



Avian Models for 3D Applications

Characters and Procedural Maps by Ken Gilliland

Songbird ReMix

Frogmouths, Nightjars & Goatsuckers

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Songbird ReMix

Frogmouths, Nightjars & Goatsuckers

Introduction

Songbird ReMix Frogmouths, Nightjars & Goatsuckers contain species found in the *Caprimulgidae*, *Chordeilinae*, *Eurostopodidae*, *Podargus*, *Batrachostomus* and *Rigidipenna* families. These are all nocturnal birds distantly related to Owls. These birds are known for their exceptionally large mouths and expertise in camouflage.

Nightjars are found around the world. They are in the family *Caprimulgidae*, characterized by long wings, short legs and short bills. They are mostly active in the late evening and early morning or at night, and feed predominantly on moths and other large flying insects. They are sometimes called “goatsuckers”, due to the ancient folk tale that they sucked the milk from goats making this the bird version of the Chupacabra. With its haunting, ethereal song, the eastern whip-poor-will is the topic of numerous legends. One New England legend says the whip-poor-will can sense a soul departing, and can capture it as it flees.

Nighthawks fall into the *Chordeilinae* family and are found only in the “new world”. Nighthawks differ from Nightjars by lacking rictal bristles, having shorter bills, and coarser plumage.

Frogmouths are a group of nocturnal birds closely related to the nightjars. They are found from the Indian Subcontinent across Southeast Asia to Australia. They are named for their large flattened hooked bill and huge frog-like gape, which they use to capture insects.

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):
 - **Nightjars and Frogmouths (Order Caprimulgiformes)**
- **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**. **Note:** Using the "Apply this Character to the currently selected Figure(s)" option **will not** properly apply the correct scaling to the bird selected. It is better to delete the existing character first and load the one you want to use.

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.

Where to find your birds

Type Folder	Bird Species
Nightjars and Frogmouths (Order Caprimulgiformes)	Tawny Frogmouth Large Frogmouth Short-tailed Frogmouth Common Nighthawk Sand-colored Nighthawk Spotted Nightjar Long-tailed Nightjar Bonaparte's Nightjar Pygmy Nightjar European Nightjar Collared Nightjar Puerto Rican Nightjar Chuck-will's Widow Eastern Whip-poor-will Common Poor-will

Where to find your poses

Type Folder	For what species?
Nightjars and Frogmouths (Order Caprimulgiformes)	Nightjars, Nighthawks and Frogmouths

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".

- **Action Morphs**

- **Common Controls**

- ◆ BeakOpenClose- *Opens and closes the beak.*
- ◆ EyesFwdBack- *Moves both eyes forwards and backwards.*
- ◆ EyesUpDwn- *Moves both eyes up and down.*
- ◆ EyeDilate- *Dilates and constricts the pupil of both eyes. Individual eye dilation morphs should be set to "0" for best results.*
- ◆ EyeLidsCloseOpen- *Closes both eyelids. This is a group control of both individual wink morphs. Wink morphs should be set to "0" for best results.*
- ◆ WingsFold- *Folds both wings. This is a group control of both individual wing fold morphs. Individual WingFold morphs should be set to "0" for best results.*
- ◆ TailFeathersFanSpread- *Spreads and folds the tail feathers.*

- **Neck Bending and Scaling**

- ◆ TwistAll- *Twists all neck and head sections in unison.*
- ◆ SideSideAll- *Turns all neck and head sections to each side in unison.*
- ◆ BendAll- *Bends all neck and head sections in unison.*
- ◆ ScrunchNeck- *Scrunches and stretches the neck.*

- **Head Controls**

- ◆ **Asymmetrical Pupils**

- rEyeDilate and lEyeDilate- *Allows the individual control of pupil dilation and constriction which many of the Potoo species can control. The master eye dilation control should be set to "0" for best results.*

- ◆ **Expressions**

- SmileFrown- *Controls a slight smile and frown expression on the beak.*
 - Eyes-AngrySad- *Rolls eyelids forward and back to give an angry/sad expression.*
 - Eyes-Sleepy- *Lowers both top eyelids. This is a group control of both individual wink morphs. Wink and EyeLidsCloseOpen morphs should be set to "0" for best results.*
 - Eyes-Wince- *Raises both top eyelids. This is a group control of both individual wink morphs. Wink and EyeLidsCloseOpen morphs should be set to "0" for best results.*
 - Head-BrowOut- *Pushes the front portion of the brow out.*

- ◆ **Eyelid Movement**
 - Eyes-RightWink and Eyes-LeftWink- Controls either eyelid to open and close. This morph may not work properly if EyeLidsCloseOpen, Eyes-Sleepy or Eyes-Wince is used. For best results these controls should be zeroed first.
- ◆ **Tongue Movement**
 - Tng-CurveDwn- Moves the entire tongue in a bending curve down.
 - Tng-UpDwn- Moves the entire tongue up and down from the back of the throat.
 - Tng-Side- Moves the entire tongue side to side.
 - Tng-TipUpDwn- Moves the tongue up and down from its tip.
- **Wing & Tail Controls**
 - WingsBendTips- Bends both wing tips. This control only works when the wings are unfolded.
 - WingsTurnTips- Turns the primary flight feathers of both wings. This control only works when the wings are unfolded.
 - WingsFanPrimaries- Fans the primary flight feathers of both wings. This control only works when the wings are unfolded.
 - WingsSmoothBend- Creates a smoother (than joint usage) upward bend on both wings. This control only works when the wings are unfolded.
 - WingsAlula- Pulls out the alula brake feathers on both wings. This control only works when the wings are unfolded.
 - TailFeathersCupDown- Cups the tail feathers downward.
 - **Left Wing and Right Wing Individual Controls.** These controls are the same as the ones above but for individual wings. The WingsFold morph must be at "0" for these controls to work. The individual wing controls would most likely be used in a bird stretching with one wing.
- **Feather Fluff Controls**
 - **Forehead Bristles-** Bristles are species dependent. Some species do not have forehead bristles.
 - ◆ BristlesLen- Controls the length of the bristles.
 - ◆ BristlesUp- Lifts bristles upwards.
 - ◆ BristlesHorns- Raises length of the bristles above the eye area.
 - ◆ NightjarWhiskers- Bends the bristles downward on each side of the neck..
 - **Head and Neck Fluff**
 - ◆ EyelashLen- Controls the length of the eyelashes.
 - ◆ Fluff-CrestUp1- Lifts head crest/fluff upwards.
 - ◆ Fluff-CrestUp2- Lifts head crest/fluff upwards with more curve.
 - ◆ Fluff-CrestLen - Controls the length of the head crest/fluff.
 - ◆ Fluff-ThroatOut- Lifts throat fluff outwards.
 - ◆ Fluff-NeckLen - Controls the length of the neck fluff.
 - ◆ Fluff-NeckOut- Lifts neck fluff outwards.
 - **Breast and Rump Fluff**
 - ◆ BreastFluff- Pull the breast fluff out.
 - ◆ RumpFluffHide- Hides the rump fluff.
 - ◆ RumpFluffSidesIn- Pulls the rump fluff sides in.
 - **Back Feathers**

- ◆ BackPlume1Raise- *Raises the first set of fluff feathers on the back.*
- ◆ BackPlume2Raise- *Raises the second set of fluff feathers on the back.*
- ◆ BackPlume3Raise- *Raises the third set of fluff feathers on the back.*
- **Thigh Fluff**
 - ◆ LegFluffBack- *Pulls the thigh fluff backwards.*
 - ◆ LegFluffExpand- *Pulls the thigh fluff outward.*
 - ◆ LegFluffLen- *Controls the length of the thigh fluff.*
- **Correction Morphs**
 - ThighsIn4Flight- *Reduces Thigh Fluff for in-flight poses.*
 - TopNeckScrunchFix- *Reduces issues in the top of the neck (Hip, Neck1, Neck2 and Neck3) caused by bending backwards or the SmallHead morph.*
 - ThroatLumpFix- *Reduces a lump in the throat caused by some bending and/or morphs that are activated.*
 - BellyOut- *Expands the belly of the bird.*
 - NeckFrontExpand- *Expands the base of the neck tapering to the throat out.*
- **Creation Morphs**
 - **Species Shapes** *(The use of other Creation Morphs in combination with these morphs may cause geometry issues and should be approached with care,)*
 - ◆ Nighthawk- *Reshapes the head for Nighthawk and Nightjar species. This morph activates a hidden lengthening on the wings (morph), when they are folded.*
 - **Body Shaping**
 - ◆ SleekerBody- *Reduces some girth to the torso.*
 - ◆ ThinTorso- *Thins the torso and raises the legs.*
 - ◆ BreastIn- *Reduces/Adds to breast shape.*
 - ◆ FlattenBack- *Flattens the back for in-flight poses.*
 - ◆ ThickerNeck- *Thickens the neck. This morph goes automatically into effect when the neck is "Scrunched".*
 - ◆ TopNeckExpand- *Thickens the entire upper neck*
 - ◆ LowerNeckExpand- *Thickens the top of the Hip, Neck1 and Neck2 sections*
 - ◆ BreastCrease- *Adds a breast crease.*
 - ◆ ScaleRump- *Reduces and extends the rump.*
 - ◆ BackPlume3Len- *Extends the back fluff feather over the tail feathers.*
 - ◆ BackPlume3Width- *Widens the back fluff feathers.*
 - ◆ LegLength- *Reduces the leg length.*
 - ◆ FootSize- *Scales the foot size.*
 - ◆ MassiveTalons- *Lengthens the talons.*
 - **Head Shaping**
 - ◆ **Head Shapes**
 - SmallHead- *Reduces the size of the head, eye and neck parts by 35%.*
 - PotooCrown- *Raises the back of the head in a fashion found on the Potoo species.*
 - CrownRounder & CrownRounder2- *Adjusts the height of the crown.*

- RaiseBackHead- *Raises the rear of the head.*
- ForeheadOut- *Pushes the forehead out.*
- PullForehead- *Lessens the bridge of the forehead.*
- PushForehead- *Increases the bridge of the forehead.*
- BigBrows- *Extends both brows outwards.*
- FrontBrows- *Pushes the front brows out.*
- ThroatIn- *Pushes the entire throat closer to the lower beak.*
- ◆ **Beak Shapes**
 - Bk-Shorten- *Shortens the entire beak.*
 - Bk-Thinner- *Reduces the upper and lower heights of the beak.*
 - Bk-Narrow- *Narrows the end of the entire beak.*
 - Bk-LowerThinner- *Reduces the lower beak's width.*
 - Bk-TipLen- *Lengthens the tip of the upper beak.*
 - Bk-RoundedTip- *Rounds or flatten the end of the upper beak.*
 - Bk-BiggerHook- *Creates a large beak hook.*
- ◆ **Eye & Nostril Shapes**
 - BugEyes- *Pushes the eyes and eye sockets out.*
 - Nostril-Slit- *Thins the shape of the nostrils.*
 - Nostril-Round- *Rounds the shape of the nostrils.*
 - Nostril-Cones- *Raises the rim of the nostrils.*
- ◆ **Tongue Shapes**
 - TongueLength- *Controls the length of the tongue.*
- **Wing Shapes**
 - ◆ WingSpan- *Extends the wingspan.*
 - ◆ WingWidth- *Expand the wing width.*
 - ◆ WingsPoint- *Tapers the wing ends.*
 - ◆ HawkWingShape1- *Extends and retracts the primary flight feathers.*
 - ◆ HawkWingShape2- *Adds a more hawk-like shape to the wings.*
- **Tail Shapes**
 - ◆ 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- *Creates a round-shape for the tail feathers.*
 - ◆ SplitTailFeathers- *Creates a wedge-shape for the tail feathers.*
 - ◆ LongTailNightjar- *Creates a species specific tail.*
 - ◆ GraduatedTail- *Graduates the tail feathers length from short (outside) to long (inside).*
 - ◆ SquareEnds- *Makes tail feathers have square ends.*
- **Scaling**
 - ◆ Scale- *Controls the size of the model. The scale is proportional to the standard human characters in Poser and DAZ Studio.*

