of darkness and numbing cold, but the snowy owl's thick feathers keep it well insulated and warm. Food is scarce during

the harsh winter months in the tundra, and the snowy owl is capable of fasting for up to 40 days at a time. It survives on the thick deposits of fat under its skin that it has acquired during the summer and further conserves its energy by moving around as little as possible.

Above left: The snowy owl will often hunt in broad daylight.

Right: This male carries a king eider duck in his sharp talons.

MIGRATION

The snowy owl is a wanderer, moving south in winter when the weather is harsh and prey is scarce in the far north. At intervals, the lemmings that form the species' main prey

suffer a dramatic and sudden drop in their population, and the snowy owls move much further south. The owls sometimes migrate as far as the Caribbean Sea. They have long

been rare in Europe, but a careful protection program enabled one pair to breed successfully in Scotland. In eight seasons, they had borne 23 healthy chicks.



DID YOU KNOW?

- Archaeologists have found snowy owl bones in kitchen waste thrown out by Neolithic people. Today, Eskimos will sometimes eat owl meat when other food is scarce.
- If a predator, such as a wolf or an arctic fox, nears the nest, the owls often attack the intruder fearlessly, swooping down on it and striking it with their talons. Sometimes, a parent will feign injury, dragging its wing along the ground, to lure the predator away from the eggs or young.



BARN OWL

CARD 12

GROUP 2: BIRDS

ORDER
Strigiformes

FAMILY
Tytonidae

GENUS & SPECIES
Tyto alba



S. Dalton/NHPA

The barn owl is a silent nocturnal hunter. It has such an acute sense of hearing that it can pinpoint the exact location of its prey even on the darkest night.

KEY FACTS



SIZES
Length: 13-14 in.
Wing length: 12 in.



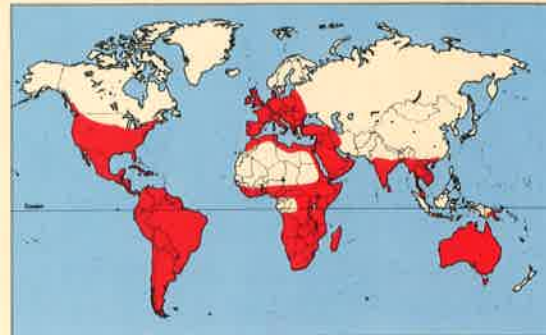
BREEDING
Sexual maturity: 1 year.
Breeding habits: Courtship starts in March. Couples mate for life.
Eggs: 4-7. Sometimes 2 broods.
Incubation: 33 days by female.
Fledging: 60 days.



LIFESTYLE
Diet: Mainly mice, voles, and shrews. Also rats, sparrows, bats, frogs, and large insects.
Lifespan: Average 2 years.



RELATED SPECIES
There are 9 species of barn owl—some very rare—and 36 subspecies of *Tyto alba* worldwide.



Distribution of the barn owl

DISTRIBUTION

Found on every continent except Antarctica.

CONSERVATION

Now a protected species. Farmers are being urged to leave patches of rough land to encourage rodents; they are also encouraged to supply breeding boxes or leave natural sites undisturbed.

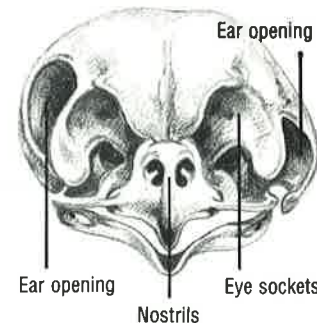
HOW THE BARN OWL HEARS

The barn owl has superb hearing, and a large part of its brain is devoted to sorting out the auditory signals it picks up.

The ears are asymmetrically placed on the barn owl's head. One is near the owl equivalent of a forehead and the other is level with the nostril.

The very sensitive ears are surrounded by small feathered flaps that can be closed over the delicate inner parts if noise levels rise too high. On still nights, these flaps can be erected to catch the minute squeaks and rustles of tiny prey below.

Barn owls can pinpoint the locations of small creatures using their ears alone. They are able to time the interval between the reception of the sound to each ear, much as humans do, but with far greater accuracy.





E.A. Janer/Nature Photographers Ltd

A change of climate in the northern regions of the barn owl's habitat is causing snow to last for longer periods in winter. Bad weather plays a significant part in reducing the numbers of this attractive nocturnal bird.

