



Avian Models for 3D Applications
Characters and Procedural Maps by Ken Gilliland

Songbird ReMix

Cool & Unusual Birds v2

Manual

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Songbird ReMix

Cool & Unusual Birds v2

Introduction

Cool and Unusual Birds v2 brings 15 of the more interesting and colorful birds on the planet.

From the jungles of New Guinea come the exotic birds of paradise with huge tail plumes or long antennae-like feathers. There's a crested hummingbird, a green woodpecker and the vibrant Cocks-of-the-Rock from the Amazon and the impossibly long Fork-tailed flycatcher from the Yucatan. From the American Southwest is the desert expert, the Black-throated Sparrow that can survive on no water and where there is water-- the fishing expert, the Belted Kingfisher will rule the skies. Painted Buntings, Redstarts and Orioles add vibrant colors to fill out this collection as well.

This set has two versions; DAZ Studio (supporting 3Delight and Iray renderers) and Poser 10+ (supporting Firefly and Superfly renderers).

Overview and Use

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):
 - **Hummingbirds and Swifts (Order Apodiformes)**
 - **Kingfishers (Order Coraciiformes)**
 - **Perching Birds (Order Passerines)**
 - **Woodpeckers and Toucans (Order Piciformes)**
- **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. When using physical renderers such as Iray and Superfly, SubD should be turned to at least "3". For DAZ Studios 3Delight renders, the SubD must be turned from the "High Resolution" setting to the "Base" setting (otherwise some areas will render incorrectly transparent).

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.

One Folder to Rule Them All

When I reworked the entire Songbird ReMix library starting in 2018, I decided to abandon the way the birds were sorted (by product name) and choose an Ornithological approach. All birds are found in the Bird Library folder and are arranged by type of bird. This approach is hopefully easier for most to find what bird they are looking for. Admittedly, it will take some getting use to for some longtime users, but I've always approached the Songbird ReMix series as a learning tool as well as a graphics tool, so hopefully some knowledge will rub off by seeing how birds are grouped.

Probably the most deceiving subfolder in the **Bird Library** is "**Perching Birds (Order Passeriformes)**". This is folder you probably will end up "favoriting" because this one folder (Passeriformes) **holds more than 50% of all birds**. Perching birds range from cardinals and jays to chickadees, crow and swallows.



Finding the bird you want within the "**Perching Birds (Order Passeriformes)**" folder can be daunting, even for an experienced birder (such as myself), so I've included an online reference tool within this folder that helps to make your search easier. Click the "**Perching Birds Finder**" icon and when loaded, look at the first column and search for the type of bird you want. For example, I want a "manakin" (a bird common to Central and South America). Scroll down the first column alphabetically and stop on "manakin". Looking across to the second column, you will now know that manakins can be found in the "Tyrant Flycatchers & their Allies" subfolder.

Physical-based Rendering

Iray and **Superfly** requires more CPU and memory horsepower than the legacy renderers because of ray-trace bounces and higher resolution meshes needed for displacement. Poser's **Superfly** renderer will require that the "Min Transparent Bounces" be set to **at least**

16 and that the “Max Transparent Bounces” be set to **at least 32** in render settings. Superfly renders may show artifacts in the head area. This is a known Poser issue and may be addressed in the future. Increasing the SubD may minimize this issue.

Posing & Shaping Considerations

This volume has various species, so when using generic poses not every pose will work perfectly with every bird. You may find that some minor alteration on the stock poses may be warranted.

Here are some of the most common alterations you may need to make:

- Birds will not be flat on the zero plane due to leg size and overall scale.
- Because of the numerous beak shapes, closing the beak may range from 0.5 to 1. Usually 0.8 is about right.
- **Raise Upper Beak** (*in Action Controls*): This morph is a “one size fits all” control. Because of the variety of beak shapes. It may not work with all birds.

IK Concerns

Some poses may go askew when IK is turned on. By default, Poser’s IK feature is turned off when loading a bird. To turn it on, select the “Figure” category from the main tool bar and “Use Inverse Kinematics” from the submenu.

By default, DAZ Studio’s IK feature is turned on when loading a bird. This will cause the thigh and shin rotations change when the character is moved. The **CTRL K** keypress will turn IK on and off in DAZ Studio. IK doesn’t work that well in Studio, so I suggest selecting the character in the **Scene tab** and simply deleting the two IK body parts to remove IK.

Complex Birds (with conformers added)

There are a few birds which load with one or more conformers added to them. These conformers are usually add-on crests for the head of the bird or add-on tail sections. In the case of tail conformers, usually the birds TailFeathers section is hidden and the conforming TailFeathers part takes its place. When posing the TailFeathers part on XYZ rotations, click on the Bird Model hidden part for the best results.

For initial posing always select the main bird model, then select the conformers BODY section to see what additional morph and posing controls are available. Here is a detailed list of the Birds that use conforming parts and what additional options are available:

- **'Akohekohe**. The attached “Conformer for Passerine Beak Fluff” has numerous additional shaping controls in the BODY section of the part.
 - **Extend Bristles**- Extends the length of the fluff
 - **Droop Bristles**- Droops the bristles over the upper beak
 - **Extend Lower Bristles**- Extends the length of the fluff below the beak
 - **Rotate Lower Bristles**- Rotates the fluff below the beak
- **Fork-tailed Flycatcher**. The attached “Tail for Fork-tailed Flycatcher” has numerous posing and shaping controls in the BODY section of the part. The main model’s existing “Tail Feathers” part is hidden to avoid confusion with this conformer.
 - **Spread Tail**- Spreads the feathers of the tail

- **Cup Tail**- Curves the outer edges of the tail
- **Twist All**- Twists the entire tail
- **Bend All**- Bends the entire tail
- **Ripple All**- Adds a ripple to the outer most retrices
- **Interior Rectrice Length**- Controls the length of the interior retrices
- **Outer Rectrices Shorter**- Controls the length of the two outer retrices
- **Outer Rectrices Width**- Creates a bulb-like end on the two outer retrices
- **Bulb-shaped Outer Rectrices**- Controls the width of the two outer retrices
- **Sway Outer Rectrices**- Sways the two outer retrices left to right
- **Bend Down Outer Rectrices**- Bends down the two outer retrices
- **Curl Up Outer Rectrices**- Curls the ends of the two outer retrices
- **Curl Down-Up Outer Rectrices**- Curls the ends of the two outer retrices
- **Left and Right Tip Down**- Individual controls to move the left or right outer retrices
- **Left and Right Ripple**- Individual controls to ripple the left or right outer retrices
- **Left and Right Twist**- Individual controls to twist the left or right outer retrices
- **Left and Right Sway**- Individual controls to move side-to-side the left or right outer retrices
- **Left and Right Bend Down**- Individual controls to bend the left or right outer retrices

- **Cock-of-the-Rock.** The attached “Conforming Crest 11 for Cock-of-the-Rock” has numerous additional shaping controls in the BODY section of the part.
 - **Standard SBRM4 Fit**- The model shape was designed specifically for the “Cock-of-the-Rock”. This morph allows you to use it with other Songbird ReMix birds.
 - **Fan Out Across Beak**- This increases the width of the crest across the beak
 - **Drape Down on Beak**- This drapes the crest closer to the beak
 - **Female Crest**- Shaping for the female “Cock-of-the-Rock” crest
 - **Back Crest In**- Pulls the back of the crest forward
 - **Front Crest In**- Pulls the front of the crest backward
 - **Crest Height Lower**- Controls the height of the crest
 - **Extend Base**- This drops the base polygons of the crest in cases where parts of the crest may not appear connected (when other morphs are used)
 - Numerous corresponding “hidden” morphs that mirror morphs found on the host model