Songbird ReMix

Frogmouths, Nightjars & Goatsuckers

Field Guide

Frogmouths

Tawny Frogmouth
Large Frogmouth
Short-tailed Frogmouth

Nighthawks

Common Nighthawk
Sand-colored Nighthawk

Nightjars & Goatsuckers

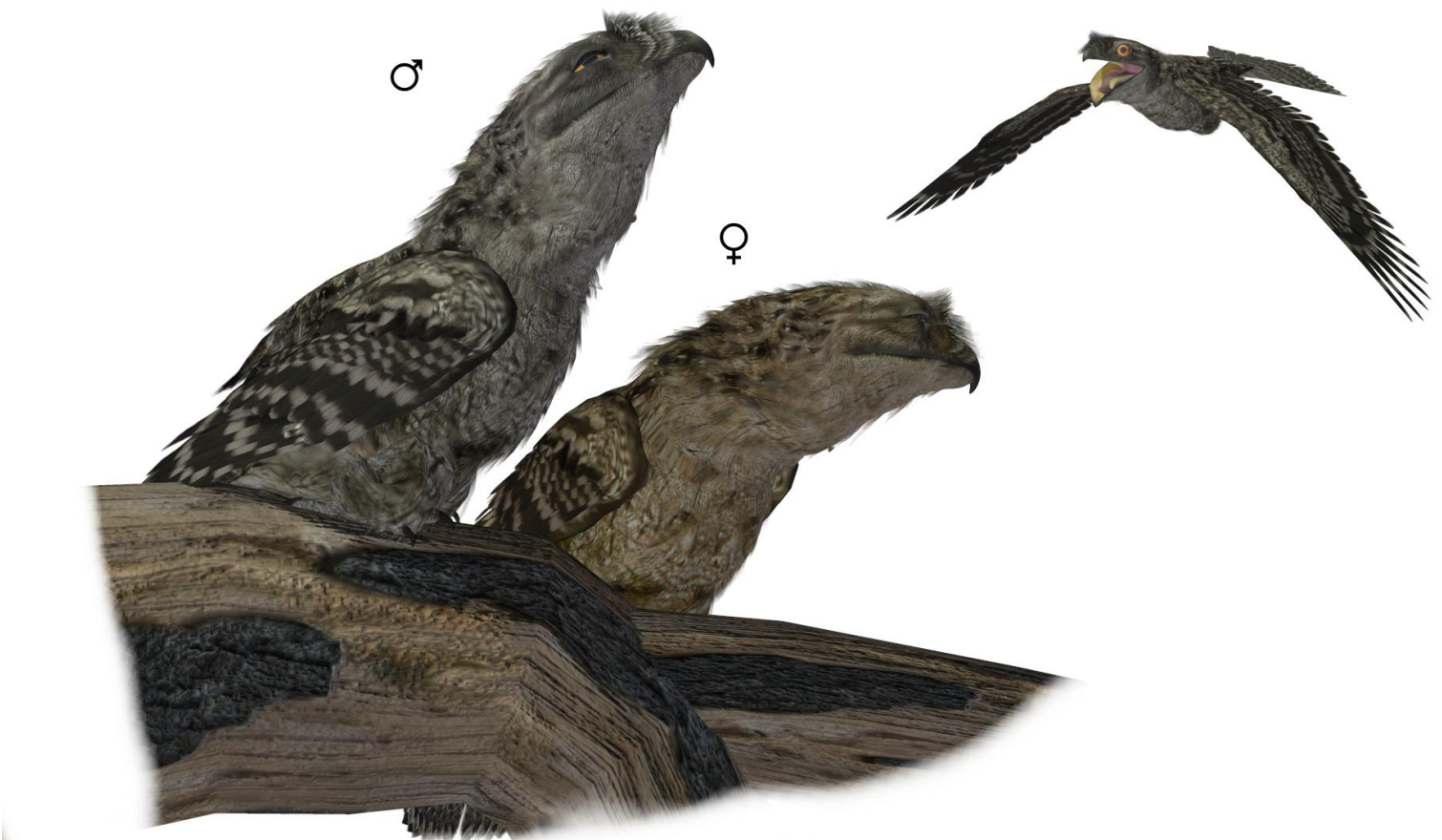
Spotted Nightjar
Long-tailed Nightjar
Bonaparte's Nightjar
Pygmy Nightjar
European Nightjar
Collared Nightjar
Puerto Rican Nightjar
Chuck-will's Widow
Eastern Whip-poor-will
Common Poor-will

Common Name: Tawny Frogmouth
Scientific Name: *Podargus strigoides*

Size: 13.4-20.9 inches (34-53 cm); **Wingspan:** 25.6-38.6 inches (65-98 cm)

Habitat: Oceania; The whole of mainland Australia, Tasmania and several of the largest offshore islands.

Frogmouths are found in almost any habitat type including forests and woodlands, scrub and heath-land vegetation, and savannas. However, they do not occur in heavy rain forests and treeless deserts. They are seen in large numbers in areas that are populated with many river gums and casuarinas and can be found along river courses if these areas are timbered. Tawny frogmouths are common in suburbs, having adapted to human presence. They have been reported nesting in parks and gardens with trees.



Status: Least Concern to Near Threatened. **Global population:** Unknown amount of adult individuals with a stable population trend, although southern and western Australia have seen declining populations. Tawny frogmouths face a

number of threats from human activities and pets. Tawny frogmouths are often killed or injured on rural roads during feeding as they fly in front of cars when chasing insects illuminated in the beam of the headlights. Large scale land clearing of eucalyptus trees and intense bush fires are serious threats to tawny frogmouth populations as they tend not to move to other areas if their homes are destroyed. Household cats are the most significant introduced predator of the tawny frogmouth, however dogs and foxes are known to also occasionally kill the birds. When tawny frogmouths pounce to catch prey on the ground, they are slow to return to flight and vulnerable to attack from these predators. As they have adapted to live in close proximity to human populations, tawny frogmouths are at high risk of exposure to pesticides. Continued widespread use of insecticides and rodent poisons are hazardous as they remain in the system of the target animal and can be fatal to a tawny frogmouth that eats them.

Diet: Mainly insects, arthropods, spiders, frogs, and sometimes small mammals. Prey is caught both on the ground and in the air with their large bills. All frogmouths are nocturnal.

One of the best examples of cryptic plumage and mimicry in Australian birds is seen in this frogmouth who perches low on tree branches during the day, camouflaged as part of the tree. Their plumage patterned with white, black, and brown streaks and mottles allows them to freeze into the form of a broken tree branch and become practically invisible in broad daylight. The tawny frogmouth will often choose a broken part of a tree branch and perch upon it with its head thrust upwards at an acute angle using its very large, broad beak to emphasize the resemblance. Often a pair will sit together and point their heads upwards, only breaking cover if approached closely to take flight or warn off predators. During daylight hours, healthy tawny frogmouths generally do not actively look for food though they may sit with their mouths open, snapping it shut when an insect enters. When threatened, adult tawny frogmouths will make an alarm call that signals to chicks to remain silent and immobile ensuring that the natural camouflage provided by the plumage is not broken.

Nesting: A medium to large frogmouth, pale gray and heavily streaked and mottled with darker charcoal gray. Upper parts generally dark with forehead and crown heavily streaked dark gray, with the sides of the head pale gray. Long feathery bristles above the base of the bill form a crest-like tuft in the mid-line. Back, wings and upper tail mottled dark and light gray with white spots on primaries. Under parts are pale gray with finely streaked dark gray. Under wings are very pale gray with indistinct darker gray on primaries. The iris is yellow. The bill is blue-gray, slightly hooked, feathered to the tip, and extremely broad with a huge gape. Legs and feet are blue-gray.

Tawny frogmouths have three distinct color morphs, gray being the most common in both sexes. Males of this morph have silver-gray upper parts with black streaks and slightly paler underparts with white barring and brown to rufous mottling.

Females of this morph are often darker with more rufous mottling. Females of the subspecies *P. s. strigoides* have a chestnut morph and females of the subspecies *P. s. phalaenoides* have a rufous morph. Leucistic or albinistic all-white aberrant plumage for this species has also been documented.

Tawny frogmouths form partnerships for life and once established, pairs will usually stay in the same territory for a decade or more. Establishing and maintaining physical contact is an integral part of the lifelong bond. During breeding season, tawny frogmouth pairs roost closely together on the same branch, often with their bodies touching. The male will carry out grooming by gently stroking through the plumage of the female with his beak in sessions that can last for ten minutes or more.

Breeding season is August to December. The nest is a flimsy platform of small sticks, usually built on the fork of a horizontal branch, but also in vertical forks, on top of grass trees, at the entrance to a hollow, and on the old nests of other birds. Frogmouths lay 1 to 4 white, oval, slightly glossy eggs, which are incubated for about 30 days. The chicks fledge in 25-35 days.

Cool Facts: When is an owl not an owl? When it is a Tawny Frogmouth. There are other species of Frogmouths and Nightjars that are often confused with owls, but the Tawny Frogmouth is the one most commonly mistaken for an Owl.

The typical call is a deep, resonant and ventriloquial 'oom-oom-oom-oom-oom' and a frequency of about eight calls in five seconds, with each 'oom' lasting about half a second and given in bursts of up to 30 seconds.

During winter, tawny frogmouths choose northerly oriented positions on branches that are more exposed to sunlight in order to increase body heat. A pair roosting and huddling to share body warmth is also common during winter months. During daylight hours, tawny frogmouths sometimes perch on the ground to sunbathe, remaining motionless for up to five minutes. During this time, the birds open their beaks wide, close their eyes, and move their head to the side to allow sunrays to penetrate beneath the thick layer of feathers.