BREEDING

Because barn owls live just two years, they usually breed only once or twice. They mate for life. Barn owls generally use a nest site that's been occupied by generations of barn owls over many decades; still, every year, the male goes through a ritual courtship calling to "show" the female the nest site. Instead of building a nest, the couple places their four to

seven pure white eggs in a dark space surrounded by pellets. The female lays the eggs at two-day intervals and incubates them until early May, when their staggered hatching relieves the parents of the burden of feeding all the hungry owlets at once. The owlets grow gradually bolder. After 60 days they are fully fledged and able to hunt their own food.



J. Burton/Bruce Coleman Ltd

A barn owl chick rests after breaking out of its shell.



J. Burton/Bruce Coleman Ltd

A 28-day-old chick. The white down soon changes to buff.



F. Greenway/Bruce Coleman Ltd

Left: Over long distances, barn owls carry prey in their beaks.

HABITAT

Barn owls prefer a warm climate with mild winters. They don't, like many other birds, store extra fat in their tissues to help them survive harsh winter weather, so many die during freezing weather or are too exhausted in the spring to breed.

Barn owls make their homes

in buildings, but they need open grassland nearby for hunting. Until about 50 years ago, the traditional farm was an ideal habitat. Corn stored in barns encouraged rodents to breed, ensuring the barn owl a plentiful supply of food. Nearby hayfields provided an unlimited source of mice.



BIRDWATCH

Barn owls are both rare and nocturnal, so you are more likely to see traces of the bird than the bird itself. Daytime—its inactive period—is the best time to look.

Barn owl pellets are a sure indication of the bird's presence. They contain unwanted pieces of fur, bones, teeth, claws,

Barn owl pellets contain undigested bones and fur.



T. Shepherd/Oxford Scientific Films

beaks, heads, and insect wing cases that the owl can't digest. Two of these pellets are coughed up each day through the mouth, one at a feeding place and one at the nest site.

If you soak a pellet in water for a few hours then gently pull it apart with tweezers, you'll be able to see the bones and fur that the owl discarded from its dinner.

FOOD & HUNTING

Although barn owls mate for life, they hunt alone. The barn owl's eyes are specially adapted to detect movement in grassland: they have extra light-sensitive rods and cones in the retinas, and their cylindrical shape produces accurate telescopic vision. In the dark the barn owl relies almost totally on its acute hearing.

The barn owl swoops silently and plucks its victim away with its large talons. Its downy feathers help muffle the sound of its movement, so the prey is unaware of the owl's approach.

Mice, voles, and shrews are the owl's staples, but it will also

catch other small rodents, sparrows, and bats. When other food is scarce, barn owls will eat frogs and large insects.

The owl takes its captured prey to a favorite eating place. During the breeding season the male carries the food back to the nest site.



L. West/Natural Science Photos

Above: A barn owl swivels its head to catch the slightest sound.

DID YOU KNOW?

- Barn owls don't "hoot" like other owls. They make a hoarse "khurrew" noise.
- In Malaysia, where barn owls were introduced to control plagues of rats, each barn owl family killed about 1,300 rats a year.
- Adult owls swallow prey whole and head first. To feed their young, they grip the prey with their feet and tear it into small pieces that the owlets can swallow.
- Most birds that live in holes, cavities, or domed nests lay white eggs, since there is no need for camouflage.