- **King of Saxony Bird of Paradise** (male only) The attached “Comforming Crest for KOS Bird of Paradise” has numerous additional shaping controls in the BODY section of the part, plus a full 16 part heirachy for each of its Ooccipital Plumes.
 - **Cape Out**- Puts the cape into a full mating display behavior.
 - **Plume Display**- Puts the crest into a full mating display behavior.
 - **Ooccipital Plume EasyPose**- All large number of controls that allow bending and twisting of the Occipital Plumes. Additional controls can be found in each of the 16 different parts of each plume.
 - **Tighten Cape Connection**- Corrects the first edge of the cape part so it fit more snugly
 - **Cape Fit**- Corrects the entire cape part so it fit more snugly
 - **Plume Ends In**- Pulls the Ooccipital Plumes ends into the the model's head
 - Numerous corresponding “hidden” morphs that mirror morphs found on the host model

- **Greater and Lesser Bird of Paradise** (males only) The attached “Tail4 for Birds of Paradise” has numerous posing and shaping controls in the BODY section of the model, as well as individual parts for each feather (5 on left/right plumes and 11 on left/right point feathers). This conforming part is **in addition to the existing tail feathers part** of the base model.
 - **Spread Plumes**- This spreads the ends of the plume feathers into a triangular shaped pattern. There are also left and right separate controls for this morph.

- **Mating Display**- This raises and curls all the plume feathers. Since this is a morph, it is **strongly recommended to return all plume feather parts to zero** since their bending can have adverse effects on this morph.
- **Upper Back Display**- This only raises and slightly curls the feathers on the upper back.
- **Numerous Left and Right Dials on Points and Plumes**- These dials allow broad bend and twist changes in the plume and point feathers. In addition, each individual part has additional controls for more precise posing.
- **Tuck Plumes for Wing Fold**- This correction morph helps hide the plumes behind the wings when folded. Also use the xyz l/rshoulder part dials on the main model to help in place the folded wings over the plumes.
- **Mating Display**- This raises and curls all the plume feathers. Since this is a morph, it is **strongly recommended to return all plume feather parts to zero** since their bending can have adverse effects on this morph.
- **Plume Feather Width**- Widens the plumes.
- **Plume Feather Length**- Lengthens the plumes.
- **Point Feather Length**- Lengthen the point feathers.

***Poser 11-12 known issue-** There is a bug in Poser 11-12 that affects the Left Eye Wink Control on all and only Superfly birds that have Conforming Parts attached to them. This control vanishes for unknown reasons on these pre-built birds. Since this is a very obscure issue, it may never be corrected for Poser. A work-around has been employed in this version. The “EyeLidWinkL1 and R1” parameters have been removed in the SF version, allowing the usually hidden Eyelid Wink CTRL” parameter to do the job instead. **Applying poses, for no apparent reason, will shut the right eye.** A Poser 12 eyelid FIX pose has been included to fix this. You can alternately set the right Eyelid Wink CTRL to “1” to correct this. Another work-around is to load the Firefly version, set the Skinning method to “Unimesh” with the render subdivision at “3” and use the **unsaved version** in your render. Saving it will create the SF issues.

Where to find your poses

| Type Folder | For what species? |
|---|--|
| Hummingbirds and Swifts (Order Apodiformes) | All Hummingbirds |
| Kingfishers (Order Coraciiformes) | All Kingfishers |
| Perching Birds (Order Passeriformes) Poses can be found in “Universal Poses | All Passerines |
| Perching Birds (Order Passeriformes) Birds of Paradise & their Allies | All Birds-of-Paradise |
| Perching Birds (Order Passeriformes) Tyrant Flycatchers & their Allies | All Cock-of-the-Rocks All Flycatchers |
| Woodpeckers and Toucans (Order Piciformes) | All Woodpeckers |

Where to find your birds

| Type Folder | Bird Species |
|---|---|
| Hummingbirds and Swifts (Order Apodiiformes) | Frilled Coquette |
| Kingfishers (Order Coraciiformes) | Belted Kingfisher |
| Perching Birds (Order Passeriformes) Birds of Paradise & their Allies | Greater Bird-of-Paradise Lesser Bird-of-Paradise King of Saxony Bird-of-Paradise |
| Perching Birds (Order Passeriformes) Cardinals, Tanagers & their Allies | Painted Bunting |
| Perching Birds (Order Passeriformes) Hawaiian Honeycreeper Finches | 'Apapane 'Akohekohe |
| Perching Birds (Order Passeriformes) NW Sparrows & their Allies | Black-throated Sparrow |
| Perching Birds (Order Passeriformes) NW Warblers & their Allies | Painted Redstart |
| Perching Birds (Order Passeriformes) Orioles, Blackbirds & their Allies | Hooded Oriole |
| Perching Birds (Order Passeriformes) Tyrant Flycatchers & their Allies | Andean Cock-of-the-Rock Guinean Cock-of-the-Rock Fork-tailed Flycatcher Vermilion Flycatcher |
| Woodpeckers and Toucans (Order Piciformes) | Green-barred Woodpecker |

Songbird ReMix
Cool & Unusual Birds v2
Field Guide

Australasia

Lesser Bird of Paradise
Greater Bird of Paradise
King of Saxony Bird of Paradise

Hawaiian Islands

'Akohekohe
'Apapane

South America

Andean & Guianan Cock-of-the-Rock
Green-barred Woodpecker
Frisled Coquette

North and South America

Fork-tailed Flycatcher

North America

Belted Kingfisher
Vermillion Flycatcher
Hooded Oriole
Painted Bunting
Painted Redstart
Black-throated Sparrow

Common Name: Lesser Bird-of-Paradise
Scientific Name: *Paradisaea minor*

Size: 12-12.3 inches (32 cm) (excluding tail wires)

Habitat: Misool and Jobi Islands of West Irian Jaya and northern New Guinea.

It prefers lowland and hill forests, swamp-forests, forest edges and second growth forests. It is adaptable to human-altered environments. Adult and sub-adult males are restricted to forest and advanced second growth forests, whereas female birds have broader habitat acceptance. Also, the upper altitudinal limit of adult and sub-adult males is lower than that of female-plumaged birds (1,500 m). Leks have been reported from much-disturbed, secondary mid-mountain forests, and in a single lofty tree or two which are immediately adjacent trees in the forest interior.



Status: Least Concern. **Global Population:** 547,000 mature adults with a declining population trend. It is common and widespread. It is one of the commonest birds on Yapen Island, in lowland, hill and mountain forests (March 1997). Despite generations of hunting of adult males by local people, this species appears not to have suffered any serious decline in its populations.

Diet: Mostly fruits, with some arthropods.

It forages mainly in the canopy, but will go lower to the ground when seeking arthropods. It may join mixed-species foraging flocks with other birds-of-paradise and flocks of Papuan Babbler (*Garritornis isidorei*).