There are 3 subspecies of Tawny Frogmouth:

- *P. s. phalaenoides*. It is found throughout Northern Australia southwards to the Great Sandy Desert, Barkly Tableland, and the Gulf of Carpentaria in Queensland.
- *P. s. brachypterus*. It is found in Western Australia northwards to the Great Sandy Desert, north-eastwards to the Channel Country of Queensland, and south-eastwards to the Murray Mallee in Victoria.
- *P. s. strigoides*, first reported by John Latham in 1801. The nominate species is found in Eastern and South Eastern Australia from north of Cooktown, westwards to the inland fringes of the Great Dividing Range, and in Tasmania.

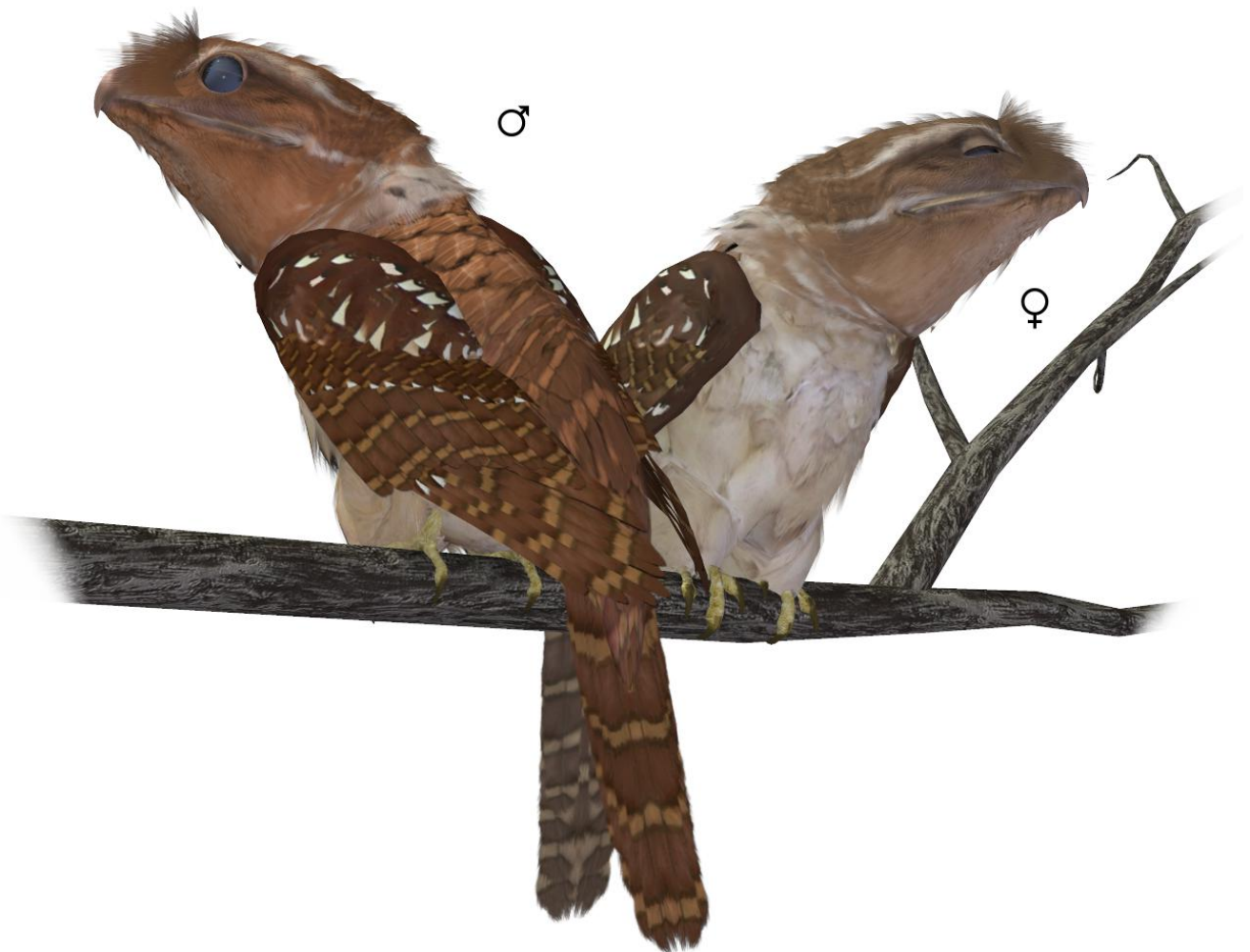
Common Name: Large Frogmouth
Scientific Name: *Batrachostomus auritus*

Size: 15.7-16.9 inches (40-43 cm); **Wingspan:** 33-35.8 inches (84-91 cm)

Habitat: Asia and Oceania; it occurs very sparsely in south peninsular Thailand; Sabah, Sarawak and Peninsular Malaysia; Kalimantan (including the Natuna and Labuan islands) and Sumatra, Indonesia, and Brunei. They do not appear to be migratory.

It is an elusive and poorly known species, that appears to be genuinely rare or uncommon. It occurs in lowland dipterocarp forest to at least 250 m, and maybe as high as 1,000 m.

Status: Near Threatened. **Global population:** Unknown amount of adult individuals with a decreasing population trend. The forest destruction in the Sundaic lowlands of Indonesia has been extremely rapid (Kalimantan lost nearly 25% of its evergreen forest during 1985-1997. The situation is little different in



Thailand and Malaysia, but its ability to persist in regenerating and secondary growth habitats means that it is probably not suffering more than a moderately rapid decline.

Diet: Mostly nocturnal insects. They also eat worms, slugs and snails; as well as small mammals, reptiles, frogs and small birds. They feed by sallying to catch insects on the ground or from branches.

Nesting: Sexes are similar, although females are duller and plainer than males. Adults are chestnut to light brown above, with pale bars on scapulars. There are white tips to upper wings coverts and lower scapulars. It has a buffy white and blackish-barred nuchal collar (base of the back of the neck) and a uniform warm brown throat and breast with a few white markings. The irises are brown. Juveniles are plainer and duller than adults with no nuchal collar or spotting on the upper parts, scapulars and wing coverts.

Little is known about nesting behavior in this species; two nests were discovered at Taman Negara on peninsular Malaysia and had eggs in February. A nest in Sumatra had a chick in late July. The nest is a flimsy platform of small sticks, usually built on the fork of a horizontal branch, but also in vertical forks, on top of grass trees, at the entrance to a hollow, and on the old nests of other birds. Frogmouths lay 1 to 4 white, oval, slightly glossy eggs, which are incubated for about 30 days. The chicks fledge in 25-35 days.

Cool Facts: This is the largest of the Asian frogmouths, although the Dulit Frogmouth (*B. harterti*) is not much smaller.

Their territorial call is unmistakable; 4 to 8 loud bubbling trills, '*prrrrrroh prrrrrroh prrrrrroh prrrrrroh*', either rising or even-pitched each followed by a 3 to 6 second pause.

Common Name: Short-tailed Frogmouth
Scientific Name: *Batrachostomus polioloophus*

Size: 7.9-8.7 inches (20-22 cm); **Wingspan:** 20.5-21.7 inches (52-55 cm)

Habitat: Asia; it is endemic to Sumatra, Indonesia, where it is known from a small number of records from the Barisan range.

The species occurs in subtropical or tropical moist lowland forests and subtropical or tropical moist montane forests between 660 and 1,400 m.



Status: Near Threatened. **Global population:** Unknown amount of adult individuals with a decreasing population trend. Forest destruction in the Sumatran lowlands has been extensive, but this species's ability to persist at higher elevations suggests that it is not suffering more than a moderately rapid decline.

Diet: Mostly nocturnal insects. Little is known about feeding habits; gut contents of specimens examined included remains of small beetles and small *Orthoptera*

species (grasshopper family).

Nesting: A sexually dichromatic species, with no apparent polymorphic variation in coloration. Males are dull dark rufous-brown with buffish-white collar across upper mantle, and bold white spots on scapulars and wing-coverts. The breast has white scallop-shaped markings, and the flanks and belly are whitish with brownish edges to feathers. It differs from other small, sexually dichromatic *Batrachostomus* species in the combination of relatively short tail and the details of coloration (as well as sub-montane distribution). Females are brighter, deep rufous to chestnut, with reduced white spotting, and often a narrower collar. Juvenile plumage is unknown.

What little is known about the nesting behavior in this species comes mainly from a single nest found in Sumatra in June 1933. The nest is a small pad with shallow cup, built mainly of down from birds, usually built on the fork of a horizontal branch. The male incubates during the daytime.

Frogmouths lay 1 to 4 white, oval, slightly glossy eggs, which are incubated for about 30 days. Chicks fledge in 25-35 days.

Cool Facts: It was formerly considered to be the same species as the Bornean Frogmouth (*B. Mixtus*) but that species has extensive white on underparts, the male has a paler crown and the female has much less contrast in the rufous color.

Common Name: Common Nighthawk
Scientific Name: *Chordeiles minor*

Size: 8.7-9.8 inches (22-25 cm); **Wingspan:** 20-24 inches (51 to 61 cm)

Habitat: The Americas; summering in North America and wintering in South America. They migrate by day or night in loose flocks; frequently numbering in the thousands, no visible leader has been observed. The enormous distance traveled between breeding grounds and wintering range is one of North America's longer migrations. The northbound journey commences at the end of February and the birds reach destinations as late as mid-June. The southbound migration commences mid-July and reaches a close in early October.



Common Nighthawks, which have one of the longest migration routes of all North American birds, sometimes show up far out of range. They have been recorded in Iceland, Greenland, the Azores, the Faroe Islands, and multiple times on the British Isles.

The common nighthawk may be found in forests, desert, savannas, beach and desert scrub, cities, and prairies, at elevations of sea level or below to 3,000 m (9,800 ft). They are one of a handful of birds that are known to inhabit recently burned forests, and then dwindle in numbers as successional growth occurs over the succeeding years or decades. It is also drawn into urban built-up areas by insects.

Status: Least Concern. **Global population:** 16,000,000 adult individuals with a decreasing population trend. Common Nighthawk populations declined by almost 2 percent per year between 1966 and 2010, amounting to a cumulative decline of 59 percent, according to the North American Breeding Bird Survey. Canadian populations experienced declines of up to 4 percent, and recent data suggest the species' numbers may have dropped by as much as half in Canada since the mid-1960s. Hard numbers are difficult to come by because the Common Nighthawk's cryptic colors and nearly nocturnal habits make them difficult to count during standardized surveys. Partners in Flight estimates the global breeding population at 16 million, with 88 percent breeding in the U.S., 5 percent in Canada, and 4 percent in Mexico. The 2014 State of the Birds Report listed them as a Common Bird in Steep Decline, and they rate a 11 out of 20 on the Partners in Flight Continental Concern Score. Across North America, threats include reduction in mosquitoes and other aerial insects due to pesticides, and habitat loss including open woods in rural areas and flat gravel rooftops in urban ones. Nighthawks are also vulnerable to being hit by cars as they forage over roads or roost on roadways at night. People have had some success creating nesting habitat by placing gravel pads in the corners of rubberized roofs and by burning and clearing patches of forest to create open nesting sites.

