

Avian Models for 3D Applications Characters and Texture Mapping by Ken Gilliland

Songbird ReMix

Owls of the World Volume 2

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Songbird ReMix

Owls of the World Volume 2

Introduction

Songbird ReMix Owls of the World includes 11 owl species found throughout the world. Included in this volume of swift and silent predators are many favorites, including the Eurasian Scops Owl, the Short-eared Owl and the Barred or "Hoot" Owl. Each owl in this set is unique in appearance and uses the latest in Songbird ReMix technology.

This volume includes several unique owls such as the Tawny Fish-owl with its antler-like ear tufts and the alien-looking Oriental Bay Owl and regional-specific owls like the Southern Boobook and Barking Owl of Australia or the Buff-fronted and Spectacled Owls of South America.

Overview

The set is located within the **Animals : Songbird ReMix** folder. Here is where you will find a number of folders, such as **Bird Library**, **Manuals** and **Resources**. Let's look at what is contained in these folders:

- Bird Library: This folder holds the actual species and poses for the "premade" birds. Birds are placed into a "type"folder (such as "Birds of Prey (Order Falconiformes)" which for example would hold falcons, hawks and eagles). The birds for this set can be found in the following folder(s):
 - Owls (Order Strigiformes)
- **Manuals:** Contains a link to the online manual for the set.
- **Props:** Contains any props that might be included in the set
- Resources: Items in this folder are for creating and customizing your birds
 - Bird Base Models: This folder has the blank, untextured model(s) used in this set. These models are primarily for users who wish to experiment with poses or customize their own species of bird. With using physical renderers such as Iray and Superfly, SubD should be turned to at least "3".

Poser Use

Select **Figures** in the **Runtime** Folder and go to the **Animals : Songbird ReMix** folder. Select the bird from the renderer (*Firefly or Superfly*) folder you want and simply click it to load. Some birds in the Songbird ReMix series may load with attached parts (*Conformers*) such as tail or crest extensions. Some of these parts have specific morphs. You will need to click on the attached part to access those controls. Associated poses can be found in the same folder- **Bird Library : (Type) : Poses**.

DAZ Studio Use

Go to the **Animals : Songbird ReMix** folder. Select the bird from the renderer (*3Delight or Iray*) folder you want and simply click it to load. Some birds in the Songbird ReMix series may load with attached parts (*Conformers*) such as tail or crest extensions. Some of these parts have specific morphs. You will need to click on the attached part to access those controls. Associated poses can be found in the same folder- **Bird Library : (Type) : Poses**. <u>Note:</u> Using the "Apply this Character to the currently selected Figure(s)" option **will not** properly apply the correct scaling to the bird selected.

Physical-based Rendering

Physical-based renderers such as **Iray** and **Superfly** require more CPU and memory horsepower than the legacy renderers for DAZ-Studio and Poser because of ray-trace bounces and higher resolution meshes needed for displacement. Superfly, in particular, may crash *especially* when using the GPU-based options. The best solution is to render using one of the CPU-based options. Limiting the number of ray-trace bounces by setting "Pixel Samples" to "2" or "1" will also reduce crashes and speed renders. Of course, upgrading memory and your CPU will also help.

Type Folder	Bird Species
Owls (Order Strigiformes)	Barking Owl Barred or "Hoot" Owl Buff Fronted-Owl Crested Owl Eurasian Scops-owl Northern Hawk-owl Oriental Bay Owl Short-eared Owl Southern Boobook Spectacled Owl Tawny Fish-owl

Where to find your birds

Where to find your poses

Type Folder	For what species?
Owls (Order Strigiformes)	Owls

Morphs and their Use

All Songbird ReMix models have morphs that change the look of the loaded model to achieve additional movements and expressions that joint movements can't achieve. These are referred to in the Songbird ReMix model as "Action Morphs". Other morphs that are included can subtly or sometimes dramatically, alter the model to resemble specific species. These morphs are referred to as "Creation Morphs".

Here is a brief explanation of where the morphs are found and what they do:

BODY section:

- Action Morphs
 - Common Controls
 - BeakOpenClose- Controls the opening and closing of the bill
 - EyesFwdBack Controls the forward and backward movement of the eyes. This will make cross-eyed eyes.
 - EyesUpDown Controls the up and down movement of the eyes
 - EyesSide2Side Controls the side-to-side movement of the eyes.
 - EyeLidsCloseOpen Controls the opening and closing of both eyelids. Dialing to -1 will give a rounded eye shape. The individual EyeWink controls should <u>not be</u> <u>used</u> in conjunction with this morph.
 - HootCall Expands the throat area to make hooting calls.
 - WingsFold- Puts both Wings into a folded position. Dialing numbers between 0 and 1 sometimes will give geometry issues (intersections, odd shapes) due to the nature of the complex morph.
 - TailFeathersSpread Controls the tail feather fanning action.
 - Neck Bending and Scaling
 - These controls allow global bending, twisting and moving side—to-side of the three neck sections. Partial bending controls can also be found in each individual neck section. There is also a control to scrunch and stretch the neck.
 - Expressions
 - SmileFrown- Creates a smile (+1) or frown (-1) expression.
 - Eyes-Angry- Creates an angry expression.
 - Eyes-Sleepy- Creates a sleepy expression. EyeLidsCloseOpen must be at "0" for this control to work.
 - Eyes-Wince- Creates a wincing expression. EyeLidsCloseOpen must be at "0" for this control to work.
 - BrowLeftDown and BrowRightDown Controls the eyebrow shape.
 - Head Controls
 - Eyelid Movement Section- has individual controls for left and right EyeWink. These individual EyeWink controls will not work properly when the master EyeLidsCloseOpen morph is used.
 - Tongue Movement Section- various morphs control the movement of the tongue.

- Ear Tuft Movement Section- various morphs control the movement of the ear tufts. Ear Tufts are only present on some owls. Ear Tuft movements will not work on owls without ear tufts.
- Wing and Tail Controls
 - These controls allow both wings and each individual wing to perform numerous wing actions and also allows the Tail feather action of cupping.
- Feather Fluff Controls
 - Head & Neck Fluff, Breast and Rump Fluff, Back Feathers and Thigh & Ankle Fluff
 - Controls numerous individual transparency layers throughout the model. Many species use the "Head and Neck Fluff " morphs to create certain species "looks". Adjusting these morphs too much may alter the appearance of the specific species.

• Correction Morphs

- BreastIn- Reduces/Adds to breast shapes.
- ThighsIn4Flight- Makes the thighs more streamlined for flight poses.
- TopNeckExpand- Adds Bulk across the top of the neck from the head to the hip section for a smoother flight or perch back line.
- FlattenBack

• Creation Morphs

- Species Shapes. These base morphs create a starting point for creating specific types of owls.
 - BarnOwl Creates a barn owl-like head.
 - CrestedOwl Repositions the Ear Tufts and angles the Forehead and Facial fluff and reshapes the head to make the distinctive look of the Crested Owl.
 - FishOwl Raises the Forehead fluffs into the Ear Tufts giving a Fish-owls look.
 - OrientalBayOwl Creates the very specific Oriental Bay Owl head.
 - Owlet Creates an owlet-like head.
 - RoundFaceOwl Combines several morphs into one dial to create generic features found on round-faced owls.

• Body Shaping

- ThickenNeck Thickens the three neck sections.
- BreastCrease- Adds a center crease to the breast.
- SleekerBody Thins the torso of the bird.
- ScaleRump- Reduces/adds to the length of the rump and tail feathers sections.
- BackPlume3Len Lengthens the rump feathers over the tail feathers.
- BackPlume3Width Adds width to the rump feathers.
- LegLength- Allows lengthening of the legs.
- FootSize- Controls the size of the feet.
- MassiveTalons- Lengthens the talons.
- Head Shaping
 - Head Shapes- These morphs control the shape of the head.
 - OriginalOwlsHead-A compatibility base morph for owls created in the 2010 version of "Owls of the World"
 - BigHead Makes the head and neck parts around 30% larger
 - WiderHead Expands the sides of the head.
 - TaperHead Reduces the sides of the head to a more pointed look.