Breeding: This species is dimorphic. The male of the nominate race has lores, forehead, ear-coverts, malar area, chin and throat that are finely feathered an iridescent yellowish emerald-green. The nostrils are covered by feathers. The rest of the head is a pale orange-yellow, glossed with iridescent silver. This extends onto the nape and mantle, blending into mid-brown of the back and the upper wing. The remaining upper parts (including upper wing and tail) are a paler brown, washed with maroon on the back, rump and upper tail-coverts. The wing has an extensive orange-yellow shoulder bar and on the outer edges of greater coverts. The central pair of rectrices are grossly elongated, only basally webbed and colored as tail, distally reduced to fine brown wire-like feathers. The breast is a darker maroon-brown, becoming paler on the belly, thighs and under tail-coverts. The central tail-coverts soft, fluffy and much elongated; grossly elongated filamental flank plumes bright yellow at the bases, streaked maroon, fading distally to dirty white and to slightest of beige hue. The iris is yellow and the bill is chalky blue-gray with a pinkish mouth and tongue. The legs are a purplish gray-brown.

The female is smaller than male, exclusively so in wing length, with central rectrices shorter, narrower and more pointed than rest. The entire head is dark brown, grading to a paler buff on the nape and mantle. The remaining upper parts are variably mid-brown to dark brown. The throat is dark throat with a sharp transition to the white breast and under parts which have a pinkish light brown wash, especially on flanks and under tail-coverts. The thighs transitioned to brown. The immature male is like the adult female and the sub-adult can be variable; like the adult female with few feathers of the adult male plumage intruding, and with the central rectrices longer, narrower and more pointed than rest, to like the adult male with few feathers of the female-like plumage remaining

The males are polygamous and perform courtship displays in groups. Females lay two pink-colored eggs with darker markings in a nest high above ground usually in a tree. Females are maroon-brown with no barring on their chests.

Cool Facts: The members of the genus *Paradisaea* are best known for their plumage. The Greater Bird of Paradise was described from specimens brought back to Europe from trading expeditions. These specimens had been prepared by native traders, removing their wings and feet for shipment. This treatment of the specimens led Europeans to think that the birds never landed but was kept permanently aloft by their plumes, hence the name "Bird of Paradise".

As with all Birds of Paradise, the Lesser Bird-of-Paradise has an elaborate mating ritual. Males gather in a clearing taking up positions they held during previous mating seasons and have competitive courtship displays. They spar individually with their neighbors often putting on extravagant mating dance, plumage displays and vocal challenges with each other to woo a female.

- *P. m. minor*. The nominate race is found in the West Papuan Islands (Misool) and Western New Guinea east in the northern watershed to West Papua–Papua New Guinea border and, in the southern watershed, to Etna Bay.
- *P. m. jobiensis*. It is endemic to Yapen Island, in Geelvink Bay (Northwestern New Guinea). It is larger than the other races, especially in tarsus length. It has a flank-plume color similar to the nominate race.
- *P. m. finschi*. It is endemic to Yapen Island, in Geelvink Bay (Northwestern New Guinea). It is on average, a similar in size to nominate race, but the flank plumes are proportionately slightly shorter and of a brighter orange-yellow. Also the yellow shoulder less extensive than in other races.



Common Name: Greater Bird of Paradise

Scientific Name: *Paradisaea apoda*

Size: Males 16.9 inches (43 cm) (excluding central tail wires); Females 13.8 (35 cm)

Habitat: Asia; it is endemic to the Aru Islands, and mainland southern New Guinea from Timika eastward to the Fly–Strickland watershed.

Birds of Paradises are found in lowland and hill forests, to at least 950 m.

Status: Least Concern.

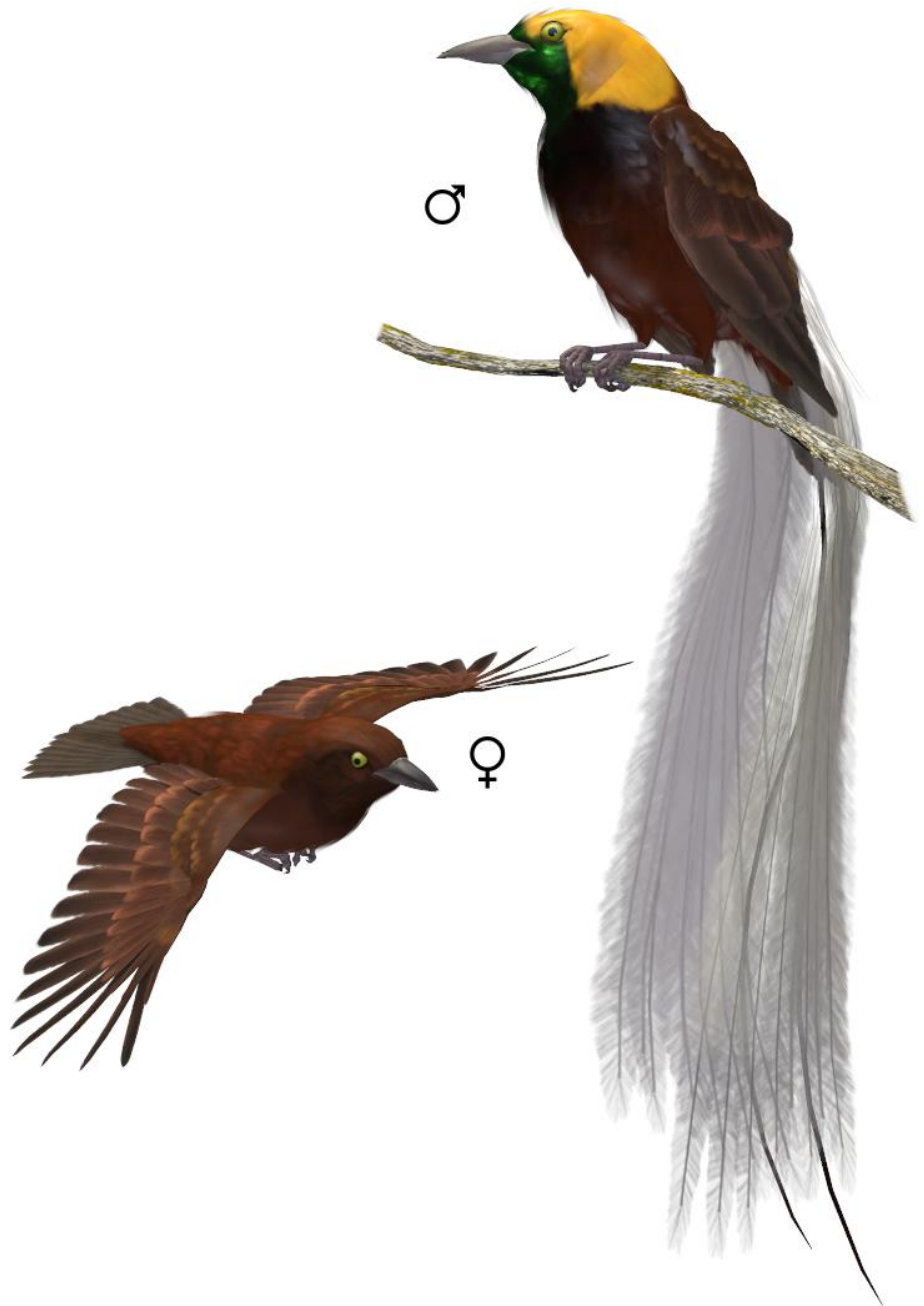
Global Population:

307,000 individuals with a decreasing population trend. It is common and fairly widespread; probably commonest in the lower foothills. Around Ok Tedi, recently it has declined conspicuously where hunting with shotguns occurred while remaining common where firearms not available.