TAWNY OWL

CARD 13

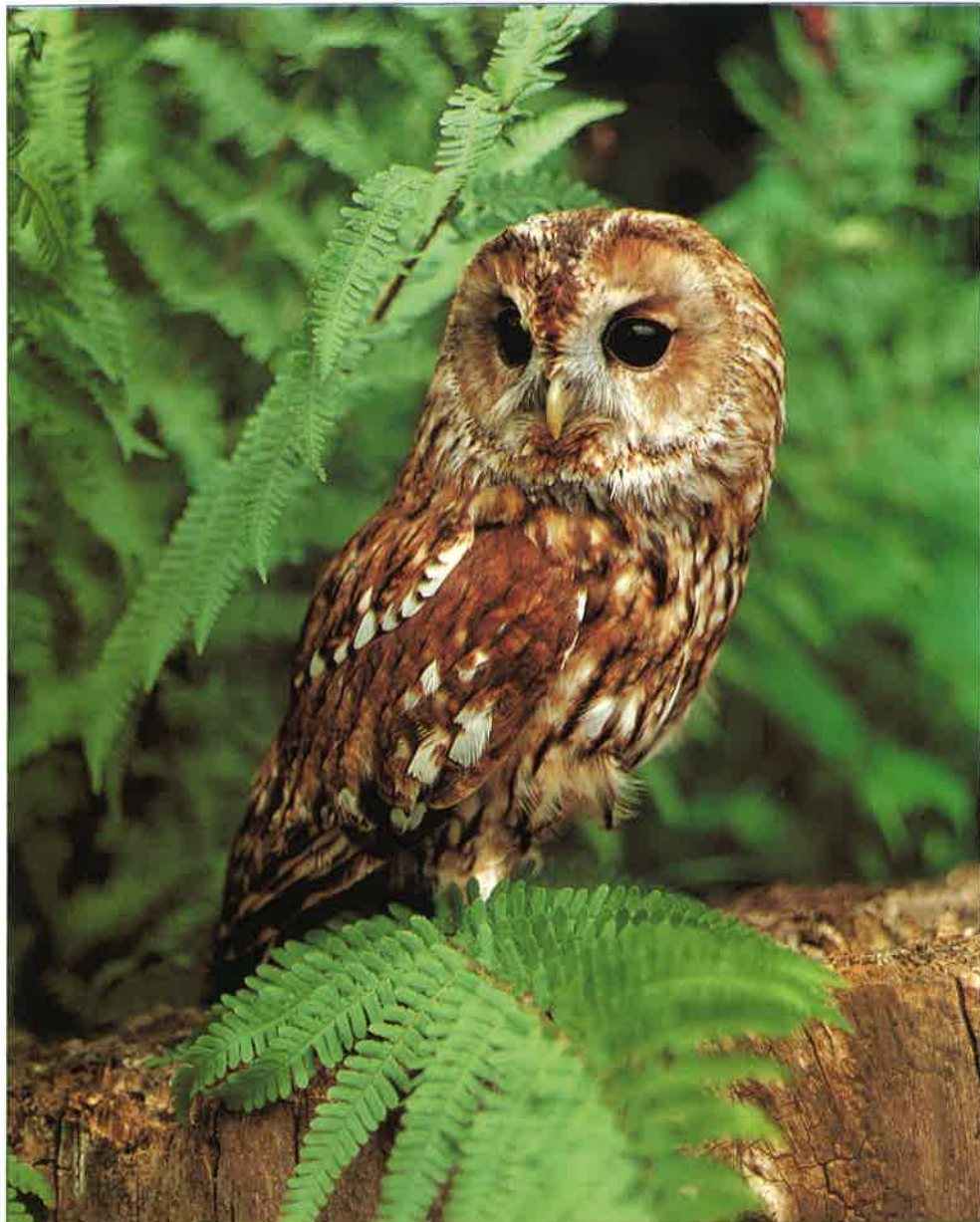


GROUP 2: BIRDS

ORDER
Strigiformes

FAMILY
Strigidae

GENUS & SPECIES
Strix aluco



Although the tawny owl is a nocturnal animal and is rarely seen, its distinctive, hooting call is a familiar sound throughout its range, and serves to announce its territory.

KEY FACTS



SIZES
Length: 15-16 in.
Weight: 12-23 oz.
Wingspan: 37-41 in.



BREEDING
Sexual maturity: 1-2 years.
Breeding season: February-June.
Eggs: 2-5, white. One brood.
Incubation period: 28-30 days.
Fledging period: 3-37 days.



LIFESTYLE
Habit: Mainly resident. Pairs for life. Usually monogamous.
Diet: Small mammals, birds, amphibians, worms, and beetles.
Call: Roar, growl or purr.
Lifespan: Up to 18 years.



RELATED SPECIES
Two closely related species are the Ural owl, *Strix uralensis*, and the great gray owl, *Strix nebulosa*. Both are larger than the tawny owl.



Range of the tawny owl.