- OblongHead- Stretches the head from top to bottom.
- SquatHead- Squishes the head from top to bottom.
- HeadGroove- Adds a groove in the center-top of head.
- FlattenHead & FlatHead2- Flattens the top or the head.
- CrownDown- Flattens the crown of the head/forehead .
- LowerCrown- Lowers the entire crown of the head, keeping the rounded shape.
- PushForehead, ForeheadExpand and ForeheadOut Controls the forehead shape. This can be useful in creating expressions.
- TallForehead- Expands the forehead portion.
- RaiseForeheadTufts- Raises both outer edges of the forehead.
- WideBridge- Expands the area between the eyes.
- RaiseCtrForehd- Raises/lowers the center portion of the forehead.
- PullForeheadCnrs- Pulls the top edges of the forehead out to make a more square face.
- LowerJowls- Stretches the lower jaw area.
- SofterBackHead,ReduceBackHead,BackCrown Reduction1 and 2 Various morphs to soften and reduce the back of the head.
- **Eye Shapes** These morphs can change the appearance of the eyes.
 - EyesDilate- Controls the pupil size of the eyes.
 - BiggerEyes- Makes eyes about 20% larger.
 - EyesOut- Pulls eyes forward.
- Beak Shapes- These morphs can change the appearance of the bill.
 - BeakOut- Controls the length of the beak.
 - BeakNarrower- Controls the width of the beak.
 - BeakFlatter- Controls the height of the beak.
 - BeakDroop- Controls the position of the beak.
- Nostril Shapes
 - NostrilCone Adds bulk around the nostrils.
 - NostrilBulbs- Adds a more dome-like shape to the nostrils.
- Tongue Shapes
 - TongueLength- Controls the length of the tongue.
 - Ear Shapes
 - HideEarTufts Raises and lower the ear tufts out of the skull. "1" is the OFF position.
 - EarTufts-PositionY and EarTufts-PositionZ These control Z and Y axis positioning of the ear tufts part for customization and the inclusion of future owl species.
 - EarTufts-Rotate- Allows rotation of the EarTuft part on the X axis.
 - EarTufts-Height- Changes the height of the Ear Tufts.
 - EarTufts-Width- Changes the width of the Ear Tufts.
 - EarTuftsCloser Move the Ear Tufts closer together.
 - ShortEars Creates tiny ear tufts found on some owls. The HideEarTufts should be in the the "OFF" position when using this.
 - Ear-LongEared, Ear-GreatHorned and Ear-Screech These morphs create a very specific ear shapes for a variety of owl species.

- Wing Shapes- These morphs control the shape of the wings.
 - WingSpan- Allows control of Wing Length.
 - WingWidth- Expands the width of the wings.
 - WingsPoint- Brings the tips of the wings to a point.
 - HawkWingShape1- Controls the shape of the leading primary flight feathers
 - HawkWingShape2- Controls the shape of the secondary flight feathers
- **Tail Shapes** These morphs control the shape of the tail feathers.
 - TailFanStyle- Creates the shape of the tail spread. 1=Fan, 0=Wedge,
 - Length- Controls the length of the tail feathers.
 - Width- Controls the width of the tail feathers.
 - Round- Rounds the tail feathers.
 - SplitTailFeathers- Creates a wedge-shape for the tail feathers.
 - GraduatedTail- Graduates the tail feathers length from short (outside) to long (inside).
 - SquareEnds- Makes tail feathers have square ends.
- **Scale** Controls the size of the model. The scale is proportional to the standard human characters in Poser and DAZ Studio.

Posing Considerations

Owls have a couple of special abilities in movement. In flight, they are able to bend their heads completely forward. The best way to achieve this look is to use the **head section** of the model and bend it backwards (-30). Joint-controlled morphs JCMs) are in place to reduce the back of the head, folding it into the neck.

Owls are also able to turn their heads around 180 degrees. The BODY section "Twist All" control is very limited. To achieve this look, it is better to use the Twist controls in the 3 Neck sections and Head section. Some texture distortions in the front of the neck may occur depending on your settings.

Songbird ReMix Owls of the World Volume 2 Field Guide

Buff Fronted-Owl Short-eared Owl Tawny Fish-owl Crested Owl Southern Boobook Barking Owl Eurasian Scops-owl Oriental Bay Owl Spectacled Owl Barred or "Hoot" Owl Northern Hawk-owl

General Information about Owls

Owls are found on every continent except Antarctica. Owls are a group of mainly nocturnal (active at night) birds classified as belonging to the order Strigiformes, a group which is most closely related to nightjars (Caprimulgiformes). The order is divided into two families: Tytonidae or Barn Owls and related species, and Strigidae or Typical Owls.

The majority of owls hunt at night and feed on live mammals and insects. Many owls have ear openings at different positions. These asymmetrical ear openings help the owl to hear in stereo and pinpoint sounds on a vertical plane. The ear tufts some owls have such as the long-eared owl or great horned owl may look like ears but actually have nothing to do with hearing.



After eating, Owls regurgitate pellets, which contain the indigestible bones, fur and feathers of their victims. These pellets can be collected by researchers to study Owls' eating habits.

Common Name: Buff-fronted Owl Scientific Name: Aegolius harrisii

Size: 7.5-8.3 inches (19-21 cm); Wingspan: 18.9 inches (48 cm)

Habitat: South America; Andes from Venezuela to Ecuador and southward on the eastern slope to Northern Argentina. There have been some records from the eastern Paraguayan Chaco. Specimens have been collected on Cerro Neblina in Southern Venezuela. There is an isolated population in Eastern Brazil, from Goiás south to Rio Grande do Sul and Uruguay and adjacent regions of Paraguay and Argentina.



Distribution seems scattered and local, and it is likely populations are yet to be discovered.

Primarily montane and cloud forest alternating with clearings and pastures, up to near timberline: wooded areas up to 3000m. Also occurs at lower altitudes in dense forest with tall trees and dense undergrowth.

Status: Least Concern to Vulnerable. **Global population:** Unknown amount of adult individuals with a neutral population trend. The population is suspected to be fluctuating owing to relative size in prey populations.

Diet: Mostly rodents and other small mammals, although it will also take birds and insects.

Nesting: Males and females are alike however males tend to be up to 8% heavier than females.. The facial disc is round, with a narrow blackish rim, and bordered buffish. There are areas of blackish-brown from the top of each eye to the edge of the disc, bordering the ochre-buffish forehead. Eyes are yellow. Cere is yellowish-gray and the bill is yellowish to pale bluish-green. The chin has a dark brown or blackish bib that

nearly merges into a thin blackish rim. The crown is blackish-brown. The mantle and back are dark chocolate-brown with a few rounded white and buffish spots. There is a narrow buffish-ochre nuchal collar, contrasting with the darker back. Scapulars have several large buffish-ochre spots on the outer webs. The wings have whitish, rounded spots. The tail is blackish with a white tip and two visible rows of rounded white spots on each web of feathers. Breast and belly are plain yellowish-tawny to ochre-buff. The tarsi are feathered to the base of the toes, which are bare and pale yellow with dark brown claws.

The Buff-fronted Owl is unsociable. The breeding season seems to vary according to climatic conditions. Nests are in tree cavities, especially woodpecker holes, of varying height above the ground.

Cool Facts: This owl's Latin name refers to the American ornithologist Edward Harris (1799-1863).