Diet: Food largely consists of fruits and arthropods.

Individuals in female-type plumage are frequently seen in small groups, including with the glossy-mantled manucode (*Manucodia ater*) and

other avian frugivores. The adult males away from the lek are typically solitary.



Breeding: The male nominate race has iridescent yellowish-green on forehead, ear-coverts, malar area, chin and throat; an iridescent yellowish emerald-green, nostril covered by feathers; rest of head, including nape and hind-neck, pale orange-yellow, glossed with iridescent silver; entire upper parts, including upper wing and tail, maroon-brown, washed darker brown on mantle, back and lesser upper wing-coverts, slight orangish yellow wash on outer edges of greater coverts; central rectrices grossly elongated, reduced to finely tapering blackish wires lacking webs except at bases, where same colour as tail; upper breast "cushion" blackish-brown, grading at lower border to dark brown and then to mid-brown on belly and medium pinkish-brown on thighs, vent and under tail-coverts; grossly elongated filamentous flank plumes bright yellow at bases, streaked maroon, fading distally to dirty white; iris yellow; bill chalky pale bluish-gray; legs purplish gray-brown. Female is smaller than male, notably in wing length, with central rectrices shorter, narrower and more pointed than male; entire head and upper breast dark brown, upperparts as on male but darker and lacking orangish-yellow wash, underparts similar to those of male. The immature male like adult female; sub-adult male variable, like adult female with few feathers of adult male plumage intruding, initially about head, to like adult male with few feathers of female-like plumage remaining; males may take at least five or six years to acquire adult plumage, but study required; male progressively acquires longer central rectrices with age.

The males are polygamous and perform courtship displays in groups. Females lay two pink-colored eggs with darker markings in a nest high above ground usually in a tree. Females are maroon-brown with no barring on their chests.

Cool Facts: The members of the genus *Paradisaea* are best known for their plumage. The Greater Bird of Paradise was described from specimens brought back to Europe from trading expeditions. These specimens had been prepared by native traders, removing their wings and feet for shipment. This treatment of the specimens led Europeans to think that the birds never landed but was kept permanently aloft by their plumes, hence the name "Bird of Paradise". The Latin name, "*apoda*" means without feet.

As with all Birds of Paradise, the Lesser and Greater have elaborate mating rituals. Males gather in a clearing taking up positions they held during previous mating seasons and have competitive courtship displays. They spar individually with their neighbors often putting on extravagant mating dance, plumage displays and vocal challenges with each other to woo a female.

- *P. a. apoda*. The nominate subspecies is found on the Aru Islands.
- *P. a. novaeguineae*. This subspecies is found in southern New Guinea (Timika to Fly/Strickland watershed). It differs from the nominate in having paler upper breast, more maroon general coloration, and smaller size.

Common Name: King of Saxony Bird of Paradise
Scientific Name: *Pteridophora alberti*

Size: Male 8.5 inches (22 cm); Female 7.9 inches (20 cm)

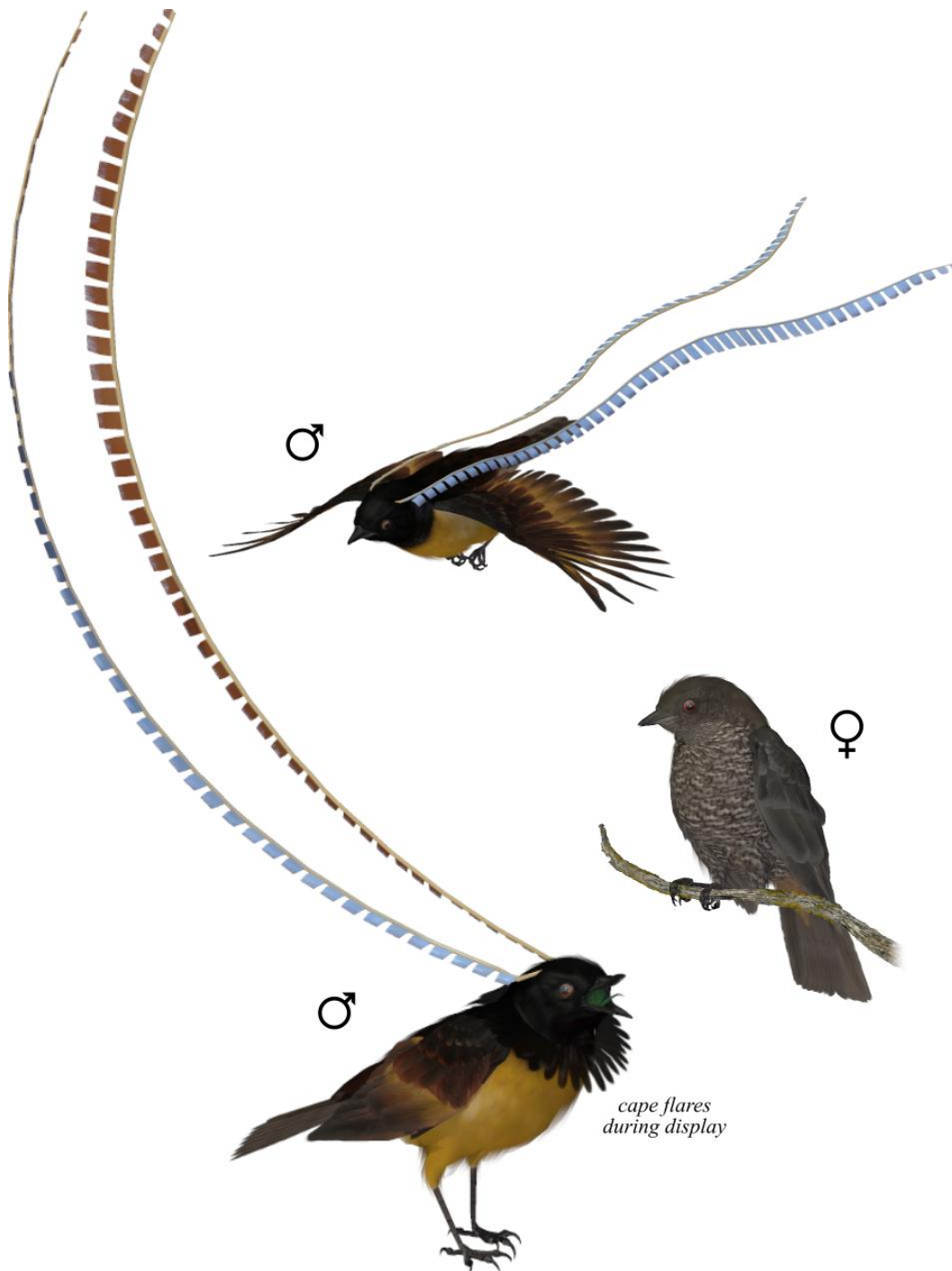
Habitat: New Guinea. It is endemic to central Cordillera of New Guinea from the Weyland Mountains east (including the Snow Mountains, Star Mountains, Victor

Emanuel Range, Mt. Bosavi, Mt. Hagen, Mt. Giluwe, Ambua Range, Kubor Range, Schrader Mountains and Bismarck Ranges) to the Kratke Range.