Diet: Twilight-hour flying insects are its preferred food source. The hunt ends as dusk becomes night, and resumes when night becomes dawn. Nighttime feeding (in complete darkness) is rare, even on evenings with a full moon. The bird displays opportunistic feeding tendencies, although it may be able to fine-tune its meal choice in the moments before capture.

Nesting: Adults have a large, flattened head with large eyes; facially it lacks rictal bristles. They have long slender wings that at rest extend beyond a notched tail. There is noticeable barring on the sides and abdomen, also white wing-patches. In the yearly molt, all bodily plumage and rectrices are replaced in the post-juvenile molt. This molt commences in September at the breeding grounds; the majority of the body plumage is replaced but wing-coverts and rectrices are not completed until January–February, once the bird arrives at the wintering grounds. There is no other molt prior to the annual molt of the adult.

The female probably selects the nest site, usually on unsheltered ground, gravel beaches, rocky outcrops, and open forest floors. Nests are typically out in the open, but may also be near logs, boulders, grass clumps, shrubs, or debris. In

cities, Common Nighthawks nest on flat gravel roofs. They lay eggs directly on the ground, which may consist of gravel, sand, bare rock, wood chips, leaves, needles, slag, tar paper, cinders, or living vegetation, such as moss, dandelion rosettes, and lichens. Usually 2 eggs are laid and incubated for 16 to 20 days.

Cool Facts: Many Late Pleistocene fossils of Common Nighthawks, up to about 400,000 years old, have been unearthed between Virginia and California and from Wyoming to Texas. While the Common Nighthawk is arguably the most studied nightjar in North America and one of the best known in the world, the Common Nighthawk remains poorly understood. Most studies of this species have been short-term and anecdotal in nature and specific data about much of its life history remain scarce, particularly from the southern part of its breeding range and especially from its South American wintering grounds.

The common nighthawk is sometimes called a "bull-bat", due to its perceived "bat-like" flight, and the "bull-like" boom made by its wings as it pulls from a dive. Another name is "goatsucker", from an archaic, erroneous idea that the birds would fly into barns at night and suck dry the teats of goats.

Nighthawks fly in looping patterns in mornings and evenings. During the day, they roost motionless on a tree branch, fencepost, or the ground and are very difficult to see. When migrating or feeding over insect-rich areas such as lakes or well-lit billboards, nighthawks may gather in large flocks. Their buzzy, American Woodcock-like 'peent' call is distinctive.

There are 9 currently recognized subspecies:

- *C. m. aserriensis*. First reported by Cherrie in 1896: breeds from south central Texas to north Mexico. It is darker than *C. m. sennetti* and paler and less cinnamon than *C. m. henryi*.
- *C. m. chapmani*. First reported by Coues in 1888. It breeds from southeast Kansas to east North Carolina and southwards to south east Texas and south Florida. It is the darkest of the subspecies.
- *C. m. henryi*. First reported by Cassin in 1855. It breeds from south east Utah and south west Colorado through mountains of west Texas, Arizona and New Mexico (less north east) to east Sonora, Chihuahua, and Durango. It is unique with ochraceous to deep cinnamon feather edges on upper parts.
- *C. m. hesperis*. First reported by Grinnell in 1905. It breeds in south west Canada (British Columbia and Alberta), the western interior of United States (Washington, Montana, Nevada, interior California, Utah, extreme north Colorado, west Wyoming). It is darker than *C. m. sennetti* and paler and less cinnamon than *C. m. henryi*.
- *C. m. howelli*. First reported by Oberholser in 1914. It breeds in west central United States (north Texas, west Oklahoma, and Kansas to east Colorado, less typical form in central Colorado, north east Utah and Wyoming). It is darker than *C. m. sennetti* and paler and less cinnamon than *C. m. henryi*.

- *C. m. minor*. First reported by J.R. Forster in 1771. The nominate species breeds from south east Alaska to Vancouver Island, British Columbia, Canada, and south Canada/northern United States (Minnesota, Indiana) to Virginia, North Carolina, Georgia and Oklahoma. Considered by some as the darkest subspecies.
- *C. m. neotropicalis*. First reported by Selander & Alvarez del Toro in 1955. It breeds in south Mexico and Honduras.
- *C. m. panamensis*. First reported by Eisenmann in 1962. It breeds on the Pacific slope of Panama and north west Costa Rica. It is noted to depart Panama during winter for points in South America.
- *C. m. sennetti*. First reported by Coues in 1888. It breeds in the north Great Plains: east Montana, south Saskatchewan, Manitoba, southwards to North Dakota, Minnesota and Iowa. It is the palest of the subspecies.

Nighthawks have a life span of 4 to 5 years; the oldest Common Nighthawk on record was 10 years old.



Common Name: Sand-colored Nighthawk
Scientific Name: *Chordeiles rupestris*

Size: 7.5-9.5 inches (19-24 cm); **Wingspan:** 19.7-22.4 inches (50-57cm)

Habitat: South America; found in Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela. It does not migrate.

Its preferred habitat is mainly rivers and marshes in forest and secondary growth, on rocky islands, sandy beaches and sandbars. It is also found near riverside villages and airstrips. It is a lowland species, recorded from sea-level to 500 m.



Status: Least Concern. **Global population:** 16,000,000 adult individuals with a decreasing population trend. In Colombia, it is locally fairly common, especially along Amazon, Orinoco and Negro rivers. Eggs and chicks are at risk from avian predators such as the Bat Falcon (*Falco rufigularis*), Great Black Hawk (*Buteogallus urubitinga*), Roadside Hawk (*Buteo magnirostris*) and especially Black Caracara (*Daptrius ater*), but humans are probably the most serious threat

in many regions, as they take large numbers of eggs as part of local diet. Reptiles, such as snakes and iguanas, occasionally take small numbers of eggs.

Diet: Nocturnal insects, including moths and termites. Forages in flight, hunting low over sandbars and beaches or higher up above rivers. Also feeds over open country, usually near rivers, and on insects attracted to artificial lights. Often forages in loose flocks.

Nesting: Sexes are similar. On adults the upper parts are pale grayish-brown, mottled and are streaked with brown and cinnamon. The wing-coverts are pale grayish-brown, cinnamon and whitish and are boldly spotted with blackish star-shaped markings. There is no scapular pattern. They have a white throat patch and the under parts are grayish-white, tinged cinnamon, barred and spotted brown, becoming buff-tinged white on belly and flanks. They have a large white patch across the back of their wings, the trailing edge and wing-tips are blackish-brown, and all but the central pair of tail feathers are white and broadly tipped with brown. The iris is dark brown and the bill is blackish-gray. The legs and feet are grayish-brown. Immatures are similar to adults but paler.

Breeding occurs during the dry season in low-water periods, from January and July to possibly late September in Colombia, May through August in Peru and June through September in Brazil. They often form loose colonies of up to 200 pairs. Nest-sites are usually on sandbar or beach along river. There is no actual nest, eggs are laid directly on the sand in a scrape (a dug-out depression on the ground). Clutches have 1–2 eggs which are elliptical, sandy-buff, possibly tinged bluish, and densely blotched and scrawled brown. The eggs are laid at 24-hour intervals. Replacement clutches may be laid if first eggs are lost through predation or flooding. The incubation period is approximately 21 days. The chicks have buffish down coat.

Adults which are flushed from nest-site may perform injury-feigning distraction display.

Cool Facts: Along certain stretches of river where aerial insects are particularly abundant, enormous congregations of several hundreds of Sand-colored Nighthawks can be found in late afternoon moving up and downstream.

There are two subspecies:

- *C. r. rupestris*. First reported by Spix in 1825. The nominate species is found in Northeast Ecuador, Northeast Peru, Southeast Colombia and southern Venezuela eastward through north & central Brazil and southern to central Bolivia.
- *C. r. xyostictus*. First reported by Oberholser in 1914. It is found in central Colombia (Cundinamarca). It is sandier than the nominate species.

Common Name: Spotted Nightjar
Scientific Name: *Eurostopodus argus*

Size: 10.6-13.8 inches (27-35 cm); **Wingspan:** 17.7-19.7 inches (45-50 cm)

Habitat: Oceania; occurs across most of mainland Australia, although it is generally absent east and south of the Great Dividing Range along the eastern seaboard from central Queensland to southeast South Australia and does not occur in Tasmania. Individuals may be locally nomadic or sedentary in northern regions, while southern birds are partially sedentary or migratory, wintering in northern Australia from May to September. The species may also winter on Indonesian islands in the Banda Sea, possibly for some individuals as a result of overshooting, with vagrants recorded as far north as Irian Jaya.



Found usually in open woodland, savanna and grasslands. Also found in forest and woods, mallee with eucalyptus, Melaleuca, Myoporum or Allocasuarina, acacia scrubland with sparse undergrowth, spinifex and tussock grassland, savanna woodland, and mangroves; prefers areas with sandy or stony ground and plenty of leaf litter. In Northern Australia, also low gravelly hills and ranges with rolling woodland and scrubland. On Aru Island, wintering birds frequent savanna, grassland and edges of rain-forest.

Status: Least Concern. **Global population:** Unknown amount of adult individuals with a declining population trend. Previously considered moderately abundant across inland and northern areas, the spotted nightjar may be becoming more rare, particularly in southern parts of its range as a result of habitat loss associated with land clearing, reduced productivity and overgrazing of remnant native vegetation. Predation by feral cats and foxes is also likely to be significantly impacting abundance in some areas. The species is now listed among Australia's 26 declining woodland birds.

Diet: Mantids, Orthoptera, lacewings, beetles, moths and winged ants.

A crepuscular/nocturnal species most active after dark and before dawn, spotted nightjars are usually observed roosting, walking or running along the ground and are rarely seen perching in trees. They are often found on roads at night and have been observed hawking insects with highly maneuverable flight around campfires, artificial lighting and flowering bushes.

Nesting: Sexes are similar. Upper parts are dull brown with off-white speckles. The central crown area is broadly streaked with blackish-brown and edged tawny or buff. There is a broad buffish nuchal collar. The wing-coverts are grayish-brown with off-white speckles, and a boldly spotted buff or pale buff, prominent buffish line along scapulars. They have a buff submoustachial stripe and large white throat patch. The under parts are dull brown spotted with buff, becoming buff barred brown on belly and flanks. Both sexes have large white spot on four outermost primaries but lack white on tail. Irises are dark brown, the bills are dark brown, and the legs and feet are brownish. Immatures are paler than adult, with smaller white spots on outer primaries. Juveniles are more rufous than immatures. Birds become larger and darker in the southern regions of their range.

Breeding season is from August through February, with northern populations breeding earlier than those in the south. They may not breed if the preceding winter was too dry. They usually have a single-brood and are very territorial, often occupying the same territory for several years. The nest-site is a scrape, usually beneath trees or among some stones, and often near hilltops or on ridges. The egg is laid on leaf litter or on the bare soil and is elliptical, glossy, and pale yellowish-green, yellowish-olive or olive-green. It is also lightly spotted and blotched -purplish-brown. Both sexes incubate the egg with the female on the nest during the day with a change-over at nightfall. The incubation period lasts 29–33 days and fledging takes another 30 days

Cool Facts: The song of the male is a rapid series of ascending "whaw" notes followed by bubbling gobbles, it is given from the ground. Alarm calls are deep barks or churrs. Other calls include grunts, gurgles and pops. They make guttural hissing sounds during threat and defense displays. The adults calls to offspring are low grunts, the chick utters soft cheeps and trills.