Common Name: Short-eared Owl Scientific Name: Asio flammeus

Size: 13.4–16.9 inches (34-43 cm); Wingspan: 33.5–40.6 inches (85-103 cm)

Habitat: Worldwide; widely in the Old World, in Iceland, the Hawaiian Islands and North and South America. Northern populations are migratory and nomadic. Movements of up to 2,000 km have been documented.

Short-eared Owls inhabit wide open spaces such as grasslands, prairie, agricultural fields, salt marshes, estuaries, mountain meadows, and alpine and Arctic tundra. Breeding habitat must have sufficient ground cover to conceal nests and nearby sources of small mammals for food. Communal roosts occur in old growth fields, along

thick hedgerows, in overgrown rubble in abandoned fields, or in clumps of dense conifers. These Owls tend to roost in trees only when snow covers the ground. During migration, Short-eared Owls will move through high mountain passes, flying at great heights.

Status: Least Concern to Vulnerable. Global population: >2,000,000 adult individuals with an decreasing population trend. Shorteared Owl populations declined by 2.5 percent per year between 1966 and 2010, resulting in a cumulative decline of 67 percent, according to the North American Breeding Bird Survey. Partners in Flight estimates a global breeding population of 3 million with 14 percent spending some part of the year in the U.S., 11 percent in Canada, and 3 percent wintering in Mexico. The 2014 State of the Birds Report listed them as a Common Bird in Steep Decline, and they rate a 12 out of 20 on the Partners in Flight Continental Concern Score. These owls are listed as of special concern, threatened, or endangered in some states. They



are more common in the northern portion of their breeding range, but populations fluctuate greatly along with prey population cycles.

Diet: Mostly small mammals, but sometimes take birds. Meadow voles (*Microtus* species) are the primary prey. Deer mice, shrews, ground squirrels, pocket gophers, pocket mice, moles, rats, bats, rabbits, and muskrats are also taken. Birds probably are more important when Short-eared Owls hunt in marshes and along coastal areas, where they can target shorebirds, terns, and small gulls and seabirds. In inland habitats they take mainly Horned Larks, meadowlarks, blackbirds, and pipits. A few insects such as roaches, grasshoppers, beetles, katydids, and caterpillars are also taken. Unlike most Owls, prey is normally carried in its talons.

This owl is generally nocturnal, but often become active 30-60 minutes before sunset; some owls may be active during the day (to a much lesser extent) during the breeding season. Seasonal changes in activity are a response to variations in vole population size and day length. They fly over open areas, a few feet above ground, and pounce when prey is located. In dense vegetation they will hover over prey, often for extended periods when facing into the wind, before pouncing. They occasionally hunt from a perch or while standing on the ground.

Nesting: Males and females are alike however males tend to be up to 8% heavier than females. The facial disc is ochre, shading into blackish around the eyes. Loral bristles and eyebrows are whitish. Eyes are pale yellow to sulfur-yellow, sometimes bright yellow. The cere is grayish-brown and the bill blackish-horn. The tiny ear-tufts are set close together near the center of the forehead, often not visible, and erected only when excited. The crown and nape are distinctly streaked dark on yellowish-tawny. Upper parts are yellowish-tawny to pale ochre-buff with a faint grayish cast, heavily streaked and spotted dusky. The scapulars have dark centers and pale edges. The basal half of the primaries above are plain ochre, contrasting with a narrow area of blackish feathers (alulae) at the 'wrist', which is distinctly visible in flight. The rest of the flight feathers are barred light and dark. The tail is slightly wedge-shaped, and yellowish-tawny to ochrewhitish, distinctly streaked brown. Undersides of the secondaries are faintly barred or plain. Tarsi and toes are feathered pale tawny to whitish-cream. Claws are grayish-horn with darker tips.

Courtship and territorial behavior is spectacular for this owl. Males perform aerial displays by rising quickly with rhythmic and exaggerated wing beats, hovering, gliding down, and rising again, often 200 to 400 meters above ground. Wing claps, in bursts of 2 to 6 per second, are often made during this flight and some singing occurs. The flight can be ended with a spectacular descent where the male hold his wings aloft and shimmies rapidly to the ground. Two birds may engage in flight, locking talons, and fighting briefly. Often, a display where one bird flashes its light under-wing towards another is used during territorial and courtship flights. The Short-eared Owl nests on the ground, unlike most other Owls. Nests are usually situated in the shelter of a grass mound, under a grass tuft, or among herbaceous ground cover. Nests are loosely

constructed by the female, who scrapes a spot on the ground and then lines the scrape with grass stems, herb stalks, and feathers plucked from her breast. Clutch sizes range from 4 to 14 eggs (average 5 to 7), with large clutches laid during years of high food abundance. Clutch size increases from south to north. Eggs are laid every 1 to 2 days and incubation commences with the first. Incubation is done largely by the female, with the male bringing food to the nest and occasionally taking a turn incubating. Young grow very rapidly after hatching, and begin to wander from the nest as soon as 12 days, an adaptation for a ground-nesting species to reduce the amount of time they are vulnerable to predation. Young fledge at about 4 weeks.

The Short-eared Owl routinely lays replacement clutches, because of high predation rates. In southern areas, it may raise 2 broods in 1 year. Because reproductive success is relatively poor, the ability to lay large clutches helps populations recover after periodic declines.

This Owl has relatively small nesting territories and home ranges, varying from 15 to 200 hectares, and may nest in loose colonies in excellent habitat. Because of its nomadic tendencies, mate and site fidelity are very low. Breeders tend to wander until they find areas with high densities of prey before settling to breed. In winter, large numbers of Owls will occur in areas with lots of food. Communal winter roosts of up to 200 birds are known, with these birds ranging over nearby areas to hunt. Resident Owls will defend winter foraging territories of about 6 hectares, before expanding the territory size during the breeding season.

Cool Facts: In Latin, the word "f*lammeus*" means fiery, flaming, or the color of fire. Common names for this owl also include the Evening Owl, Marsh Owl, Bog or Swamp Owl, Grass Owl, Meadow Owl, Mouse-hawk, and Flat-faced Owl.

The Short-eared Owl may compete with the Barn Owl in some areas. Some successful nest box programs to attract Barn Owls have coincided with the decline of the Short-eared Owl in the same area.

Wild Short-eared Owls have reached almost 13 years of age. Natural enemies include many diurnal raptors such as the Bald Eagle, Northern Goshawk, Gyrfalcon, Red-tailed Hawk, and Snowy Owl. Because they nest on the ground, they are vulnerable to mammalian predators such as skunks, dogs, foxes, and coyotes, while Jaegers, gulls, ravens, and crows steal eggs and small chicks. Collisions with vehicles account for a large number of deaths. Also, They are attracted to the wide open fields of airports and so many are killed by collisions with aircraft.

There are 10 subspecies of Short-eared Owl:

- *A. f. bogotensis*. First reported by Chapman in 1915. It is found in Colombia, Ecuador and northwestern Peru.
- *A. f. domingensis*. First reported by Statius Müller in 1776. It is found on Hispaniola.
- *A. f. flammeus.* First reported by Pontoppidan, 1763. The nominate species, it is found in North America, Europe, northern Africa and northern Asia.

- *A. f. galapagoensis.* First reported by Gould in 1837. It is found on the Galápagos Islands.
- *A. f. pallidicaudus.* First reported by Friedmann in 1949. It is found in Venezuela, Guyana and Suriname
- A. f. ponapensis. First reported by Mayr, 1933: found on east Caroline Island
- A. f. portoricensis. First reported by Ridgway in 1882. It is found in Puerto Rico
- *A. f. sandwichensis.* First reported by A. Bloxam in 1827. The Pueo or Hawaiian short-eared owl is found in the Hawaiian Islands.
- A. f. sanfordi. First reported by Bangs in 1919. It is found on the Falkland Islands
- *A. f. suinda.* First reported by Vieillot in 1817. It is found from southern Peru and southern Brazil to Tierra del Fuego.
- *A. f. cubensis.* First reported by Garrido, 2007. It is found in Cuba.