It lives high in the tree canopy of the cloud forests.

Status: Least Concern.

Global Population: 219,000 individuals with a decreasing population trend. It is widespread and often considered "common". It is common at 2750 m and moderately common at 2100–2550 m in the Okbap



*cape flares
during display*

area, the Star Mountains. It is common in Tari Gap but uncommon on Mt. Hagen.

Diet: Diet consists Mostly fruits (stone fruit/drupes, notably those of *Timonius belensis*). It also feeds on insects and spiders.

It forages mostly alone, at all canopy levels down to the shrubbery near the ground. It forage for invertebrates by tearing and probing at mosses and lichens.

Breeding: The male has its head, mantle and back all a velvety black with iridescent sheen of bronzed green, which is most notable on its elongated "cape" of feathers on the mantle. Behind each eye, from amid an ear-tuft of elongate feathers is a uniquely modified occipital plume (up to 50 cm long) of bare central feather shaft with 40–50 plastic-looking "flags" decorating outer side only, the upper surface of each "flag" an enamel-looking glossy sky-blue to true blue and the under side dark brown. The rump, upper tail-coverts and upper tail are a matte black, washed dark brown. The upper wing is similar but the exposed bases and broad leading edges of secondaries and all except outermost two primaries cinnamon. The chin and throat are also a velvety black, but with large and sparse scale-like feathers at center and lower border of the black throat narrowly tipped iridescent green-blue to purple (suggesting a faint breast shield). The remaining under parts are a dark yellow, which is brighter on the breast and paler and duller on the vent and under tail-coverts. There is creamy feathering on the flanks. The iris is dark brown, the bill is black, the mouth is a pale to rich aqua-green and the legs are dark brownish gray. The female is smaller than the male, lacks the occipital plumes and has radically different plumage. Most of the head and entire upper parts are gray to blackish gray, becoming darker and browner on the lower back. The chin, throat and neck sides are a buffy gray with broad dark brownish gray barring creating a scalloped-like appearance. The breast to vent is whitish and heavily marked with open, shallow, blackish-brown chevrons. The under tail-coverts are contrastingly ochraceous. The immature male resembles the adult female, but the upper parts are paler, more uniformly brownish gray to gray (less scalloped), and the under parts are whiter (less dark barring and spotting). the iris is red-brown. The sub-adult male is variable; it is like the adult female with a few feathers of adult male plumage intruding to an appearance like the adult male with few female-like feathers remaining. The first sign of adult plumage is black nasal-tuft feathering and darker primaries with orange (not gray) concealed at their bases. It is followed by more black head plumage and some yellow in the breast. The male tail length decreases slightly with age.

Breeding is possible in all months, with it peaking July through February. It is polygynous. A solitary promiscuous male does advertisement-singing from several traditional emergent perches. Courtship involves initial canopy advertisement-singing and displays from perches in emergent trees, during which the male performs simple displays with mouth gaping and movement of occipital plumes. It then descends to an under-story vine perch to perform a "Bouncing"

display with leg-flexing (and a continuous sub-song), along with wing-shivering and the erection of mantle cape, breast shield and head feathering. It occipital plumes are raised to about 45° and held widely apart; copulation follows.

The female builds and attends the nest alone. The nest is a shallow open cup of loosely accumulated fine stems of epiphytic orchid and fresh green "comb-tooth" fern fronds. The interior is sparsely lined with fine epiphytic orchid stems or tendrils. The nest is usually placed about 11 m above ground in large trifurcate upright branch fork of *Timonius belensis* tree. One egg is laid and the incubation period is usually 22 or more days

Cool Facts: The bird gets its name from King Albert of Saxony.

The two incredibly long, scalloped brow plumes can be erected at the birds will and are part of its mating display as well as a bobbing up and down dance. So bizarre were its head plumes that when the first specimens were brought to Europe, it was believed to be a fake.

While the males of King of Saxony Birds of Paradise are hunted for their usual head plumes which are used by natives for ceremonial purposes, it is a common species throughout its large habitat range.

Common Name: 'Akohekohe (Crested Honeycreeper)
Scientific Name: *Palmeria dolei*

Size: 7 inches (18 cm)

Habitat: Oceania; the Hawaiian Islands. Northeastern slope of Haleakala Volcano on the island of Maui. The species formerly occurred on the neighboring island of Moloka'i, but that population is now extinct. Almost the entire population is found between 1,500 and 2,300 meters of elevation, in forest permanently enshrouded in clouds and mist. Average rainfall is 235 to 275 inches per year. It was formerly found on the island of Moloka'i, but this population is now extinct.

Status: **Critically Endangered.** **Global Population:** 3,800 Mature individuals



with a declining population trend. At this point in time, the major threats appear to be the negative effects of introduced animals (especially feral pigs) and plants. Feral pigs wreak havoc on the soil and vegetation in native forests, destroying native understory and sub-canopy plants and creating wallows that can act as breeding sites for disease-carrying mosquitoes.

Rainforest areas that have been affected by pigs can recover if the pigs are removed, but these areas have higher concentrations of non-native plants.

Although 'Akohekohe feed primarily in the canopy on 'ōhi'a lehua trees, they also

feed on flowering understory shrubs. The destructive activities of pigs, together with the encroachment of non-native plants into formerly pristine forest, may

cause 'Akohekohe to search for food at lower elevations, where infectious mosquitoes and avian diseases are common.

Diet: Primarily nectarivorous. Nectar from the 'ōhi'a lehua makes up 40-75% of these birds' diets. They also feed on the nectar of other plants, caterpillars, flies, spiders, and other invertebrates.

It actively forages alone, stopping at each flower for only a few seconds. It typically hops or runs over the continuous forest canopy, foraging from tree to tree without taking flight. Occasionally punctures a hole in base of tubular flowers of lobelias and mints to extract nectar

Breeding: Sexes look alike, although the female is slightly smaller. The females also develop a brood patch (featherless area on the belly) while the males vent area swells during mating season. Overall, the adult plumage is blackish with orange-scarlet and silver lanceolate feathers high-lighting the head, breast, back, and upper tail-coverts. There are silver tips on feathers of the cheek, crown, and forehead. There is a broad, orange eye-ring extending across the back of the eye towards the nape. The entire nape is a brilliant orange-scarlet. The flight-feathers and tail are black, often with white tips. The primary margins are white. The wing shoulders are white and orange and the thighs are orangish. The black bill is slightly decurved and slender. The eggs and feet black with the toe pads being whitish gray.

Most prominent feature on adults is a bushy whitish gray feather crest that extends approximately 1 cm from forehead, curves over top of bill, and partially conceals nostril. The musty sweet drepanid odor, unique to many honeycreepers, is obvious when 'Ākohekohe are held in hand or on close inspection of nest.

Breeding appears to begin in February-March. No nests have been described, although immature birds have been observed with adults in May-August.

Cool Facts: The Hawaiian name for this species, pronounced "ah ko-hay ko-hay," comes from a commonly heard call that it makes.

The 'Akohekohe is very aggressive and will chase off 'Apapane and l'iwi for possession of 'ōhi'a lehua blossoms.