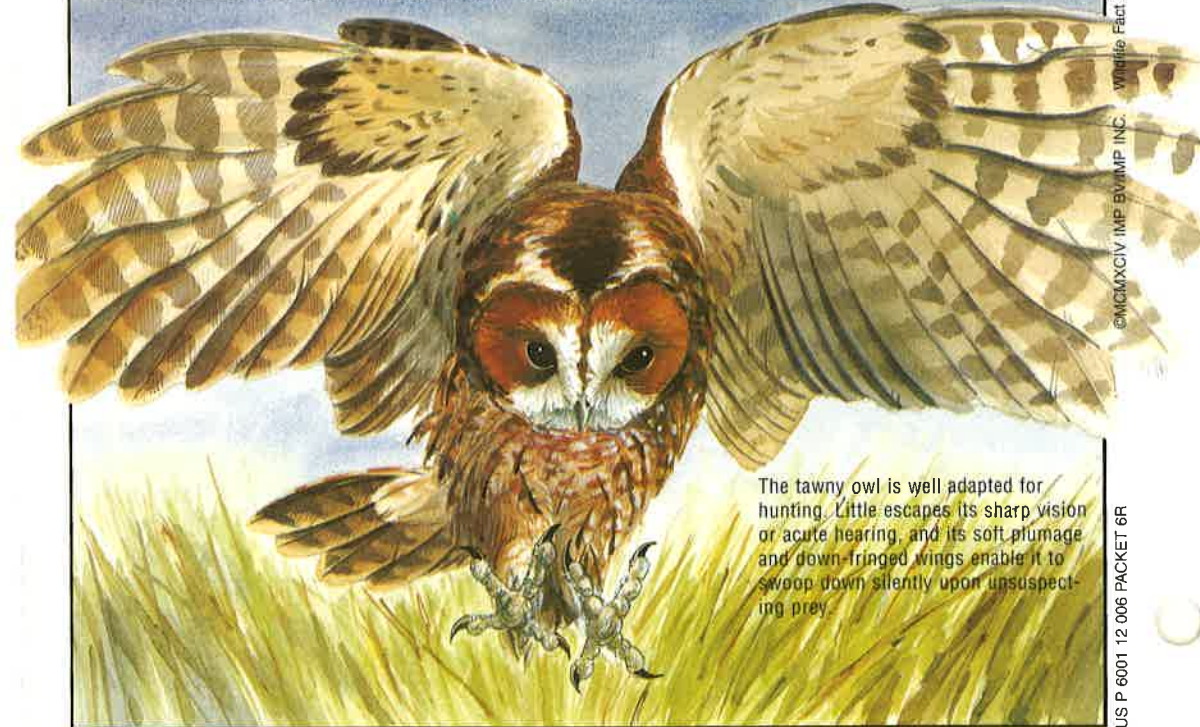
DISTRIBUTION

Europe, except Iceland and northern Scandinavia. Parts of northern Africa, and Eurasia, including Afghanistan and China.

CONSERVATION

Common over most of its range. Like many birds of prey, it has suffered from pesticides, such as DDT.

ADAPTATIONS OF THE TAWNY OWL



The tawny owl is well adapted for hunting. Little escapes its sharp vision or acute hearing, and its soft plumage and down-fringed wings enable it to swoop down silently upon unsuspecting prey.

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The tawny owl is common throughout Europe, where its coloring varies from gray to reddish-brown. A natural-born hunter, it swoops down swiftly on its prey, and can even catch a bat in flight.



HABITAT

Tawny owls are mostly found on farmlands and in woodlands. They live in both evergreen and deciduous trees. In cities, they are often found in wooded areas, such as parks and cemeteries.

Tawny owls breed in conifer forests in which the trees are mature enough to provide suitable nesting holes. The recent increase in the planting of conifers has benefited the tawny owl.

DID YOU KNOW?

- In addition to the hooting call, tawny owls produce a bubbling trill, a loud moan, and a hissing noise.
- Tawny owls will hover over bushes and undergrowth, beating their wings loudly to

flush small birds and animals out into the open, where they can be caught.

- There is a high death rate among owlets because they are forced to leave their nests soon after birth.

FOOD & HUNTING

A nocturnal bird, the tawny owl hunts at night. Its hearing is so sharp that it can pinpoint its prey without seeing it. Once it locates its prey, it swoops almost silently down from its perch and seizes it.