Common Name: Tawny Fish-owl **Scientific Name:** *Bubo flavipes*

Size: 19-24 inches (48-61 cm); Wingspan: 62.9 inches (160 cm)

Habitat: Asia; found in subtropical to temperate forests in Bangladesh, Bhutan, China, India, Laos, Myanmar, Nepal, Taiwan, and Vietnam. They inhabit the Himalayan foothills from Kashmir and Garhwal east to the mountains of Laos and Vietnam and in southern China up to Chekiang and Anhwei.

They require forest tracts, floodplains or foothills bearing mountain streams.

Status: Least Concern. **Global population:** Unknown amount of adult individuals with a stable population trend. National population sizes have been estimated at < c.100 breeding pairs in China and < c.100 breeding pairs in Taiwan (Brazil 2009).

Diet: Mostly fish, crabs, shrimps, crayfish and frogs. The primary food of tawny fish owls in one study from Taiwan was freshwater crabs (apparently of the Candidiopotamon genus) which made up 62.8% of the diet followed by the Asiatic toad (Bufo gargarizans), at least three other frog species, then fish and Eriocheir mitten crabs. The toads were taken considerably more regularly than other frog species, although far less abundant in number in the stream wetlands there, due to their larger sizes. More terrestrial prey is by no means avoided though and the species



may also hunt lizards, snakes, and small mammals such as moles, and particularly rodents (such as the bamboo rats (*Rhizomys*)). It also preys on birds including Mandarin ducks (*Aix galericulata*) in Taiwan and has preyed upon large ground birds

such as junglefowl (*Gallus ssp.*), pheasants and eared pheasants (the latter sometimes weighing more than 2 kg (4.4 lb)).

The tawny fish owl is at least partially diurnal in activity, with daytime activity mainly occurring in the late afternoon and they may be seen actively hunting before nightfall especially on cloudy days. However, before the afternoon they tend to be sluggish during the day. If disturbed or threatened, these owls tend to sit tight and not take flight. Like most owls, they usually choose inconspicuous perches during the day to avoid detection. They usually hunt by swooping down to the water to capture fish from the surface and are reportedly surprisingly active in their hunting style and are not dissimilar in the hunting methods to those used by diurnal fish-hunting raptors such as fish eagles, sea eagles and ospreys.

Nesting: Males and females are alike however males tend to be up to 8% heavier than females. It is a large fish-owl with prominent horizontal ear-tufts. Facial disc orange-rufous with indistinct dark border; above, rich orange-rufous or tawny with broad striping.

Tawny fish owls are highly solitary and territorial as are a majority of owls. The breeding season is November to February in India and December to February in Assam. Nest locations found have included large holes in river banks, caves in cliffs and the fork or crotch of a large tree. As in all owls, tawny fish owls do not build a nest so merely lay their eggs on the bare ground of whatever surface they use. They also have been known to nest in abandoned nests built by Pallas's fish eagles (*Haliaeetus leucoryphus*). Usually two eggs are laid, but sometimes only one is. Greater details of the reproductive biology are not currently known although are presumed to basically be similar to those of other fish owls.

Cool Facts: Compared to eagle owls of similar length, fish owls tend to be even shorter in tail length and even heavier in build, have relatively larger wings (the tawny is particularly chunky in shape), have considerably longer legs, and have a rough texture to the bottom of their toes. At least the latter two features are clear adaptations to aid these owls in capturing fish.

Unlike fish-eating diurnal raptors who will not submerge any part of their body while hunting, fish owls will wade into shallow water, hunting on foot. Unlike most owls, the feathers of fish owls are not soft to the touch and they lack the comb and hair-like fringes to the primaries, which allow other owls to fly silently in order to ambush their prey. Due to the lack of these feather-specializations, fish owl wing beats make sounds. The lack of a deep facial disc in fish owls is another indication of the unimportance of sound relative to vision in these owls, as facial disc depth (as well as inner ear size) are directly related to how important sound is to an owl's hunting behavior. Similar adaptations, such as unwillingness to submerge beyond their legs and lack of sound-muffling feathers are also seen in the African fishing owls, which do not seem to be directly related.

Common Name: Crested Owl Scientific Name: Lophostrix cristata

Size: 15-17 inches (38-43 cm); Wingspan: 43.3 inches (110 cm)

Habitat: The Americas; found in Central America and northern South America, where it occurs in Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, and Venezuela. It is found in the Amazon Basin except in the north-west basin region with western Guyana, Venezuela, and central-eastern Colombia.

It inhabits humid evergreen forests and generally roosts by day in thickets, often very low. It can be found from sea level to the cloud forests at 6300 ft. (1950 m) in elevation.



Status: Least Concern to Vulnerable, Global population: 50,000-499,999 adult individuals with a stable population trend. This species is suspected to lose 18.8-21.9% of suitable habitat within its distribution over three generations (17 years) based on a model of Amazonian deforestation. It is therefore suspected to decline by <25% over three generations.

Diet: Mostly large insects like caterpillars or beetles, although it will probably take some small vertebrates as well.

The Crested Owl is strictly nocturnal.

Nesting: Males and females are alike however males tend to be up to 8% heavier than females. It

has large white eyebrows that continue into the white ear tufts. From the front, the owl is darker above and lighter below. All 3 subspecies have light and dark morphs.

Dark morph: The crown, facial disc, and upper breast is uniform deep chocolate-brown, with the dark rim around the facial disc barely visible. Some individuals have a rufous facial disc. Forehead, eyebrows and most of the ear-tufts are white. Eyes are normally dark brown-orange, but individuals with orange-yellow eyes have been recorded. Bill is yellowish-horn to dark horn. Upper parts are plain dark chocolate-brown, wing-coverts and outer webs of the primary feathers have whitish dots All flight feathers are barred light and dark. Tail feathers are uniform chocolate-brown with very fine darker mottling. The throat is pale buff, while the neck and upper breast is dark chocolate. The rest of the underparts are pale brownish with numerous faint brown vermiculations. Tarsi are feathered to the base of the toes, which are pale grayish-brown. The claws are dark horn with blackish tips.

Light morph: General color is pale rufous-brown instead of dark chocolate. Upper breast has a darker brown collar.

Nesting season begins in February and extends through May. It is a cavity nester, usually using a tree cavity. The young are thought to stay with the adults at least through September.

Cool Facts: It has a deep almost frog-like croak that it repeats every 5-10 seconds. The Central American race (*L.c. stricklandi*) also has a shorter "*gurrr*" or "*ohrrr*" than the other two races, which have a longer "*g,g,g,g,ggrrrrrrr*" call.

There are three races of the Crested Owl that are recognized:

- *L. c. stricklandi.* It is found in Central America and is darker than either the dark or light morphs of the other two races. It also has a yellow-orange iris compared to the other two races, which have dark brown irises.
- *L. c. wedeli.* It is found from the northern part of South America into East Panama
- *L. c. cristata.* The nominate species is found in North and Central South America.

Common Name: Southern Boobook Scientific Name: *Ninox boobook*

Size: 10.5-14 inches (27-36 cm); Wingspan: 27.5-31.5 inches (70-80 cm)

Habitat: Oceania; endemic to mainland Australia, southern New Guinea, Timor and the Sunda Islands.

Eucalypt forests and woodlands appear to be the preferred habitat but mallee, mulga, semi-desert, tree-lined creeks, residual timber on farmland, leafy suburbs, offshore islands are also suitable habitats. They are generally absent from dense rainforest,



except for the Red Boobook of north Queensland.

Status: Least Concern. **Global population:** Unknown amount of adult individuals, but the population is suspected to be stable in the absence of evidence for any declines or substantial threats.

Diet: Mostly insects (particularly nocturnal beetles and moths), mice, and birds up to the size of a house sparrow.