Captive raising of 'Ākohekohe is currently being initiated by joint efforts of The Peregrine Fund, state of Hawai'i Department of Land and Natural Resources, U.S. Fish and Wildlife Service, and PIERC/BRD. Future plans include release of birds where 'Ākohekohe exist in lower numbers; reproduction in captivity is being attempted but has not occurred in first year of project. Abundance of mosquitoes below 1,500 m elevation would hinder reintroduction of 'Ākohekohe into native habitats on Maui and Moloka'i where they once existed.

Common Name: 'Apapane
Scientific Name: *Himatione sanguinea*

Size: 5 inches (13 cm)

Habitat: Oceania; the Hawaiian Islands. The Apapane can be found on six out of the eight Hawaiian Islands. Commonly found in the wet, mesic forests of 'ōhi'a lehua blossoms, located on the island of Kauai at Kokee Park, Koolau range on Oahu, and a large population of Apapane at the Volcano National Park on the island of Hawaii.

They are mostly found in high altitudes above 1250 m for protection from predators like the mongoose, rat, and deadly *avian malaria* carrying mosquitoes. These predators are the cause for the great decline in the Apapane population.

Status: Least Concern. **Global population:** 53,700 mature adult with a stable population trend. Habitat loss, avian disease, and the introduction of alien species

have had the greatest impacts on 'Apapane populations. Forests have been cleared for agriculture, cattle-ranching, and development fragmenting their habitat.

Avian diseases, from the introduction by humans of mosquitoes and caged birds, effectively limit breeding populations to elevations above the mosquito line (mosquitoes can't survive above 1,500 m for now, but global warming is changing that). The Laysan subspecies went extinct in 1923.



Diet: Primarily 'ōhi'a lehua nectar with some fruit, insects and spiders.

It forages mostly in mid and upper strata of the forest canopy. The nominate subspecies is never seen on the ground (the extinct Laysan subspecies did forage on the ground exclusively). Most are seen feeding conspicuously on outer flower clusters of 'ōhi'a lehua trees. They clean insects from small twigs and both

the upper and lower surfaces of leaves, mostly in the outer crowns of the canopy. Foraging on larger branches and trunks is rarely seen.

Breeding: Sexes look alike though females are slightly smaller. Adults are bright crimson with black wings and black tails. They have a slightly decurved gray-black bill. It has prominent white patch at the under tail-coverts and lower abdomen. Juveniles have a gray-brown and buff body feathers with white under tail-coverts. Their secondaries and some of their greater coverts are rufous-to-buff on the outer webs.

Nests are mostly found in the crown of the 'ōhi'a lehua trees. The breeding season is during the months of January through July. Both parents build the nest with the construction taking 5 to 8 days. The female have approximately 2-4 white eggs with red markings. Incubation lasts 13-14 days and during this time the female does not sing at all and only she incubates the eggs. After hatching, both parents feed the young juveniles and care for them until they are ready to fledge.

Cool Facts: While 'Apapane nests are mostly found in 'ōhi'a lehua trees there is evidence that nests have also been found in lava tubes on the Island of Hawaii.

'Apapane are frequently found in small groups, foraging through 'ōhi'a lehua trees, hopping from flower to flower consuming the nectar; they rarely feed from the ground. The 'Apapane have two distinct flight patterns: straight flight and a circling flight.

The 'Apapane and the 'I'iwi (*Vestiaria coccinea*) are the only two species of Hawaiian honeycreeper in which the same subspecies occurs on more than one island.

There were two subspecies recognized; *H. s. sanguinea* on main Hawaiian islands, and *H. s. freethii* on Laysan Island. The extinct Laysan subspecies differed in the plumage (scarlet vermilion, not blood red) coloration and had a shorter, stouter bill than that of the nominate race.

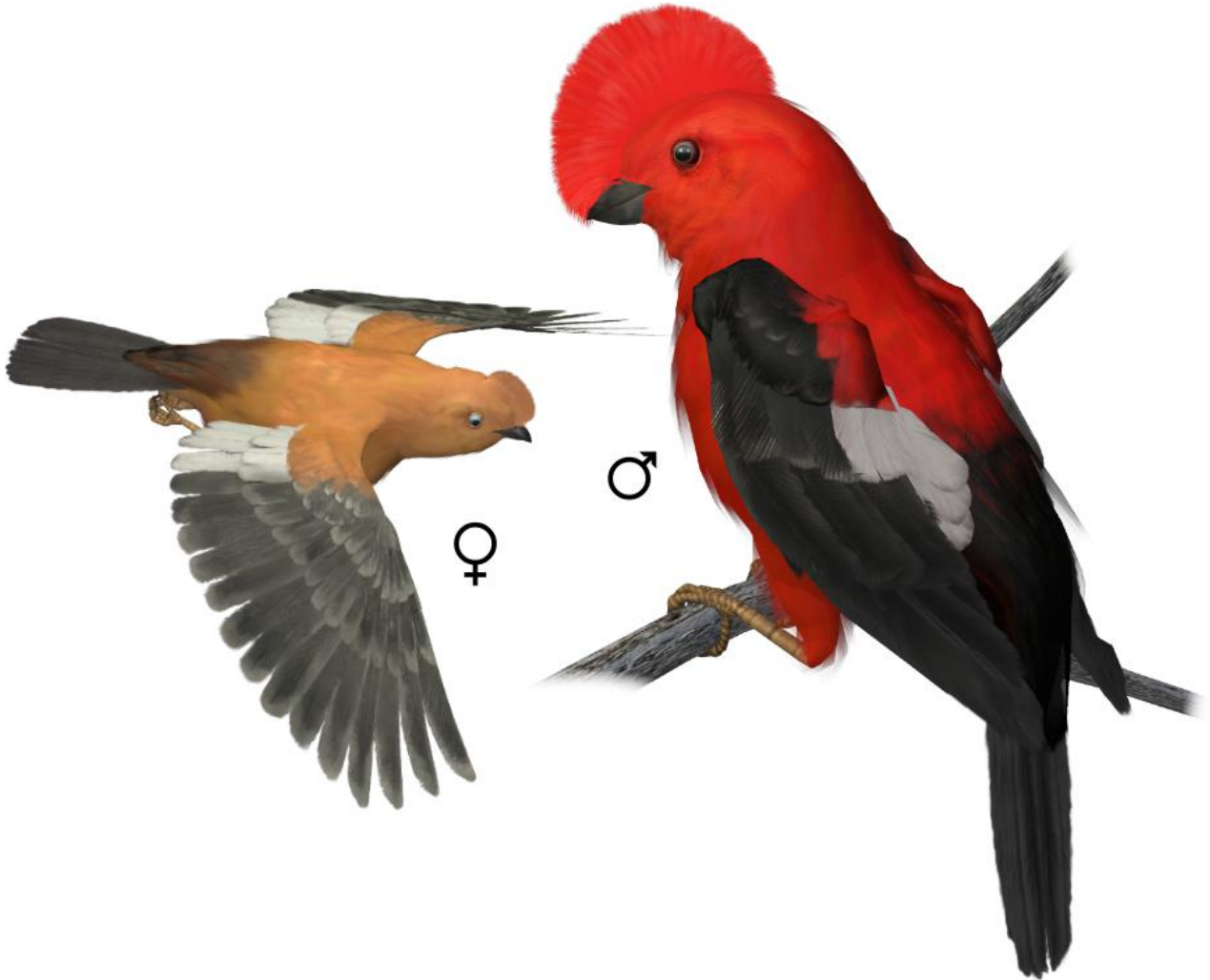
Common Name: Andean Cock-of-the-Rock

Scientific Name: *Rupicola peruvianus*

Size: 12 ½ inches (30.5-32 cm)

Habitat: South America. The Andean Cock-of-the-rock is distributed in Andean cloud forests from Venezuela, through Colombia, Ecuador and Peru, to Bolivia.