The tawny owl's diet can be quite varied, and is dependent upon its habitat. In woodland areas, it eats mainly small rodents, birds, shrews, worms, and beetles. Owls that live near ponds or creeks catch fish.

In urban areas, the tawny owl will eat a higher proportion of small birds, such as sparrows and starlings.



Left: With its sharp talons outstretched, the tawny owl swoops down on a field mouse.

Below: Tawny owls produce pellets made of the indigestible parts of their food, such as bones, teeth, fur, and feathers. They can be found in or around nests.

BREEDING

Tawny owls form mating pairs and select nest sites in the fall. A hole in a mature deciduous tree is preferable, but abandoned birds' nests or crevices in rocks or buildings may also be used.

Before mating, the male will court the female for several weeks by bringing her food. Mutual preening is also a part of the courtship display.

The female incubates two to five eggs. Because she lays the eggs one at a time, they hatch at intervals.

Fledging takes about five weeks. The young are fed by their parents until they are 2-3 months old. They are eventually turned out of the nest and forced to find their own territories.

Right: This owlet will be turned out of the nest as soon as it becomes independent.



BIRDWATCH

Tawny owls can be encouraged to nest in wooded areas that are lacking in mature trees if they are provided with nesting boxes. The boxes should have a large opening at the front and be large enough (30 inches deep with 8-inch by 8-inch floor) to provide the owl with plenty of nesting space. Boxes should be placed high on a tree trunk where it is not exposed to direct sunlight.

BLUE-FOOTED BOOBY

CARD 14

GROUP 2: BIRDS



ORDER
Pelecaniformes

FAMILY
Sulidae

GENUS & SPECIES
Sula nebouxii



The blue-footed booby is a goose-sized tropical seabird that breeds on islands off the Pacific coast. It catches fish in spectacular plunging dives beneath the surface of the waves.

KEY FACTS



SIZES
Length: 30-33 in. Females larger.
Weight: Males 3 lb. Females 4 lb.



BREEDING
Sexual maturity: 3-4 years.
Breeding season: Almost year-round on Galapagos.
Eggs: 2-3.
Incubation: 41 days.
Fledging period: 102 days.



LIFESTYLE
Habit: Feeds singly or communally.
Diet: Fish.
Call: Short, high-pitched squeaks.
Lifespan: 17 or more years.



RELATED SPECIES
There are 9 species of gannet and booby—the gannet in temperate waters, the boobies in tropical and subtropical waters.



Range of the blue-footed booby.

DISTRIBUTION

Breeds on arid islands in the Gulf of California, off the west coast of Mexico, on islands along the coast of Ecuador and northern Peru, and on many of the Galapagos Islands.

CONSERVATION

There are less than 40,000 breeding pairs, half of which live on the Galapagos Islands, where the species is legally protected. Egg collectors pose a minor threat elsewhere.

COURTSHIP DISPLAYS OF THE BLUE-FOOTED BOOBY

Courting rituals: The male parades around his nesting territory, flaunting his blue feet in an exaggerated, high-stepping walk, and presents small pieces of nest material to the female.
Flight display: The male also flashes his feet at his mate in an airborne "salute" while landing after making a courtship flight over his territory.

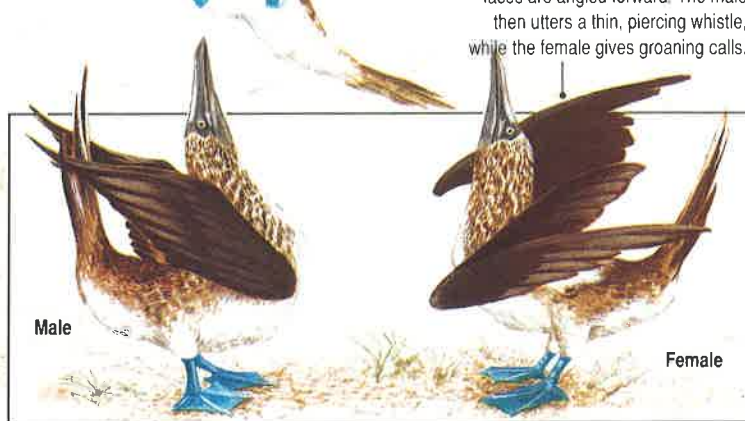


Male

Pointing display: Each bird angles its bill to the sky and tilts its wings around so that the upper faces are angled forward. The male then utters a thin, piercing whistle, while the female gives groaning calls.