Generally nocturnal, roosts by day in thick foliage. When threatened, they sit bolt upright, with feathers pressed tight against the body, and turn sideon to the source of the threat, appearing long

and slender. It uses a fence, branch or telegraph pole as a perch or vantage point to hunt from.

Nesting: Males and females are alike however males tend to be up to 8% heavier than females. It has generally brown head and upperparts, with white markings on the

scapulars and spots on the wings. Its head lacks tufts common in other owls, and has a paler facial disk with darker feathers behind the eyes. The eyes have been described as gray-green, green-yellow, or even light hazel. The underparts are paler, ranging from buff to cream, and are streaked with brown. The overall color is variable and does not appear to correspond to subspecies or region.

They nests in tree cavities, anywhere from 1 to 20 m above the ground. The nest is sparsely lined with wood shavings, leaves and small twigs, but may be left bare. Usually 2-3 eggs are laid and are incubated for 35 days. The female alone incubates the eggs, but both sexes, and sometimes a second female helper, feed the young. The young have white down and are fledged in 5 to 6 weeks. They leave the nest well below full size and with abundant down. They are probably dependent on the parents for 2 to 3 months after this.

Cool Facts: This bird is the smallest owl on the Australian mainland and is the continent's most widely distributed and common owl. It was considered to be the same species as the "morepork" of New Zealand until 2013. The common name comes from the two-tone call of the bird, and has also been transcribed as "mopoke"

Eleven subspecies are recognized:

- *N.b. boobook,* the nominate subspecies. It is found on the Australian mainland, from Southern Queensland, through New South Wales and Victoria into South Australia.
- *N.b. halmaturina*. It is found on Kangaroo Island. It is sometimes included in the nominate subspecies. It has dark brown underparts with reddish-brown rather than white markings.
- *N.b. rotiensis*. It is found on Rote Island in the Lesser Sunda Islands.
- *N.b. fusca*. It is found on Timor, Roma and Leti Islands in the eastern Lesser Sunda *Islands*. It has a more gray-brown plumage with no red tinge, unlike other subspecies.
- *N.b. moae*. It is found on Moa, Leti and Romang Islands in the Lesser Sunda Islands.
- *N.b. plesseni*. It is known only from a single specimen from Alor Island in the eastern Lesser Sunda Islands.
- *N.b.cinnamomina*. It is found on Tepa and Babar Islands in the eastern Lesser Sunda Islands.
- *N.b. pusilla.* It is from southern lowlands New Guinea.
- *N.b.remigialis*. It is found on the Kai Islands in the Lesser Sunda Islands.
- *N.b. ocellata*. It is found across northern Australia, Western Australia and western South Australia, as well as Savu near Timor. It is generally lighter-colored than other mainland boobooks, though occasional dark-plumaged individuals are seen.
- *N.b. urida,* also known as the Red Boobook. It is from north Queensland, and sometimes considered a separate species.

Common Name: Barking Owl Scientific Name: Ninox connivens

Size: 15.3-17.7 inches (39-45 cm); Wingspan: 33.3-47.2 inches (85-120 cm)

Habitat: Oceania; widely distributed throughout Australia (but more common in Northern Australia), but are absent from central Australia, the Nullarbor Plain and from Tasmania and the large offshore islands. Barking Owls are also found in New Guinea and the Moluccas.

They are usually found in habitats that are dominated by eucalytpus species, particularly red gum, and, in the tropics, paperbark species. They prefer woodlands and forests with a high density of large trees and particularly sites with hollows that are used



by the owls as well as their prey. Roost sites are often located near waterways or wetlands.

Status: Vulnerable to Endangered. **Global population:** Unknown amount of adult individuals, but he population is suspected to be in decline owing to ongoing habitat destruction and degradation through overgrazing. Loss of hollow-bearing trees and firewood harvesting impacts on the species by removing nesting and roost sites as well as habitat for hollow-dependent prey such as gliders, possums and parrots. In Victoria,

it was listed on the 2007 Advisory List of Threatened Vertebrate Fauna as 'endangered', as it was estimated that there were only 50 pairs left. The Action Plan for Australian Birds 2010 lists the barking owl southern sub-species as 'near threatened'.

Diet: Mostly small to medium-sized mammals, birds, reptiles and insects. Diet is largely insects during the non-breeding season, with larger prey more commonly taken when breeding.

Prey is located either from the air or from an exposed perch. Most hunting is performed in the first few hours of the night and the last hours before dawn. Occasionally, birds may even be seen hunting in daylight. The Barking Owl prefers to hunt in clearings, including waterways and other open areas.

Nesting: Males and females are alike however males tend to be up to 8% heavier than females. The forehead, crown and facial disc is grayish-brown, with the facial disc having an indistinct rim. Eyes are yellow, the cere is grayish, and the bill is grayish-horn to blackish. The back and mantle are smoky grayish-brown and rather uniform. The scapulars have large whitish areas on the outer webs, forming a whitish row across the shoulder. Wing-coverts are smoky gray-brown with small whitish spots. The primaries and secondaries are slightly darker than the wing-coverts, and are barred with very narrow whitish bars. The tail feathers are gray-brown with 5-6 narrow whitish bars. The throat is whitish-buff, and streaked grayish-brown. Throat feathers are erectile giving a bearded appearance. Under parts are creamy-buff to whitish, with prominent grayish-brown streaks. There is considerable individual variation here, with streaks varying from narrow to broad, and from darker to paler. The tarsi are feathered and the toes are sparsely bristled, and colored dull yellow or yellowish-brown. The claws are horn, becoming dusky towards the blackish tips.

Barking Owls raise a single brood in a season. The nest site is an open hollow in a tree trunk, loosely lined with sticks and other wood debris. The female incubates the eggs, while the male supplies the food. Young Barking Owls remain dependent on their parents for several months, and will remain in the family group until a few months before the next breeding season.

Cool Facts: The barking owl was first described by ornithologist John Latham in 1802. The Australian name for the owl is "Goora-a-Gang."

A screaming call, similiar to that of the barking owl, is described by Aboriginal folklore as the 'Bunyip' ("devil" or "evil spirit"). The Bunyip is said to be a fearsome creature that inhabited swamps, rivers and billabongs and feeds on the flesh of women at night. There is debate over whether the call of the barking owl actually started the Bunyip story, but the owl is the most likely explanation since it is nocturnal and found in the regions where the Bunvip was said to dwell. Aborigines debate this explanation saying that the Barking Owl has learned to mimic the screams of the Bunyip.

Common Name: Eurasian or Common Scops-owl **Scientific Name:** *Otus scops*

Size: 7.5-8.3 inches (19-21cm); Wingspan: 19-21 inches (47-54 cm)

Habitat: Eurasia and Africa; central, eastern and western Europe, and Africa north of the Sahara from Morocco to Tunisia, Asia Minor and eastwards to central Asia. It is generally a migratory bird. European owls normally winter in the Savannas of east and west Africa, north of the rainforest. In Autumn, the owls leave their breeding areas between August and November, returning between March and late April.

Their preferred habitats are semi-open or open country with scattered trees or small woods, cultivated areas with groups of trees, rocky landscapes, parks, avenues of trees along roads, gardens with mature trees, Mediterranean scrub and garrigue. In warm climates, they are also found in mountainous regions. This owl does not occur in dense forest. They winter mosty in savanna habitats.

Status: Least Concern. Global population: 1,000,000-3,000,000 adult individuals with



a decreasing population trend.

Diet: Mostly insects such as grasshoppers, beetles, moths, cicadas, spiders, caterpillars and earthworms. Small mammals, small birds, reptiles and frogs are also taken.

They are often attracted to artificial lighting to capture moths and other insects that have settled nearby by swooping on them. Larger prey are normally caught by swooping on them

from a perch. Small prey are taken with the bill, while larger prey are seized with the talons. They are most active from after sunset to midnight.