The preferred habitat is humid forest near rocky outcrops.



Status: Least Concern. **Global Population:** Unknown. It is considered uncommon to locally common. Large lek exists near the [Cock-of-the-rock Lodge](#), in Peru. Occurs in several protected areas, e.g. Cueva de los Guácharos National Park, in Colombia, Podocarpus National Park, in Ecuador, and Machu Picchu Historical Sanctuary, in Peru. Preference for steep, thickly vegetated ravines and streamsides ensures little human disturbance.

Diet: Diet consists mainly of fruit.

Breeding: The bird is unmistakable. It has a strong bill which is wide at base, becoming laterally compressed towards the tip. The legs and feet are strong, with the talons large and well hooked. Adult male nominate race has distinctive crest formed by two rows of fluffy feathers, ventral surfaces of which meet along midline to form semicircular casque; bright orange head, body and majority of lesser upperwing-coverts; rest of upperwing and whole tail jet-black, except for grey tertials (with mostly concealed darker bases); inner secondaries very broad and square-ended; p10 with long slender tip, notched where tip joins expanded portion of inner vane; iris pale dull orange-pink with yellow inner ring; bill intense golden-yellow; legs yellow. Female is dark chestnut-brown, blacker on throat and wings, crest smaller than male's, eyes pale blue to whitish, bill blackish, legs grey. Immature female is like adult; immature male similar but more orange, bird bred in captivity acquired adult male plumage at 15 months (perhaps unnaturally early, owing to unnatural social environment), but some acquire subadult plumage with body feathers olive-washed and modified secondaries not of fully adult type.

Males are polygamous. They build shallow nests with mud and plant material on the walls of rocks. The female lays 1-2 eggs. The male does not participate in the building of the nest or the incubation of the eggs.

Cool Facts: The common name comes from part of their nest building materials, rocks.

Like Birds of Paradise, Cocks-of-the-Rock have elaborate mating rituals. Males gather in a clearing taking up positions they held during previous mating seasons and have competitive courtship displays. They spar individually with their neighbors often putting on extravagant mating dance, plumage displays and vocal challenges with each other to woo a female.

The Andean Cock-of-the-Rock is the national bird of Peru.

Four subspecies are recognized. Races vary mainly in depth and shade of pigmentation of male's plumage, the extent of gray on the inner secondaries, and eye color, with the female varying in similarly.

- *R. p. sanguinolentus*. It is found in the west Andes of Colombia and northwestern Ecuador. It has body plumage that is blood-red. The eyes are deep red with a yellow inner ring. The female eyes are light red with a gray inner ring or pinkish gray-brown.
- *R. p. aequatorialis*. It is endemic to the Andes of western Venezuela (northwestern Barinas, Táchira), the central and eastern Andes of Colombia, and the eastern slope in Ecuador and Peru (southward to Amazonas and northern San Martín). This race is bright orange, but can be somewhat

variable. It has the gray of the inner secondaries restricted. The eyes are bright yellow or orange-yellow with yellow inner ring. The female eyes are whitish to brown.

- *R. p. peruvianus*. The nominate subspecies is found in central Peru (southern San Martín southward to Junín).
- *R. p. saturatus*. This subspecies is found in southeastern Peru (south from Cuzco) and western Bolivia (La Paz, Cochabamba). Race *saturatus* is deep orange-red, the eyes are usually pale blue to whitish with a pale orange-yellow inner ring. The female eyes sometimes are brown.

Common Name: Guianan Cock-of-the-Rock
Scientific Name: *Rupicola rupicola*

Size: 12 inches (30cm)

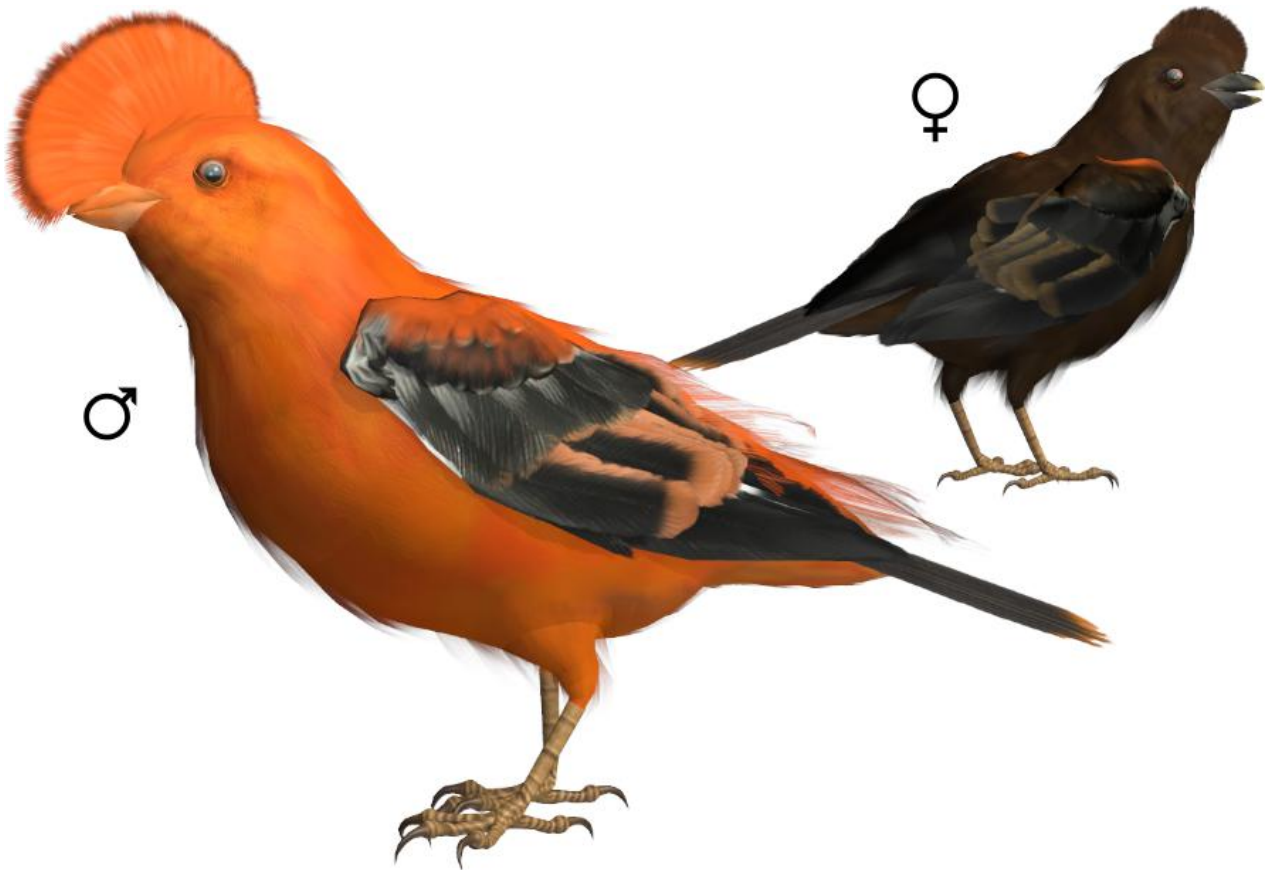
Habitat: South America. The Guianan Cock-of-the-rock is distributed in the mountainous regions of Guyana, eastern Colombia, southern Venezuela, Suriname, French Guiana and northern Amazonian Brazil.