Common Name: Long-tailed Nightjar
Scientific Name: *Caprimulgus climacurus*

Size: 11-17 inches (28-43 cm); **Wingspan:** 22.8-30.3 inches (58-77 cm)

Habitat: Africa; occurs in Angola, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Republic of the Congo, Democratic Republic of the Congo, Ivory Coast, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Sudan, Tanzania, Togo, and Uganda. The nominate race is migratory and partially sedentary, some populations moving southward after breeding season. Race *sclateri* is possibly sedentary and partially migratory while Race *nigricans* is probably sedentary.



It is highly variable throughout its range, in all habitats from arid semi-deserts to woods, forest and forest clearings. It is common in all types of grassland and in cultivated areas. Also, it is found in recently burnt areas and open patches in second growth and villages in Liberia. Outside breeding season, it is also found in stony hillsides and papyrus swamps.

Status: Least Concern. **Global population:** Unknown amount of adult individuals

with a stable population trend. Common and locally abundant throughout much of its range, perhaps less so in forest clearings in the South. It is widespread and common in Senegal, locally common in Gambia, common in Ghana and Togo, and a fairly common breeding visitor to Niger. It is locally abundant on the Southern shores of Chad and widespread and common in Nigeria. The numbers in the south are enhanced by northern migrants from November through February. It is common and widely distributed throughout much of Sudan, common in northern Congo, widely distributed in Zaire; but rare to scarce locally in Kenya. It also occurs in several protected areas such as Djoudj and Niokola Koba National Parks (Senegal), W National Park (Niger) and Waza National Park (Cameroon).

Diet: Nocturnal insects, including moths and termites. Forages in flight, hunting low over sandbars and beaches or higher up above rivers. Also feeds over open country, usually near rivers, and on insects attracted to artificial lights. Often forages in loose flocks.

Nesting: Sexes are dimorphic. Variable in color ranging from pale brown, brown and grayish-brown to sandy-buff. The upper parts and wing-coverts are generally grayish-brown, finely streaked with brown. The male has a white line across the fore wing, while the female has a buff or buffish-white line. They have a broad tawny or buff nuchal collar and white throat patch. The under parts are pale brown, speckled and barred pale buff, becoming buff thinly barred with brown on belly and flanks. The male has a broad white band across the five outermost primaries and a white trailing edge to inner wings. The tail is graduated, the central pair of feathers being longest and the outer tail feathers edged and tipped white. The female has a buffish-white wing band and buff or buffish-white trailing edge to the inner wing, and it is shorter-tailed with the outer feathers edged and tipped buff. The irises are brown, the bills are brown, and the legs and feet are brownish. Immatures are similar to adult female but paler.

Breeding season depends on region and rainfall. They are probably monogamous and a scrape-type nest is used with eggs laid on leaf litter or bare earth, often on or alongside path or track, or in cultivated field. The clutch usually has 2 eggs which are elliptical, creamy-white, buff or pinkish, heavily blotched gray or grayish-purple and stained umber.

Cool Facts: There are three subspecies:

- *C. c. climacurus*, first reported by Vieillot in 1824. The nominate species is found in South Mauritania and Senegal eastward to Southern Sudan and Northern South Sudan; partial migrant southward to Guinean savanna and forest zones.
- *C. c. sclateri*, first reported by Bates in 1927. It is found in the humid belt of West Africa (Sierra Leone to Nigeria) eastward to Northern Congo, Western Uganda and South Sudan. Race *sclateri* is more rufous, but variable in color, than the nominate species.

- *C. c. nigricans*, first reported by Salvadori in 1868. It is centered on White Nile in Southeast Sudan, reaching eastward to West Eritrea and southward to Northerneastern South Sudan and Western Ethiopia. Race *nigricans* is distinctive, generally blackish and the male often longer-tailed than the nominate species.

Common Name: Bonaparte's Nightjar
Scientific Name: *Caprimulgus concretus*

Size: 8.2-8.6 inches (21-22 cm); **Wingspan:** 22-23.6 inches (56-60 cm)

Habitat: Asia; occurs on Sumatra, Belitung Island and Kalimantan (Borneo), Indonesia, Brunei, and Sabah and Sarawak (Borneo), Malaysia, where it is locally common, but rarely recorded.

It is restricted to lower elevations (usually below 500 m) where it frequents forest, perhaps particularly clearings and edges, heath forest and secondary growth. The true nature of its habitat use is uncertain, although it has been observed foraging from a perch inside forest.



Status: Vulnerable. **Global population:** 15,000-30,000 adult individuals with a decreasing population trend. If this bird is an extreme lowland forest specialist, as appears possible, then it must be in steep decline from habitat loss. Rates of forest loss in the Sundaic lowlands have been extremely rapid (Kalimantan lost nearly 25% of its evergreen forest during 1985-1997, and Sumatra lost almost 30% of its 1985 cover), because of a variety of factors, including the escalation of

logging and land conversion, with deliberate targeting of all remaining stands of valuable timber including those inside protected areas. Furthermore, the major fires of 1997-1998 affected about 50,000 km² of forest on Sumatra and Borneo, damaged at least 17 of Indonesia's parks and reserves and, following previous major conflagrations in 1972 and 1982-1983, accelerated the desiccation of the forest environment that renders regrowth and unburnt adjacent areas more vulnerable to fire and poorer in biodiversity.

Diet: Nocturnal insects. Forages by making short flycatching sallies from perches, often hunting out over rivers.

Nesting: Sexes are dimorphic. The upper parts are brown spotted with chestnut. There is no nuchal collar markings. The wing-coverts are brown, spotted with chestnut and cinnamon. The scapulars are blackish-brown tipped with chestnut, and have broadly edged pale buff on the outer web edges. The submoustachial stripe is white and it has a large white throat patch. The under parts are brown barred with chestnut, and becoming buff barred brown on the belly and flanks. Both sexes lack white on wings; the male has white tips to two outermost tail feathers and the female lacks them or rarely has very narrow white tips. The irises are dark brown, the bills are brownish, and the legs and feet brown. Immature plumages are unknown.

Breeding habitats are unknown but nightjars nesting habits are similar. The scrape-type nest is created at the base of a tree or a shrub and 1-2 eggs are laid directly on the ground or on a leaf litter. Females usually incubate the eggs during the day with the male taking over at night.

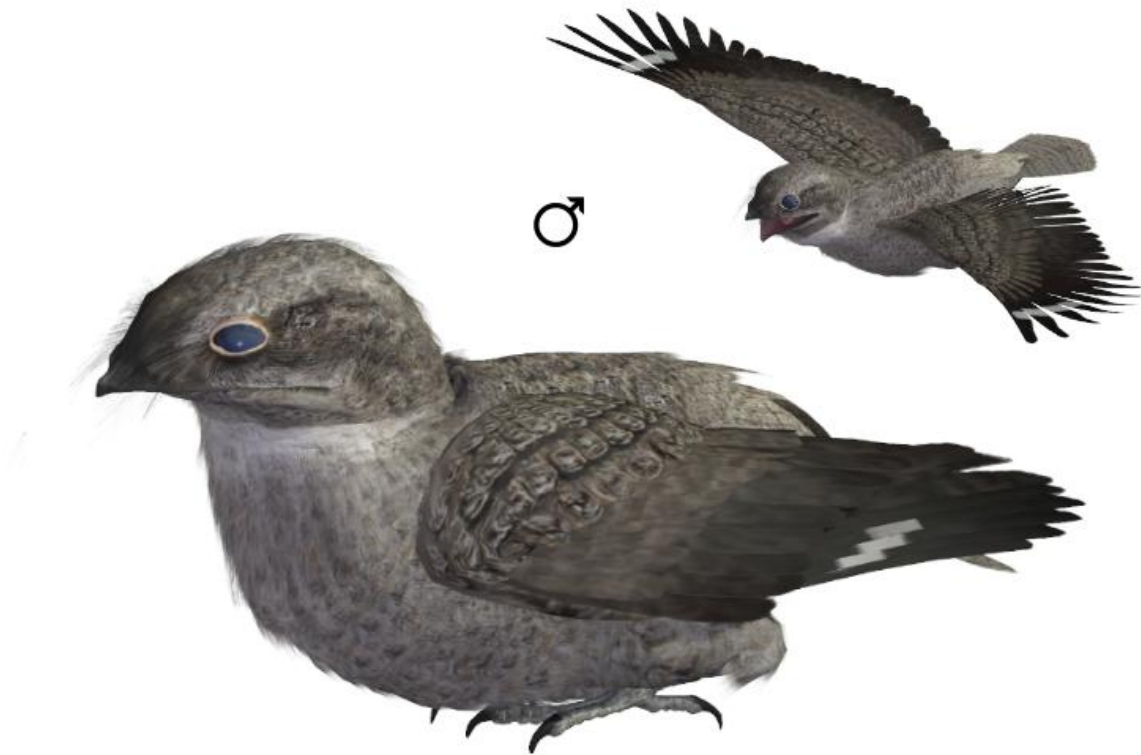
Cool Facts: It is also known as the Sunda nightjar. The song of the male is a low, mournful “*wa-ouuuu*”, with the second note descending in pitch. It sings from perches, mainly at dusk and dawn and on moonlit nights.

Common Name: Pygmy Nightjar
Scientific Name: *Nyctipolus hirundinaceus*

Size: 6.3-7.9 inches (16-20 cm); **Wingspan:** 16-16.6 inches (41-50 cm)

Habitat: South America; endemic to Xeric Caatinga of north-east Brazil. A population was recently discovered in east-central Brazil.

The species largely prefers lowland deciduous forest especially with open sandy areas, although the newly described subspecies *vielliardi* occurs in rocky areas



Status: Least Concern. **Global population:** Unknown amount of adult individuals with a stable population trend. The Caatinga habitats have suffered markedly from agricultural expansion, grazing and burning since the late 18th century. The level of general disturbance has further increased in the last 30 years since the arrival in the area of the Brazilian oil company, Petrobrás, which has improved access, permitting an influx of settlers and relocation of many families by government agencies.

Diet: Nocturnal insects. Forages in flight, hunting low.

Nesting: Sexes are dimorphic. The upper parts and wing-coverts are grayish-brown, densely speckled with grayish-white or tawny and buff. There is no scapular pattern or nuchal collar. It has an indistinct buff collar and a thin whitish supercilium with an indistinct buff submoustachial stripe. There is a large white patch on throat with broad cinnamon-buff colored band below. The under parts are brown, densely spotted and barred with pale buff and grayish-white, becoming buff with barred brown on belly and flanks. The male has a white spot on the four outermost primaries and white tips to the two outermost tail feathers (inner web only on outermost). The female has smaller wing spots and lacks the white on tail. Irises are dark brown, bills are blackish-brown, and the legs and feet are blackish-brown.