Nesting: Males and females are alike. The facial disc is grayish-brown, finely mottled with the rim not very prominent. Eyes are yellow, and the bill is gray. Ear tufts can be

difficult to see when the plumage is held loose. When afraid, this owl becomes very slim, with ear-tufts erected straight. Upper parts are grayish-brown with blackish streaks, the pattern resembling the bark of an old tree. The crown is similar, with blackish shaft-streaks. Scapulars are white on the outer webs, with a blackish central streak and black tip. The flight feathers are barred dark and pale, as is the short tail. Underparts are also grayish-brown but somewhat paler than the back, with blackish shaft-streaks, and some thin cross-bars and dark vermiculations. Several of the shaft-streaks are much broader than the others and have heavier horizontal vermiculations. Tarsi are feathered to the base of the toes, which are gray. Claws are grayish-brown with darker tips. There is also a rare reddish morph of this owl.

For migrating populations, breeding season starts on return from winter quarters. For resident populations, such as southern Spain, the season starts in February. Males begin by calling on calm nights. The female answers and the birds start duet-ting. Mating is frequent after such duets. The male then flies to a potential nest cavity, enters and sings from the opening. Once the female has inspected and accepted the cavity, the pair will remain close by every evening. Nest sites include natural cavities in trees, rocks or walls, woodpecker holes in tree trunks or thick branches, or holes in steep banks of ditches or sandpits, even under roofs. Nest boxes are also accepted. There is usually only one brood per year. Egg laying begins from late April or May to the first half of June, sometimes July. Normally 3-4 white eggs are laid directly on the bottom of the cavity at two day intervals. Incubation begins with the second egg and is done by the female alone while the male provides the food. The eggs hatch after 20-31 days, depending on climate. The female broods and feeds the young for about 18 days, then leaves the nest to help the male bring in food. The chicks hatch blind, with their eves beginning to open at 6-8 days and fully opened at 11-13 days. Regurgitation of pellets begins at about 6-9 days. At 3-4 weeks, the young leave the nest, landing on the ground and climbing up into trees or bushes by using their bill and claws, and flutter with their wings. At about 33 days, they are fully capable of flight. They are cared for and fed by both parents for a further 4-5 weeks before becoming independent. Sexual maturity is reached at an age of about 10 months.

Cool Facts: The call is a deep whistle given by both sexes. It is similar to the call of the Midwife Toad. The maximum age recorded for a Common Scops owl is 12 and a half years.

Common Name: Oriental Bay Owl **Scientific Name:** *Phodilus badius*

Size: 9-11.4 inches (23-29 cm); Wingspan: 28.7-29.5 inches (73-75 cm)

Habitat: Asia; South and South-East Asia, from eastern India and southern China, through Bangladesh, Myanmar, Thailand, Cambodia, Lao, Vietnam, Peninsular and East Malaysia, Singapore, Brunei Darussalem, Kalimantan, Sumatra, Java, and Bali, Indonesia.



Strictly nocturnal, occurring in dense evergreen primary and secondary forest in lowlands, foothills, submontane and montane forest up to 1,700 m in South-East Asia, although it has been recorded up to 2,300 m. Its preferred habitat is foothill forest between 200 and 1,000 m and submontane forest up to 1,500 m. It typically occurs alongside water.

Status: Least Concern. **Global population:** Unknown amount of adult individuals with a stable population trend. The species is considered to be very rare throughout most of its range.

Diet: Mostly small rodents (such as rats and mice), bats, birds, lizards, frogs, and large insects such as beetles and grasshoppers.

They are completely nocturnal and hunt from a perch, flying through dense stands of young trees beneath the forest canopy to make a kill. They also tend to hunt near water.

Nesting: Males and females are alike. The facial disc is elongated and colored whitishwine, with a broad vertical chestnut-brown zone through each eye. The feathers of the rim are tipped blackish and chestnut-brown. The forehead is V-shaped and pale brownish-gray, with the upper part of the 'V' reaching the crown, giving the frontal shield a triangular aspect. Eyes are dark brown or brownish-black, and relatively large. The evelids are whitish. The bill is creamy-yellow or pinkish-horn. The crown and nape are chestnut, speckled with black and buff shaft-spots. The mantle and back, to the upper tail-coverts, is a paler chestnut, spotted with black and buff shaft-streaks, with the feather bases being bright buff, and each mantle feather having 2-3 black spots on the shaft. The tail is chestnut with a few narrow dark bars. The outer two primary wing feathers (10th & 9th) have white on the outer webs, and are banded with black or chestnut edges. The 8th & 7th primaries also have white on the outer webs near the tips. The throat is creamy-wine. Underparts are vivid pale yellowish-brown, speckled with blackish-brown and buff. The tarsi are feathered to the toe joint with pinkish-wine feathers that become paler near the toe joint. The toes are yellowish-brown or pinkishbuff, with the claws being paler.

Breeding season is March to May around Nepal and Sikkim. In Java, eggs have been recorded from March to July. Nests are in tree holes, rotten tree trunks or stumps, or cavities. Has been recorded nesting in leaf layers of palms in Java. Has also been reported using nest boxes. 3-5 white eggs are laid at 2 day intervals. Incubation starts with the first egg, and is done by the female alone while the male brings in food. Incubation and fledging periods are unknown.

Cool Facts: A population of this species has apparently become extinct on Samar Island in the Philippines during the 20th century. It was described as *Phodilus badius riverae* and was only ever known from a single specimen, which was lost in a bombing raid in 1945.

Common Name: Spectacled Owl Scientific Name: Pulsatrix perspicillata

Size: 16.1-20.6 inches (41-52.3 cm); Wingspan: 37.4-39.3 inches (95-100 cm)

Habitat: The Americas; a resident breeder in forests from southern Mexico and Trinidad, through Central America, south to southern Brazil, Paraguay and northwestern Argentina.

Primarily a bird of tropical rain forests, it is found mostly in areas where dense, oldgrowth forest is profuse. However, it may enter secondary habitats, such as forest edges, especially while hunting. On occasion, they have been found in dry forests, treed savanna plains, plantations and semi-open areas with trees. In areas such as Costa



Rica, they may inhabit subtropical montane forests of up to 1,500 m (4,900 ft), although are generally associated with lowland forests.

Status: Least Concern to Extinct. **Global population:** 499,000- 4,999,999 adult individuals with a decreasing population trend. Being a large, slow-maturing bird of prey with a strong sense of territoriality, it as a rule occurs at low densities. In areas where prey populations are hunted by people and habitats are destroyed or compromised, they may decrease. This is the likely source of extinction for an entire race on Trinidad (*P. p. trinitatis*). It is estimated that there will be a 17.5 to 20.3% population decline over the next three generations.

Diet: A wide array of noctural mammals and invertebrates. Mammals such as Peter's climbing rat (*Tylomys nudicaudus*), the mouse opossum (*Marmosa ssp.*), the Greater spear-nosed bat (*Phyllostomus hastatus*) and broad-eared bats (*Nyctinomops laticaudatus*) are preferred prey. Smaller monkeys such as tamarins (*Saguinus ssp.*) may be vulnerable to predation. Invertebrates are eaten regularly as well, second only in importance to mammals, and may be comprised mainly by caterpillars, but also crabs, snails, large insects and spiders.

Nesting: Males and females are alike however females are larger and heavier than males. It is unmistakable in most of its range with blackish brown upper parts, head and upper breast, white facial markings and whitish to yellowish-ochre underparts. The eyes are yellow and the beak is pale. The juvenile is even more distinctive than the adult, being completely white apart from a chocolate brown facial disc. The head is typically darker than the back and mantle but the shade of this area besides the composition of the breast band is the main distinguishing external feature of the subspecies.