Female



Male

Female



The blue-footed booby is one of the world's most comical-looking seabirds. It has dazzling blue webbed feet, a cigar-shaped body, and long pointed wings and tail. Its tapering, pointed bill with serrated edges is ideal for grasping the slippery fish that are its prey.

DID YOU KNOW?

- The name "booby" comes from the Spanish word *bobo* which means "stupid fellow." The blue-footed booby is so called because its lack of fear and its clumsiness on land have made it easy prey for man.
- The pupils in the female's eyes appear larger than the male's. This is an illusion—the female has rings of dark pigment around her pupils that make them look bigger.
- The blue-footed booby likes plenty of space around its nest, but its relative the gannet may pack as many as seven nests in a square yard at its breeding colony.

CHARACTERISTICS

The blue-footed booby has brown and white plumage that greatly contrasts with its bright blue feet and greenish-gray bill. Its head is pale brown and streaked with whitish feathers.

Like the many other animals of the Galapagos Islands, the blue-footed booby is remarkably tame. As a result, it is one of the most photographed of all the islands' bird species.

Top left: Boobies congregate on Baltra Island, Galapagos.

Right: Sun-baked islands form the booby's breeding grounds.



BREEDING

During the breeding season, which is year-round, the males stage elaborate courtship displays (see back page). After mating, two to three eggs are laid in a shallow depression on flat or gently sloping ground. Both male and female take turns incubating the eggs.

Unlike most birds, the blue-footed booby—along with its relatives the gannet, the cormorant, the tropicbird, and the pelican—lacks patches of bare skin, called *brooding patches*, that serve to transmit heat from the bird's body to the eggs. Instead, the booby incubates the eggs beneath its broad, webbed feet. The feet have an increased blood supply which conveys heat to the

eggs, maintaining a constant temperature of 103° F.

When the chicks start to hatch, the booby supports the eggs on the tops of its feet. The chicks, which have only a sparse covering of down, are brooded here. Chicks feed from both the male and the female, thrusting their bills inside their parents' to obtain regurgitated fish. The male brings in a constant supply of small fish for the chicks, who must be fed continually. If food is scarce, the largest of the chicks will be fed at the expense of the survival of its smaller, weaker nest mates. This behavior ensures that at least one chick in each brood will survive. If more food is available, all the chicks may survive.



Left and below: The booby incubates its eggs with the warm blood supply in the webbing of its blue feet. The chicks will sit on the parents' feet until they are about a month old, when they will be able to control their own body temperature.

FOOD & FEEDING

The blue-footed booby spends much of its time gliding purposefully over the water, bill angled downward, watching the surface for signs of fish. It can dive from heights of up to 80 feet. Streaking downward at great speed, with wings angled in close to its body, it hits the water with barely a splash and resurfaces several yards away with its catch. Sometimes it will catch flying fish in midair. Unlike other boobies, the blue-footed booby will also catch fish by diving below the water from a swimming position on the surface.

Although it feeds alone, the bird will cooperate within a flock of boobies to hunt fish. The first bird to spot a fish gives a single whistle as a rallying

call; the rest of the group follows the first as it dives into the water. Their movements are perfectly synchronized.

The blue-footed booby feeds mainly in the early morning and late afternoon, possibly to avoid the attention of the frigatebird, who might steal its food.

The male booby is adapted for catching one size of prey while the female is adapted for another. The lighter, more maneuverable male can dive into extremely shallow water in order to catch relatively small fish. The much heavier female catches larger fish further offshore in deeper water. Between them they can exploit a wide variety of prey.

PEREGRINE FALCON

CARD 16

GROUP 2: BIRDS

ORDER
Falconiformes

FAMILY
Falconidae

GENUS & SPECIES
Falco peregrinus



H. Reinhardt/B. Coleman Ltd.

The peregrine falcon is one of the larger species of falcon. It is an extremely strong flyer and can catch its prey with deadly accuracy, diving through the air with amazing speed.

KEY FACTS



SIZES
Length: 15-18 in.
Wingspan: 37-43 in.
Weight: Males, 20-26 oz.
Females, 30-45 oz.