Cool Facts: There are three subspecies:

- *N. h. cearae*, first reported by Cory in 1917. It is found in Northeastern Brazil from northern Ceará southward to extreme North Bahia. This subspecies is paler, with less barring on the under parts, which are sometimes plain, and larger white wing spots in the male than in the nominate species.
- *N. h. hirundinaceus*, first reported by Spix in 1825. The nominate species is found in northeastern Brazil in southern Piauí, Bahia (except extreme North) and Alagoas.
- *N. h. vielliardi*, first reported by Ribon in 1995. It is found in eastern Brazil in southeastern Minas Gerais and west-central Espírito Santo. This subspecies is darker, with longer wings, and smaller white wing spots in the male than in the nominate species.

Common Name: European Nightjar
Scientific Name: *Caprimulgus europaeus*

Size: 9.6-11 inches (24.5-28 cm); **Wingspan:** 24.8-28.6 inches (63-72.7 cm)

Habitat: Eurasia and Africa; this species is highly migratory. All subspecies breeds across most of Europe eastwards through temperate Asia. They winter in sub-Saharan Africa.

Nightjars prefer mostly dry, open country, lowland heaths with scattered trees and bushes, commons and moorland, forest and woodland (especially glades, clearings and edges), recently felled woodland and young forestry plantations.



Also chalk down-land, industrial waste tips, wooded or scrub--covered steppe, sparsely forested or stony hillsides, oak scrub-land, sand dunes, semi-deserts and deserts. They tend not to breed in urban areas, mountains, steppes, treeless plains, dense forest interior, mature plantations, cultivation and tall grassland, but

not infrequently forages over such areas as farmland, gardens, reed beds and wet habitats (e.g. marshes). They winter in wooded country, dry coastal acacia steppe, forest clearings, open sandy country and highlands. They have been recorded from sea-level to 2800 m on their breeding grounds, and up to 5000 m during winter.

Status: Least Concern. **Global population:** 2,000,000-6,000,000 adult individuals with a decreasing population trend. The population is suspected to be in decline owing to ongoing habitat destruction, pesticide use reducing the availability of food, and disturbance, especially in Northwestern Europe.

Diet: Moths, beetles, mantises, mayflies, dragonflies, grasshoppers, crickets, cockroaches, wasps, bees, antlions, lacewings, caddisflies and flies. They will occasionally take butterflies and flightless glow-worms, and also feed on spiders and mites. Grit and small stones are also ingested and vegetable matter; this is probably taken accidentally.

Their foraging flight is agile and buoyant. They hunt over open country, in clearings, along woodland edges and borders, and in meadows and farmland, around grazing animals, and over stagnant ponds. They may also make short flycatching sallies from ground or low perches, and hover close to vegetation to take food from foliage. They rarely feed on the ground, and if so, they do so by darting forward to take their prey. They usually hunt alone, but loose feeding flocks sometimes occur. It may forage diurnally on overcast days.

Nesting: Sexes are dimorphic. The upper parts are grayish-brown, streaked blackish-brown with indistinct pale buff nuchal (back of the neck) collar. The lesser coverts are brown and the rest of wing-coverts are grayish-brown, spotted buffish, and showing a buff line across fore-wing and buff line along the scapulars. There is a broad buffish-white sub-moustachial stripe and a white throat patch. The under parts are gray-brown, barred brown and spotted buff, becoming buff barred brown on belly and flanks.

The male has a white spot on three (occasionally four) of the outermost primaries and white tips on the two outermost tail feathers. The female lacks these white markings. The iris is dark brown, the bill is blackish, and the legs and feet brown or tan.

Racial variations can occur by region; the birds becoming smaller and paler in the further Eastward parts of their range, with the white wing spots of males becoming larger.

Breeding occurs in late May to August and breeding is often influenced by the lunar phase. They have single or double-broods and are generally monogamous. The nest-site is in the open, beneath a tree, bush or shrub, found within upturned tree roots or among vegetation. There is no physical nest (a "scrape" nest type)

and eggs are laid on ground, on leaf litter, pine needles or bare soil. The clutch is usually 1–2 eggs which are elliptical, smooth and fairly glossy, whitish, grayish-white or cream, spotted and blotched yellow-brown, dark brown and gray or densely scrawled brown and gray, rarely unmarked. They are laid at intervals of 36–48 hours. The incubation is done mainly by the female over a period 17–21 days. The brooding period takes 10–16 days and is also performed mostly by the female

Cool Facts: Nightjars drink in flight by swooping down into ponds and streams.

There are six subspecies:

- *C. e. europaeus*, first reported by Linnaeus in 1758. The nominate species is found in Northern & Central Europe, eastward through North-central Asia (mainly south of c. 60° N) to the lower Baikal region.
- *C. e. meridionalis*, first reported by E. J. O. Hartert in 1896. It is found in Northwestern Africa and Iberia, eastward through Southern Europe, Crimea, Caucasus and Ukraine to Northwest Iran and the Caspian Sea.
- *C. e. sarudnyi*, first reported by E. J. O. Hartert in 1912. It is found in Kazakhstan from Caspian Sea, eastward to Kyrgyzstan, Tarbagatai and Altai Mountains..
- *C. e. unwini*, first reported by A. O. Hume in 1871. It is found in Iraq and Iran East to West Tien Shan and Kashgar region, North to South Turkmenistan and Uzbekistan and South to West Northern Pakistan.
- *C. e. plumipes*, first reported by Przevalski in 1876. It is found in East Tien Shan (Northwestern China and Western & Southern Mongolia).
- *C. e. dementievi*, first reported by Stegmann in 1949. It is found in Southern Transbaikalia and Northeastern Mongolia.

Poets sometimes use the nightjar as an indicator of warm summer nights, as in George Meredith's "Love in the Valley"...

*Lone on the fir-branch, his rattle-notes unvaried
Brooding o'er the gloom, spins the brown eve-jar*

In Dylan Thomas's "Fern Hill"...

*and all the night long I heard,
blessed among stables,
the nightjars flying with the ricks,*

In Wordsworth's "Calm is the fragrant air"...

*The busy dor-hawk chases the white moth
With burring note. Nightjars only sing when perched*

Thomas Hardy referenced the eerie silence of a hunting bird in "Afterwards":

*If it be in the dusk when, like an eyelid's soundless blink
The dewfall-hawk comes crossing the shades to alight
Upon the wind-warped upland thorn.*

Caprimulgus and the old name "goatsucker" both refer to the myth, old even in the time of Aristotle, that nightjars suckled from nanny goats, which subsequently ceased to give milk or went blind. This ancient belief is reflected in nightjar names in other European languages, such as German *Ziegenmelker* and Italian *succiacapre*, which also mean "goatsucker", but despite its antiquity, it has no equivalents in Arab, Chinese or Hindu traditions. It is likely that the birds were attracted by insects around domestic animals, and, as strange nocturnal creatures, were then blamed for any misfortune that befell the beast.



Another old name, "puckeridge", was used to refer to both the bird and a disease of farm animals, the latter actually caused by botfly larvae under the skin. "Lich fowl" (corpse bird) is an old name which reflects the superstitions that surrounded this strange nocturnal bird. Like "gabble ratchet" (corpse hound), it may refer to the belief that the souls of unbaptized children were doomed to wander in nightjar form until Judgment Day.

Common Name: Collared Nightjar
Scientific Name: *Gactornis enarratus*

Size: 9.4 inches (24 cm); **Wingspan:** 25.2 inches (64 cm)

Habitat: Africa; it is endemic to North and East Madagascar.

This nightjar is found in lowland primary forests which include dense, humid, evergreen forests and adjacent second-growth forests. It can be seen occasionally in dry, deciduous forests and occurs from sea-level to 1880 m.



Status: Least Concern. **Global population:** Unknown adult individuals with a decreasing population trend. This nightjar is generally considered rare throughout much of range. This may be because it is usually secretive and difficult to observe, so possibly under-recorded and locally uncommon to fairly common in some regions.

Threats include hunting by local people and loss of habitat as a result of deforestation

Diet: Nocturnal insects, including moths and termites. Forages in flight, hunting low over sandbars and beaches or higher up above rivers. Also feeds over open country, usually near rivers, and on insects attracted to artificial lights. Often

forages in loose flocks.

Nesting: Sexes similar. The upper parts are grayish-brown and boldly spotted blackish-brown with the spots edged with chestnut. It has a broad rufous nuchal collar with thin, well defined buff band above. The wing-coverts are gray-brown with boldly spotted black-brown; the spots are broadly edged chestnut or pale buff. The scapulars are grayish-brown and boldly spotted blackish-brown with chestnut edges. There is a tawny-buff band around lower throat and the underparts are brown with a boldly spotted blackish-brown edged chestnut which becomes less spotted and more streaked on belly and flanks. Both sexes lack white markings on wings and have narrow white tips to one or two outermost tail feathers. The iris is dark brown and the bill black or pink-gray with black tip. The legs and feet dark brown or pinkish-gray.

It can breed from late September to early December, but usually in October and November. The nest site is usually at edge of forest track or clearing and is a "Scrape" nest with the eggs being laid on leaf litter or ferns on a tree stump. The clutch is usually 2 eggs which are glossy white and often lightly washed pinkish-brown. The incubation period is not known.

Adults who are threatened at nest-site may give a defense display or injury-feigning display to distract predators..

Cool Facts: It was previously placed in the genus *Caprimulgus* and moved to *Gactornis* in 2014.

Alarm calls of adult at nest are repetitive, liquid "kow" or "keeow" notes; adult makes guttural hissing sounds during defense displays. Chicks utter a soft "chic" notes.

Common Name: Puerto Rican Nightjar
Scientific Name: *Antrostomus noctitherus*

Size: 8.7-8.8 inches (22-22.5 cm); **Wingspan:** 23.6-24.4 inches (60-62 cm)

Habitat: North America; it is endemic to Puerto Rico and the Virgin Islands.

It is typically found in semi-deciduous forest with hardwood trees and little or no ground vegetation, usually on dry, limestone soils. It has also been found in dry, open secondary growth areas with scrub, xeric or dry scrubland, open scrub forest, and forest with tangled, thorny undergrowth. It occasionally frequents plantations of *Eucalyptus robusta*. It avoids riparian forests, and is found in disturbed areas only where canopy is still intact. It is a lowland species, recorded from sea-level to 230 m.



Status: Endangered. **Global population:** 1,400 to 2,000 adult individuals with a decreasing population trend. The loss of habitat through deforestation is a possible reason for current, restricted range. Potential predators include feral cats and introduced mongooses (*Herpestes auropunctatus*).

Diet: Nocturnal insects, including beetles, moths and other flying insects. They forage by making flycatching sallies from perches and hunt beneath tree canopies. Smaller prey items are probably consumed in flight, but larger insects are carried in the bill back to perch, where they are shaken and swallowed.