This species is largely nocturnal, starting activity right around the time of last light at dusk and usually being back on their roosts for the day around first light. It is a solitary, unsocial bird, usually roosting singly each day and only peaceable while associating with others of their own species for reproductive purposes.

Eggs are laid variously in the dry season (November–May), or at the start of the wet season (June–July). This owl typically nests in an unlined tree cavity but may also use the crutch of a large tree. They do not build an actual nest; they simply lay their eggs on the bare surface of the tree cavities. Spectacled owls lay 1-2 eggs, which are incubated entirely or almost so by the female for about 5 weeks. If two eggs are hatched, often only one of the chicks will survive, the smaller chick usually perishing via starvation or by aggression from the larger nestling. Chicks leave the nest for surrounding branches at about 5–6 weeks but cannot usually fly well at this stage. However, they tend to depend on their parents for several months after leaving the nest and may be fed and cared for for up to a year once fledged, inhibiting the pair's ability to have young the following year. Spectacled owls may breed while still in immature plumage since it may take up to five years before full adult plumage is obtained.

Cool Facts: There are six subspecies. Each of the recognized species also has a distinct song.

- *P. p. Boliviana*. First reported by Kelso in 1933. It is distributed in Bolivia. Most similar to *P. p. chapmani*, with slightly lighter color on mantle than that race and a lighter, more buff underside color. The feathers appear to be relatively long on this race especially on the flanks, probably due to the cooler climates it inhabits. Specimens have a single wing length of 335 to 366 mm (13.2 to 14.4 in) and a tail length of 205 mm (8.1 in).
- *P. P. chapmani.* First reported by Griscom in 1932. It is found from eastern Costa Rica to northwestern Ecuador. A relatively dark hued subspecies, sooty black on the back and rich tawny-rufous below. The single wing length is 326 to 346 mm (12.8 to 13.6 in), tail is 183 to 193 mm (7.2 to 7.6 in), the bill from the cere is 29.5 mm (1.16 in). A mean weight of 750 g (1.65 lb) was published.
- *P. P. perspicillata.* First reported by Latham in 1790. The nominate species has by far the largest distribution of the races. It is found from northwestern South America to as far south as central Brazil and Bolivia. The wing length is 305 to 355 mm (12.0 to 14.0 in), tail is from 133 to 196 mm (5.2 to 7.7 in) long, and bill from cere is 26.5 to 31.5 mm (1.04 to 1.24 in).
- *P. p. pulsatrix.* First reported by Wied-Neuwied in 1820. The "Short-browed Owl"; native to southeastern Brazil from about Bahia south to Rio Grande do Sul in the area of Aparados da Serra National Park and also bordering over into northeastern Argentina. This species has creamy-buff instead of white on the spectacles of the face. *P. p. pulsatrix* is lighter brown than in any other spectacled owl, with no contrasting darker plumage on the crown and nape as in other races. The breast band is brown and distinctly broken in the center. Main proposed difference (leading to it being considered a full species) is that territorial song is not as ascelerated as in other races. Apparently, where the ranges of more typical spectacled owls overlap with the short-browed types, they do not seem to hybridize. This is the largest variety of Spectacled Owl. The wing length is 363 to 384 mm (14.3 to 15.1 in) long and tail is 211 to 226 mm (8.3 to 8.9 in). The weight of a single male and single female was 1,050 g (2.31 lb) and 1,250 g (2.76 lb), coincidentally exactly the same of the maximum weight recorded for the nominate race of Spectacled Owl.
- *P. p. saturata.* First reported by Ridgway in 1914. It is found from southern Mexico to northern Costa Rica. *P. p. saturata* differs from the typical spectacled owl only in that it is black on the head and the back, with black barring on the sides. It is one of the more distinct and widely described subspecies. The wing length is 314 to 370 mm (12.4 to 14.6 in) and tail is 182 to 204 mm (7.2 to 8.0 in) long. The bill from the cere is 27 to 32.5 mm (1.06 to 1.28 in). Weight is from 591 to 761 g (1.303 to 1.678 lb) in males and from 765 to 982 g (1.687 to 2.165 lb) in females.
- *P. p. trinitatis.* First reported by Bangs & T. E. Penard in 1918. It is found on Trinidad and Tobago. This poorly-known race is sometimes treated as synonymous with the nominate by some authorities.Today, authorities believe that the race is extinct.

Common Name: Barred or "Hoot" Owl Scientific Name: Strix varia

Size: 16-25 inches (40-63 cm); Wingspan: 38-49 inches (96-125 cm)

Habitat: North America; widespread in North America, they occur across most of the eastern half of the continent from Florida northward to southern Canada; they are also spreading westward in the north of their range. Northern populations may be partially migratory depending on food resources.

Barred Owls live year-round in mixed forests of large trees, often near water. They tend to occur in large, unfragmented blocks of mature forest, possibly because old woodlands support a higher diversity of prey and are more likely to have large cavities suitable for nesting. Their preferred habitats range from swamps to streamsides to



uplands, and may contain hemlock, maple, oak, hickory, beech, aspen, white spruce, quaking aspen, balsam poplar, Douglas-fir, lodgepole pine, or western larch.

Status: Least Concern. Global population: 3,000,000 adult individuals with an increasing population trend. Barred Owls are fairly numerous and their populations increased 1.7 percent per year between 1966 and 2010, according to the North American Breeding Bird Survey. Until the twentieth century, Barred Owls were residents of old. undisturbed forests in eastern North America. They were probably restricted from moving into northwestern boreal forests because of frequent forest fires. But fire suppression-along with tree planting in the Great Plainsallowed them to spread northward and westward during the past century. They eventually expanded south along the West Coast as far as northern California, where they

began competing with Spotted Owls. Barred Owls have displaced these slightly smaller and less aggressive owls and started hybridizing with them, further threatening the already compromised Spotted Owl population. Barred Owls are forest birds. They tend to occur in older forests and they need large, dead trees for nest sites; these requirements make them sensitive to expansion of logging. For this reason, the Barred Owl is often used as an indicator species for managing old forests.

Diet: A very opportunistic hunter; meadow voles are its main prey, followed by shrews and deer mice. Other mammals include rats, squirrels, young rabbits, bats, moles, opossums, mink, and weasels. Birds are taken occasionally, including woodpeckers, grouse, quail, jays, blackbirds, and pigeons. They also eats small fish, turtles, frogs, snakes, lizards, crayfish, scorpions, beetles, crickets, and grasshoppers.

A nocturnal bird, hiding in dense foliage during the day, usually high up. It may also roost on a branch close to a broad tree-trunk, or in a natural tree hole. It may become very aggressive when defending a nest. It will use a perch, from where it dives upon its prey. Birds are taken as they settle into nocturnal roosts, because they cannot catch birds on the wing. They will also swoop down to the water's edge to catch frogs, other amphibians, and occasionally fish. Barred Owls are attracted to campfires and lights where they forage for large insects. Prey is usually devoured on the spot. Larger prey is carried to a feeding perch and torn apart before eating.

Nesting: Males and females are alike. The facial disc is pale grayish-brown with darker concentric lines. The rim is not very prominent. Eyes are dark brown to blackish-brown. The cere is pale horn and the bill is orangish to pale yellow with sometimes a slight greenish tint. The sides of the head and neck are barred light and dark. The upper parts are brown to grayish-brown, scalloped with whitish bars on the crown, back and mantle. Wing-coverts are spotted whitish. Flight feathers are barred whitish-buff and brown. The tail is brown or grayish-brown with 4-5 whitish bars. Underparts are pale grayish-brown to dirty whitish. The upper breast and fore neck are densely barred light and dark. The rest of the underparts are boldly streaked dark to rufous-brown. The tarsi are feathered, and toes are almost totally feathered, the bare parts being yellowish-gray. The claws are dark horn with blackish tips.