BREEDING
Sexual maturity: 3 years.
Breeding season: March to May.
No. of broods: 1.
Eggs: 3-4 in clutch; white with reddish-brown blotches.
Incubation: 29-32 days.



LIFESTYLE
Habit: Solitary. Fast-flying hunter of other birds. Pairs for life.
Diet: Mainly other birds.
Lifespan: Estimated at about 20 years in the wild.



RELATED SPECIES
The number of subspecies varies, but it is officially listed as 22. The largest are found in the Arctic, and the smallest in desert areas.



Resident peregrines Wintering areas Breeding grounds

DISTRIBUTION

Found in North and South America, Europe, Asia, Africa, and Australia.

CONSERVATION

The peregrine, like most larger falcons, has become endangered. Individual birds nesting in vulnerable areas are sometimes guarded by volunteers.

COURTSHIP FEEDING

As part of the peregrine falcon's courtship behavior, the male passes prey to the female, often while in flight. To make this maneuver possible, the female rolls over in midair to take the food from the male's talons.



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The peregrine falcon is a majestic animal, and a top predator among birds of prey. But it is now endangered because of persecution by hunters and egg collectors. It is also suffering from the deadly effects of pesticides, which diminishes its breeding success.



HABITAT

The peregrine falcon generally inhabits open country, such as prairie and semidesert, where prey is easy to spot. In the United States, the falcon is most common in mountainous areas where there are rocky crags on which to breed. Cliffs and quarries also provide suitable nesting sites.

In winter, peregrine falcons may also frequent lakes and rivers. It can also be found far out at sea, on its route to or from its feeding areas. The scientific name of the peregrine falcon, *peregrinus*, is Latin for "foreign" or "wanderer."

Below: A female with young calls to its mate for food.



J.M. Labaie/Ardea London



Left: Peregrine plucking feathers off of a captured common pigeon.

FOOD & HUNTING

The peregrine falcon's main prey consists of other birds, ranging in size from the small skylark to larger birds like the pigeon and grouse. However, the peregrine falcon has been known to feed on rabbits or even bats. In winter, when the falcons hunt along waterways, they feed on gulls, waders, and ducks. The peregrine falcon

most often swoops down and grabs its prey while in flight. It sometimes catches birds on the ground or in low-lying vegetation.

On the average, a peregrine falcon needs 3½ ounces of food a day. When there are young to feed, it requires more. During the breeding season, it may need to travel widely to find enough food. Its territory can range from 25 to 125 square miles.

BREEDING

Peregrine falcons mate for life and usually breed on high, inaccessible cliffs and rocky crags. Paired birds often return to the same *eyrie* (nest) each year.

The falcons do not build nests; they prefer to use existing vegetation in which to lay their eggs.

Egg-laying begins in spring, and three or four eggs is the usual number in a clutch. Incubation begins after the last egg is laid, and it is the female who spends the most time raising the chicks.

Below: Two-month-old chicks in their cliff-top *eyrie*.



D.Dugan/Frank Lane Agency

PEREGRINE FALCON & MAN

The peregrine falcon is particularly sensitive to chemical pollutants because it is higher on the food chain, and, consequently, ingests more of the toxins found in its prey. The pesticide DDT, in particular, has caused a great reduction in numbers by affecting the falcon's breeding success. Birds

would break their own eggs in the nest while incubating because of thin shells caused by the excess of poison in the eggs' tissues.

The use of DDT is now prohibited, and, although egg collectors still persecute the peregrine, its numbers are beginning to increase.



BIRDWATCH

The best time to spot peregrine falcons is in spring, when they breed on rocky ledges and cliffs or soar in circles overhead. They are recognizable by their bullet-shaped bodies and broad, pointed wings.

In the fall, peregrine falcons can be spotted on Padre Island, Texas, and Hawk Mountain, Pennsylvania. In spring, they can be seen in the Brigantine National Wildlife Refuge in New Jersey.

D.MacCaskill/Natural Science Photos

DID YOU KNOW?

- Peregrine falcons have eyes that are larger than human eyes; they can spot their prey from a height of 1,000 feet.
- The male peregrine falcon is known as a *tiercel* because it is a third (a tierce) smaller in size than the female.
- In the United States, the peregrine falcon is often called the "duck hawk" because it feeds on ducks.
- Peregrines were deliberately shot during World War II so they wouldn't catch carrier pigeons.