Nesting: Sexes are dimorphic, though not strongly so. Both sexes upper parts are grayish-brown, tinged rufous and streaked blackish-brown, broadly so on crown. There is an indistinct tawny-buff nuchal collar. The wing-coverts are grayish-brown, speckled and spotted buff, tawny and greyish-white, showing row of large blackish spots across upper fore-wing and along scapulars. There is a white or buffish-white band around lower throat. The under parts are brownish, heavily spotted gray-white and cinnamon feathers, becoming buff barred brown on belly and flanks. Both sexes lack white markings on wings which are found on many species of Nightjar. The male has broad white tips to three outermost tail feathers while the female has narrow, buffish tips. The iris is dark brown, the bill is black and the legs and feet blackish-brown. Immatures are paler than adults.

This nightjar breeds late from February to July and is apparently influenced by moon phase. This species has been known to double-brood and is highly territorial. The nest site is usually partly shaded, beneath scrub vegetation in woodland where canopy height is 4–6 m, or at base of small tree. They create a “Scrape” type nest with the eggs being laid on leaf litter on ground. The clutch is usually 1–2 eggs, which are elliptical and buffish-brown, blotched and spotted purple, with markings denser around blunt end. Incubation is performed by both sexes with the male incubating more than the female during day. The incubation period generally lasts 18–21 days. The eggs are hatched asynchronously. The chick is semi-precocial and is covered in reddish-buff or cinnamon down. The chicks are usually brooded by male and can fly short distances after 14 days.

Adults threatened at the nest site perform an injury-feigning distraction display.

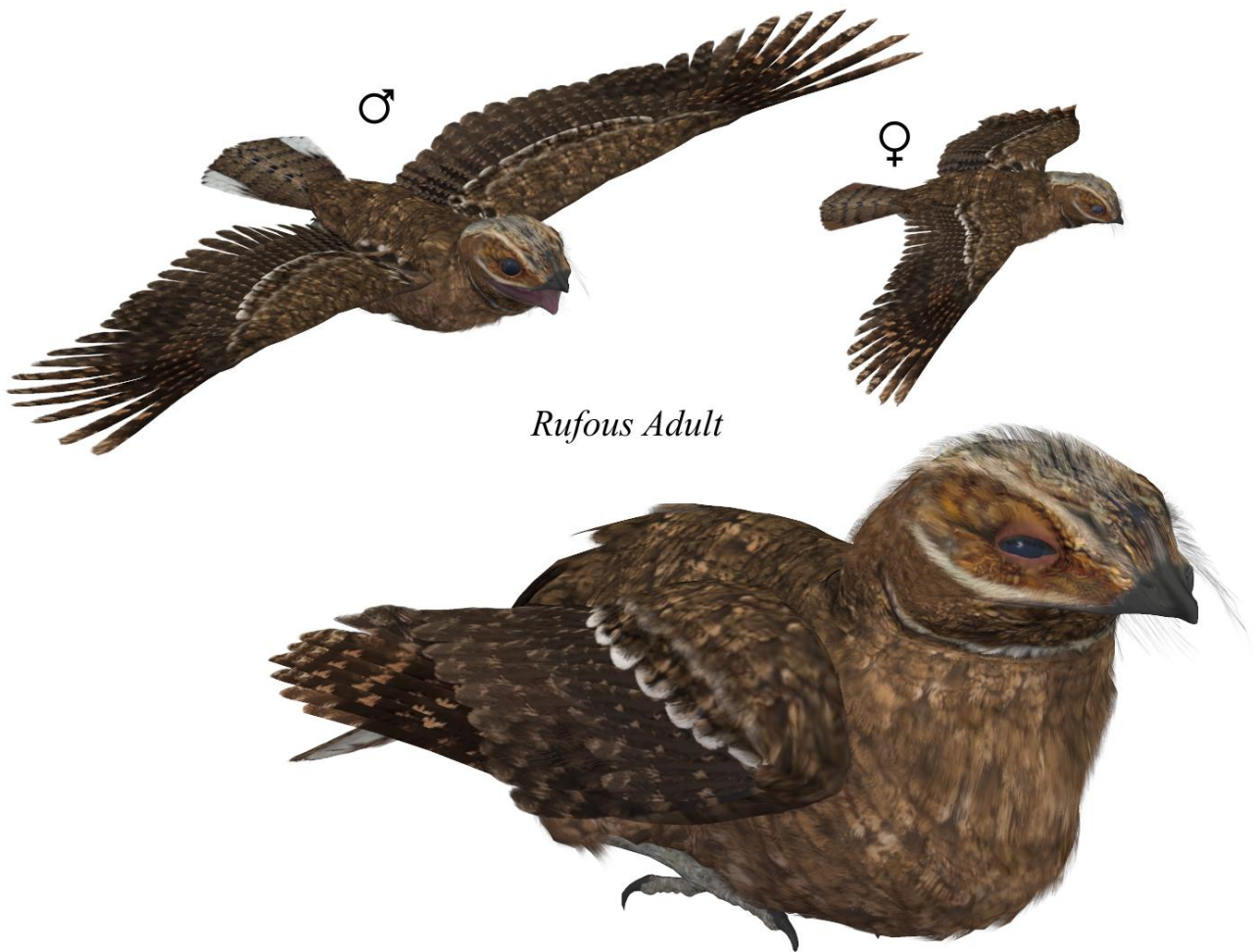
Cool Facts: This species was thought to be long extinct until rediscovered in 1961.

Common Name: Chuck-will's Widow
Scientific Name: *Antrostomus carolinensis*

Size: 11-13 inches (29-33 cm); **Wingspan:** 23-26 inches (58-66 cm)

Habitat: The Americas; summering in the Southeastern United States. It winters in the West Indies, Central America, and northwestern South America. In, migration, males generally move before females do.

It is found near swamps, rocky uplands, and deciduous woods and forests, mixed woodlands of pines and oaks. Outside breeding season, it is also found in thick woodlands, open woodlands, scrub and palmetto thickets, tangled riverside vegetation, mature hedgerows and second-growth woodlands.



Status: Least Concern. **Global population:** Unknown amount of adult individuals with an increasing population trend. Increases have been noted in Massachusetts

and New York.

Diet: Nocturnal insects such as moths, flying ants, cicadas, crickets, grasshoppers, damselflies, dragonflies and beetles. It has been known to take small birds such as hummingbirds, sparrows and swallows and shellfish (*bivalves*).

It hunts in flight along woodland edges and over open areas, often flying low over ground. It also forages by making short fly-catching sallies from perches. When in heavy molt, it may feed on ground by scuttling about after prey.

Nesting: Sexes are dimorphic. It has a short bill and a long tail (typical of the family). This species has mottled brownish under parts, a buff throat, reddish-brown feathers lined with black, and brown and white patterning on head and chest, differing from the gray and black of its more common cousin. The male has white inner webs on its three outermost tail feathers, outer webs being tawny, speckled or barred black; the female lacks white on its tail. The iris is dark brown, the bill dusky flesh colored with black tip and the legs and feet are dull tan.

Females do not build nests, but rather lay eggs on patches of dead leaves on the ground. The eggs, which are pink with spots of brown and lavender, are subsequently incubated by the female.

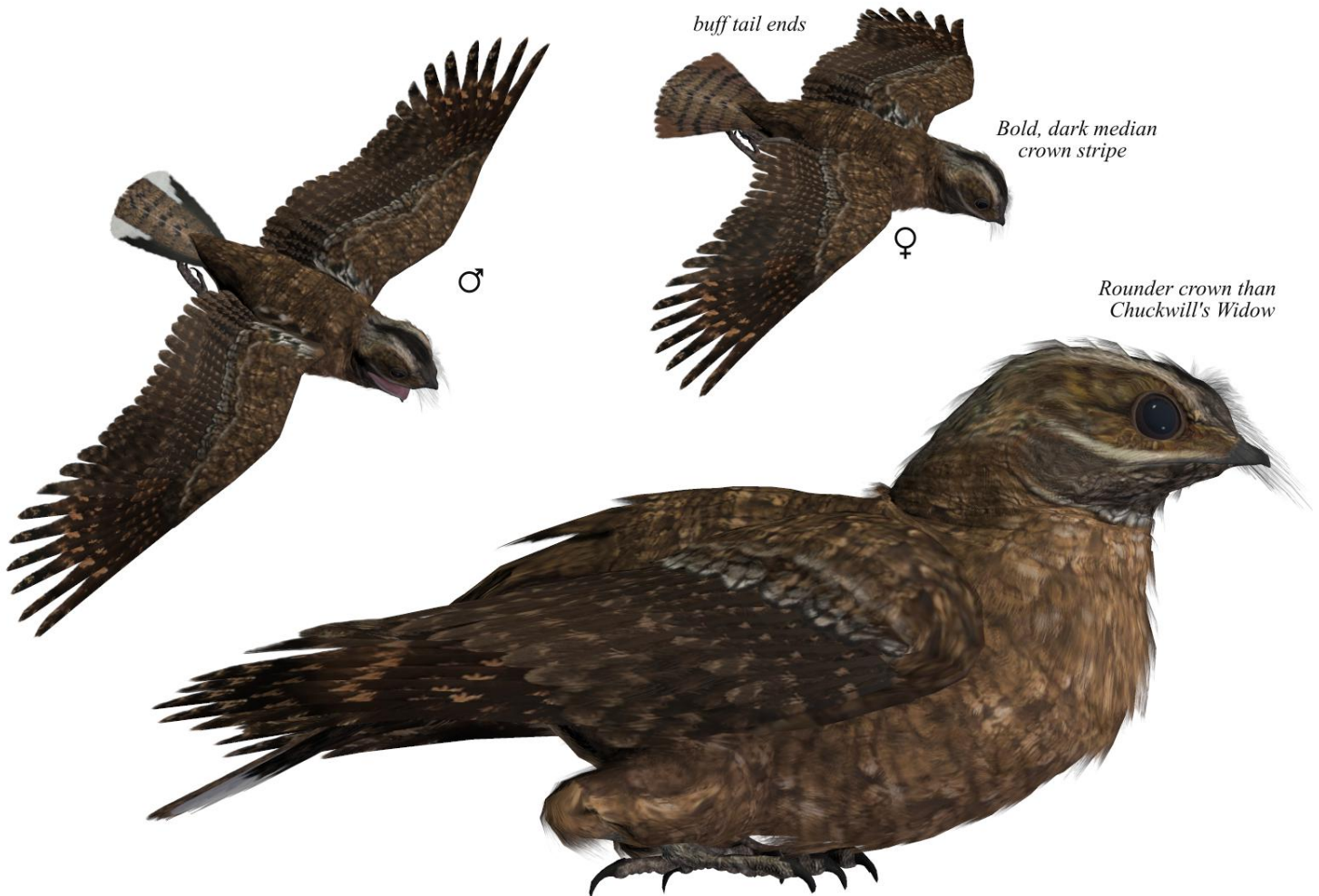
Cool Facts: Its common name derives from its continuous, repetitive song that is often heard at night. This consist of a series of calls with a vibrating middle note between two shorter notes, not much shifting in pitch. It is slower, lower-pitched and less piercing than the song of the whip-poor-will. "Chuckwuts-widow" is another common name less often found, but also imitating the rhythm of the bird's calls. Other alternative names include "Chip-fell-out-of-a-oak".