Barred Owls call year-round but courtship activities begin in February with breeding occurring between March and August. Males hoot and females give contact calls. As the nesting season approaches, males chase after females giving a variety of hooting and screeching calls. Males display by swaying back and forth, and raising their wings, while sidling along a branch. Courtship feeding and mutual preening also occur. Barred Owls nest in cavities and will also use abandoned Red-shouldered Hawk, Cooper's Hawk, Squirrel, or Crow nests. Eggs number 2-4 and are white, and almost perfectly round, with a slightly rough texture. They are likely laid every 2 to 3 days and incubation begins with the first egg laid. Incubation period is 28-33 days. The Male brings food to the female while she is on the nest. The Barred Owl is single-brooded but has a long breeding season, which allows for laying of replacement clutches if the first clutch or

brood is lost. When the young leave the nest, at about 4 weeks, they are not able to fly, but crawl out of the nest using their beak and talons to sit on branches. They fledge at 35 to 40 days. Once they lose their down, there is no difference between adult and juvenile plumage.

Parents care for the young for at least 4 months, much longer than most other Owls. Young tend to disperse very short distances, usually less than 10km, before settling. Pairs mate for life and territories and nest sites are maintained for many years.

Cool Facts: Barred owls may be partly responsible for the recent decline of the northern spotted owl, native to British Columbia, Washington, Oregon, and California. Since the 1960s, barred owls have been expanding their range westward from the eastern US, perhaps because man-made changes have created new suitable habitat in the west. When spotted owls and barred owls share the same environment, the latter are generally more aggressive and out-compete the former, leading to decreased populations of the native owls. They have also been known to interbreed, with the hybrids named "sparred owl" or "botted owl", which are sterile, and further threaten the population stability of the Spotted Owl.

The Great Horned Owl is the most serious predatory threat to the Barred Owl. Although the two species often live in the same areas, a Barred Owl will move to another part of its territory when a Great Horned Owl is nearby.

Common Name: Northern Hawk-owl Scientific Name: Surnia ulula

Size: 14.2-17.6 inches (36-44.7 cm); Wingspan: 43.3-47.2 inches (110-120 cm)

Habitat: Northern Hemisphere; from eastern Alaska through to Newfoundland and in some areas extends south into northern United States and across northern Eurasia and central China.

They are unevenly distributed and highly variable throughout the boreal forest. They live mostly in open coniferous forests, or coniferous forests mixed with deciduous species such as larch, birch, poplar, and willow. They are found in muskegs, clearings, swamp valleys, meadows, or recently burnt areas, and generally avoid dense spruce and fir forests.



Status: Least Concern. **Global population:** 130,000 adult individuals with a fluctuating population trend. Populations are known to fluctuate with cycles of small rodents and irruptions are known to occur in sub-boreal regions throughout the world. In Scandinavia, populations have been reported to vary from a few hundred birds in certain years to over 4000 birds in others and even up to 10 000 breeding pairs in optimal years. Irruptions can be used as indicators of small mammal abundance and in eastern North America. southern irruptions have been linked with low densities of red-backed voles in the high boreal forest.

Diet: Mostly small rodents, mammals and a variety of birds. In Eurasia, the northern hawk-owl is known to feed

primarily on voles from the *Microtus* family. Other animals that are important prey items for the northern hawk-owl include the red squirrel (*Sciurus vulgaris*), mice, rats, lemmings, the short-tail weasel (*Mustela erminea*), partridge, spruce grouse

(*Falcipennis canadensis*), doves, pileated woodpeckers (*Dryocopus pileatus*), sparrows, jays, robins, starlings, buntings, grackles, and finches.

The northern hawk-owl is a partially diurnal hunter, although it has been recorded hunting at varying times and does not appear to have a preferred hunting time. It will perch and scour the immediate area for prey. They likely do not stay put for long if the site is not producing prey. The hawk-owl prefers open, forest-type environments when perching.

Nesting: Males and females are alike however females are slightly larger than males. They have relatively dark brown with an off-white spotting pattern on all dorsal parts of the body. The exception of the back of the neck which has a distinct black v-shaped pattern. The underbelly is generally white or off-white which continues to the toes with brown bands on the breast and stomach. It also boasts a long tail with brown banding. The northern hawk-owl has a smokey white face with a black border, a flat head, yellow eyes and a yellow curved beak.

The northern hawk-owl generally starts its mating rituals at the beginning of March. After calling and pairing is complete the northern hawk-owl will build a nest and start to lay eggs. On average the northern hawk-owl will lay 3-11 eggs per brood. The nest sites are usually the tops of hollow stumps of old dead spruce trees. These nesting sites are usually 2-10 m (6.6–32.8 ft) above ground for the North American and approximately 4-5 m (13-16 ft) above ground for the Eurasian.

For the most part the female northern hawk-owl does the incubating of the eggs whilst the male forages for food. Once the chicks have hatched their roles shift drastically. At about two weeks into the chicks lives the female starts to leave the nest for long spans of time (5 hours or more). This span of time is presumably when the female hunts. The male however, will guard the nest diligently until the chicks leave. When predators (usually other raptors) fly nearby, the male will sometimes chase them away from the nest if they feel it is necessary. Once the owlets have grown to a size which allows less parental supervision, they will leave the nest. This occurs on average after their 21st day, and can begin as early as mid-June. After this the female will provide most of the care. However the male will remain close and will still feed his young on occasion. The northern hawk-owl has also been known to nest on cliff sides. It has little fear of humans, and will attack if the young are approached too closely.

Cool Facts: The northern hawk-owl has been said to resemble a hawk in appearance and in behavior. In North America, its appearance in flight is often considered similar to a Cooper's hawk (*Accipiter cooperii*). It has been suggested that this may be because the hawk-owl may partially fill an important diurnal niche similar to that of day hunters such as hawks.

When alerting to danger, the northern hawk-owl lets out a sound similar to *rike, rike, rike, rike*. It also releases a high pitched scream followed by a yip when an intruder is near to

the nest. To warn of impending dangers to a fledgling, the hawk-owl will let out a noise similar to *ki ki kikikiki*. Calls can vary in length from 15 s to 2 min.

Three subspecies exist across the northern holarctic:

- *S. u. caparoch.* The North American subspecies spans from eastern Alaska through to Newfoundland and in some areas extends south into northern United States.
- S. u. Tianschanica. Breeds in central Asia reaching Xinjiang (China)
- *S. u. ulula.* It is found across Eurasia reaching Siberia at its most eastern range.

Special Thanks to...

....my betatesters (FlintHawk, and Jan Wilson) and Nerd3D (for his invaluable help in special Poser coding).

Species Accuracy and Reference Materials

The author-artist has tried to make these species as accurate to their real life counterparts as possible. Birds of the same species vary considerably, just as all others do in nature. The birds were created using the correct field markings and the most common similarities.

With the use of one generic model to create dozens of unique bird species, some give and take is bound to occur. In addition, 3D-models have many technical challenges, which make exact representations difficult, if not impossible. It's best to think of these birds represented as resembling the particular species, and they may not, in some cases, be 100% scientifically accurate.

The model and morphs were created using Luxology's Modo. The texture maps were created in Corel's Painter. The model was rigged in Smith-Micro's Poser and adapted for use in DAZ's DAZ Studio..

Field Guide Sources:

- "The Sibley Guide to Birds" by David Allen Sibley.
- "Illustrated Checklist of the Birds of the World. Volume 1: Non-passerines" by HBW and BirdLife International

Internet Sources:

- Cornell Lab of Ornithology (<u>http://www.birds.cornell.edu</u>)
- Wikipedia (<u>http://www.wikipedia.com</u>)
- Birdlife International (<u>http://www.birdlife.org</u>)
- The Owl Pages (<u>http://www.owlpages.com</u>)
- Planet of the Birds (<u>http://www.planetofbirds.com</u>)
- Arkive.org (<u>http://www.arkive.org</u>)