It is the largest nightjar in North America.

Common Name: Eastern Whip-poor-will
Scientific Name: *Antrostomus vociferus*

Size: 8.7-10.6 inches (22-27 cm); **Wingspan:** 18-20 inches (45-50 cm)

Habitat: North America; Breeding grounds in Ohio and Kansas have 60% of the population, Maryland and Ontario have 20% of the population. They arrive at their southern breeding grounds by late March and their northern by mid-May, with



most arriving in April. It departs from breeding grounds September through November (depending on the weather) and winters in lowlands of South Carolina and the Gulf States, Southward through Eastern Mexico to Guatemala, Southern Belize, El Salvador and Honduras. Loose flocks may form during migration, but usually it is observed singly.

It is found in all types of forest and open woodland, especially of oak or mixed pine and oak, but also accepts a wide variety of semi-open habitats, including rural farmland, roadway corridors, clear-cut and selectively logged forest, old fields and reclaimed surface mines. It tolerates both arid and more humid conditions, from lowlands to montane altitudes. It can also be found in suburban habitats, and on migration in coastal scrub. In the Southeastern United States, it primarily occurs in mixed woodland, often in broadleaf evergreen woods near open areas. In Central Florida, winter territories were mostly found in *Pinus elliotti-Quercus laevis*, *Pinus clausa*, scrub and scrubby flatwoods.

Status: Least Concern. **Global population:** Unknown amount of adult individuals with a decreasing population trend in most of its range. The eastern whip-poor-will is becoming locally rare. Several reasons for the decline are proposed, such as habitat destruction, predation by feral cats and dogs, and poisoning by insecticides, but the actual causes remain elusive. Even with local populations endangered, the species as a whole is not considered globally threatened due to its large range. In Massachusetts, it is listed as a “Species of Special Concern”.

Diet: It feeds on moths, beetles, grasshoppers, crickets, mosquitoes, caddisflies, locusts, ants and possibly worms.

Feeding starts 30 minutes after sunset and is weather-dependent (none in cold, rainy weather); duration during dark depends on moonlight and probably abundance of flying insects. In the morning, feeding begins near first light and ends about 40 minutes before sunrise.

Nesting: Sexes are dimorphic. Adults have mottled plumage: the upper parts are gray, black and brown; the lower parts are gray and black. They have a very short bill and a black throat. Males have a white patch below the throat and white tips on the three outer tail feathers; in the female, these parts are light brown.

The nest is a shallow scrape on the ground, often at the base of a fallen log. Nests are frequently reused every breeding season. A clutch of 1–2 eggs are laid. They are elliptical, slightly glossy, white or pale cream, and unmarked or faintly marked pinkish and brownish or blotched and irregularly spotted brown, purple and lilac. Incubation begins with first egg, usually by female during day, with change-over at dusk to the male, with the female taking over again before dawn. This incubation period generally lasts 19–21 days. When hatched the chicks are covered in cinnamon, pale brown or buff down, fading to yellowish-tan within a few days. Fledging takes about 15 days.

Cool Facts: With its haunting, ethereal song, the eastern whip-poor-will is the topic of numerous legends. One New England legend says the whip-poor-will can sense a soul departing, and can capture it as it flees. This is used as a plot device in H. P. Lovecraft's story “The Dunwich Horror”. Lovecraft based this idea on information of local legends. This is likely related to an earlier Native American

belief that the singing of the birds is a death omen. This is also referred to in whip-poor-will, a short story by James Thurber, in which the constant nighttime singing of a whip-poor-will results in maddening insomnia of the protagonist Mr. Kinstrey who eventually loses his mind and kills everyone in his house, including himself.

It is also frequently used as an auditory symbol of rural America, as in Washington Irving's story, "The Legend of Sleepy Hollow", as a plot device. For example, William Faulkner's short story, "Barn Burning", makes several mentions of whip-poor-wills...

"and then he found that he had been asleep because he knew it was almost dawn, the night almost over. He could tell that from the whip-poor-wills. They were everywhere now among the dark trees below him, constant and inflectioned and ceaseless, so that, as the instant for giving over to the day birds drew nearer and nearer, there was no interval at all between them."

American poet Robert Frost described the sound of a whip-poor-will in the fourth stanza of his 1915 poem "Ghost House". This is notable in Frost's use of assonance, in...

*The whippoorwill is coming to shout
And hush and cluck and flutter about.*

In the 1934, Frank Capra's Academy Award winning film, "It Happened One Night", before Peter Warne (Clark Gable) reveals his name to Ellie Andrews (Claudette Colbert), he famously says to her: "I am the whip-poor-will that cries in the night".

In music, "My Blue Heaven", written in 1924 by Walter Donaldson and George A. Whiting, and popularized by a 1928 Gene Austin recording, opens with the words, "When whip-poor-wills call, and evening is nigh, I hurry to my blue heaven."

Hank Williams's 1949 song, "I'm So Lonesome I Could Cry", opens with the lyric, "Hear that lonesome whip-poor-will/He sounds too blue to fly." The whip-poor-will is also referenced in Hank Williams Jr's song "I'm Gonna Get Drunk and Play Hank Williams All Night Long" with the lyrics "Cause the wedding bells will never ring for me and that whip-poor-will ain't got no sympathy". Jim Croce too makes a reference to this bird in his song "I Got a Name": "Like the whip-poor-will and the baby's cry, I've got a song, I've got a song". Elton John and Bernie Taupin's 1975 song "Philadelphia Freedom" features a flute mimicking the call of the eastern whip-poor-will and includes the lyrics "I like living easy without family ties, till the whip-poor-will of freedom zapped me right between the eyes."

Common Name: Common Poor-will

Scientific Name: *Phalaenoptilus nuttallii*

Size: 7-8.3 inches (18-21 cm); ; **Wingspan:** 18-20 inches (45-50 cm)

Habitat: North America; from British Columbia and southeastern Alberta, through the western United States to northern Mexico. Many northern birds migrate to winter within the breeding range in central and western Mexico, though some remain further north.



They typically prefer arid or semi-arid country such as deserts, gravelly plains, open prairie, grassy hillsides, rocky terrain with scattered vegetation or dry brush, rocky canyons and chaparral. They are also found in open woodland, and clearings in pine or fir forest, generally between 500 m and 1000 m

Status: Least Concern. **Global population:** Unknown amount of adult individuals with a increasing population trend. In Canada, while not listed by Committee on the Status of Endangered Wildlife in Canada, it is red-listed by British Columbia

Ministry of the Environment. Eggs and young probably taken by predators such as birds of prey, crows and ravens (*Corvus*), coyotes (*Canis latrans*), foxes (*Canidae*), badgers (*Taxidea taxus*), skunks (*Mustelidae*) and snakes (e.g. *Crotalus viridis* or *Pituophis melanoleucus*). Adults may be taken by birds of prey such as Hen Harrier (*Circus cyaneus*) or Great Horned Owl (*Bubo virginianus*).

Diet: Nocturnal insects; such as moths, beetles, and grasshoppers. It ejects pellets of the indigestible parts, in the manner of an owl.

The common poor-will frequently takes prey off of the ground or by leaping into the air from the ground.

Nesting: Sexes are dimorphic, although only marginally so. The upper parts are grayish brown or grayish white, speckled and barred brown, boldly spotted blackish brown on crown. There is no nuchal collar. The wing-coverts are pale gray-brown, streaked and barred with blackish brown, and creme tipped. The scapulars pale gray-buff or gray-white with broad, almost star-shaped, blackish-brown centers. The sides of crown are often thinly edged white. There is a black mask with a thin white (on males) or buff (on females) submoustachial stripe. The chin and throat are dark brown and the sides of lower throat are white. The rest of under parts are generally pale gray-brown or buff, barred with brown. Both sexes lack white markings on wings but have all but central pair of tail feathers narrowly tipped white, more boldly so in male. The iris is dark brown. The bill is black and the legs and feet are brown. Immatures are similar to the adult. Juveniles are dull buff-white speckled with gray and lacking the black-brown spotting on crown. They have buff (not white) patches on sides of lower throat and less distinct black-brown markings than the adults, especially on underparts.

The nest is a shallow scrape on the ground, often at the base of a hill and frequently shaded partly by a bush or clump of grass. The clutch size is typically two, and the eggs are white to creamy, or pale pink, sometimes with darker mottling. Both sexes incubate for 20–21 days to hatching, with another 20–23 days to fledging. There is usually one brood per year, but females may sometimes lay and incubate a second clutch within 100 m of the first nest while the male feeds young at the first site. The young are semiprecocial. An adult disturbed on the nest tumbles and opens its mouth, hissing, apparently imitating a snake.

Cool Facts: The common poor-will is the only bird known to go into torpor for extended periods (weeks to months). This happens on the southern edge of its range in the United States, where it spends much of the winter inactive, concealed in piles of rocks. This behavior has been reported in California and New Mexico. Such an extended period of torpor is close to a state of hibernation, not known among other birds.

Song of male is a melodious, whistled “*poor-will-low*” lasting about 5 seconds.

There are six subspecies of Common Poor-will:

- *P. n. nutalli*, first reported by Audubon in 1844. The nominate race breeds over most of the North American range.
- *P. n. californicus*, first reported by Ridgway in 1887. It is found in the Southwestern United States (Western California) and extreme Northwestern Mexico (Northwestern Baja California). Known as the “dusky poor-will”, it is darker and browner than the nominate race.
- *P. n. hueyi*, first reported by Dickey in 1928. It is found in Southeastern California, Southwestern Arizona and Northwestern Mexico (Northeastern Baja California and Northwestern Sonora). Known as the “desert poor-will”, it is paler than the nominate race.
- *P. n. dickeyi*, first reported by Grinnell in 1928. It is found in Central & Southern Baja California. Known as the “San Ignacio poor-will”, it is smaller and less heavily marked than *P. n. californicus*.
- *P. n. adustus*, first reported by van Rossem in 1941. It is found in the Southern United States (extreme South Arizona) Southward to Northwestern Mexico (Sonora). Known as the “Sonoran poor-will”, it is paler and browner than the nominate race.
- *P. n. centralis*, first reported by R. T. Moore in 1947. It is found in Central Mexico from Southern Durango southward to Northeastern Jalisco and Guanajuato.

Special Thanks to...

....my betatesters (FlintHawk)

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
- **"Birds of Europe"** by Killian Mullarney, Lars Svensson, Dan Zetterstorm and Peter J. Grant.
- **"Birds of East Asia"** by Mark Brazil.
- **"Handbook of Australian, New Zealand and Antarctic Birds"** by S. Marchant and P. J. Higgins

Internet Sources:

- **Cornell Lab of Ornithology** (<http://www.birds.cornell.edu>)
- **Wikipedia** (<http://www.wikipedia.com>)
- **Birdlife International** (<http://www.birdlife.org>)
- **HBW Alive** (<http://www.hbw.com>)

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