The preferred habitat is humid forest near rocky outcrops.

Status: Least Concern. **Global Population:** Unknown.

Diet: Diet consists mainly of fruit. Three quarters (75%) of the fruit eaten by the Guianan Cock-of-the-rock at one study site was either black or red colored fruit.

Although the Guianan Cock-of-the-rock is a large, stocky bird, they fly agilely through the forest. Forage for fruit with sallies



Breeding: The adult male is a dazzling orange. The head has a prominent disc-like crest that runs from the front of the bill to the nape with a subterminal narrow maroon band. The primaries are gray to black broad white bases. The outermost

primary has a long slender tip. Secondaries very broad; inner secondaries have long, silky, orange fringes. The tail rectrices are black with narrow orange tips. The adult female is similar in proportions to the male but its crest is reduced in size. It is primarily a dark smoky brown-gray color. The immature male at one year is similar to female but flecked with orange. At two years, it is mainly orange with small brown blotches. It attains its definitive plumage at age three. The immature female is similar to adult female.

Males are polygamous. The Guianan Cock-of-the-rock maintains no long term pair bonds. They build shallow nests with mud and plant material on the walls of rocks. The female lays 1-2 eggs. The male does not participate in the building of the nest or the incubation of the eggs.

Cool Facts: In Brazil, the Guianan Cock-of-the-rock is known as the galo-da-serra, through its dependence on huge boulders and rocky caves for breeding. At leks males utter a variety of loud crowing, monosyllabic, chicken-like notes, whilst both sexes may give a loud waa-oww whilst foraging. This latter vocalization has been likened to a rubber duck being strangled

Like Birds of Paradise, Cocks-of-the-Rock have elaborate mating rituals. Males gather in a clearing taking up positions they held during previous mating seasons and have competitive courtship displays. They spar individually with their neighbors often putting on extravagant mating dance, plumage displays and vocal challenges with each other to woo a female.

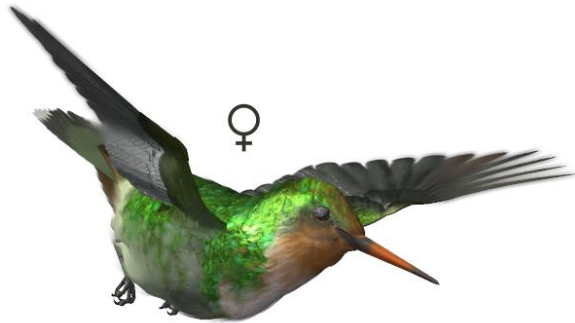
Common Name: Frilled Coquette
Scientific Name: *Lophornis magnificus*

Size: 2 ½ inches (6.5cm)

Habitat: South America. Eastern Brazil from Bahia to Santa Catarina.

This species is found in humid forests, secondary woodlands and cerrado.

Status: Least Concern. **Global Population:** 3,080,000 mature individuals with an unknown population trend. This species readily accepts man-made habitats like plantations and flowering gardens and includes other disturbed areas like secondary growth.



Diet: Arthropods and nectar of small flowering plants like Cirus, Delphinium, *Duranta arborensis*, introduced Eucalyptus, *Genipa americana*, Helicteres, Hibiscus, *Inga affinis*, *Lantana camara*, *L. lilacina*, *L. brasiliensis*, *Leonurus siribicus*, *Myrciaria cauliflora*, *Odontonema*, *Palicourea*, Phlox, *Psychotria maregravii*, *Salvia*, *Stachytarpheta*, and *Tilandsia*.

It will hawk insects from perches 2–5 m above ground.

Breeding: The male has short straight bill, orange-

red, tipped black. The forehead is iridescent green and the crest rufous-orange. The rest of the upper parts bronzy-green with a white band across the rump. The throat is a glittering emerald green with elongated feathers fanning out from the cheeks and the sides of the throat. These feathers are fan-shaped, white with shining black-greenish distal bands and rufous at their bases. The rest of the under parts are grayish-green. The tail is squared with the central rectrices a bronzy green and the remaining a rufous with bronzy green tips and edges.

The female lacks elongated fan-shaped feathers and the crest, but the upper parts are similar to the male. The throat has rufous discs and some white with dark crescents and below is washed grayish-green. The tail is squared as with the male but is dark bronze-like and distally rufous.

The juvenile resembles the adult female.

Breeding season occurs from August to March. The nests are small cups made of spider web silk and other materials attached to a small branch. Usually two eggs are laid and incubated by the female for 12-13 days. They fledge after 20 days.

Cool Facts: The Frilled Coquette is the smallest Brazilian hummingbird. All Coquettes have a white band between their wings and tail feathers.

Common Name: Green-barred Woodpecker
Scientific Name: *Colaptes melanochloros*

Size: 10 ½ inches (27- 29 cm)

Habitat: South America. East and central South America from northeast Brazil to Bolivia and central Argentina.

It is found in a variety of habitats from forest to caatinga and desert scrub.

Status: Least Concern. **Global Population:** 6,390,000 mature individuals with a stable population trend.

Diet: Feeds mostly on ants; also eats spiders, fruits and berries.

It is seen singly and in pairs. It may occasionally join groups of larger and more wary Campo Flicker (*C. campestris*) feeding on ants on ground. It seeks food mainly on ground, where it progresses in long bounds or moves in short hops. It forages less often in trees.

Breeding: The adult male has a black forehead and forecrown, a red hindcrown and nape, whitish lores, cheeks and ear-coverts and ear-coverts strongly tinged olive. It has a red malar stripe with black feather bases. The whitish-green chin and throat are streaked with black. The upper parts, including the wing-coverts and tertials, are yellow-green, barred dark brown. The rump is paler and less barred. The upper tail-coverts are buff with black bars. The greenish-brown flight-feathers are narrowly barred paler with olive shafts. The upper tail is black, and at least the outer feathers are barred pale. It is pale green below usually darker and brighter on the breast, with prominent black spots, often tending towards bars on the flanks, with the spots becoming smaller or absent on the belly. It has a yellowish-white under-wing, the primary coverts are sometimes spotted. The black under tail are barred yellow. The black bill is fairly long and pointed, the culmen curved; it is



narrow across nostrils. The iris is brown to chestnut-brown and the legs gray, usually tinged greenish or yellow. The female has proportionately longer tail than male, and its malar is mostly black with white streaks, but no red. Juveniles are duller than adults, with broader barring above, and markings below more bar-like.

Cool Facts: The woodpecker's long tongue, in many cases as long as the woodpecker itself, can be darted forward to capture insects. The tongue is not attached to the woodpecker's head in the same way as it is in most birds, but instead it curls back up around its skull, which allows it to be so long. It acts as a seatbelt for the brain absorb the hammering the woodpecker does during its foraging and drumming.

The easiest way to tell the boys from the girls in this woodpecker is to remember that males have red malars (moustaches), while females have black.

The Golden-breasted Woodpecker and Green-barred Woodpecker were merged into the same species recently.

Green-barred group:

- *C. m. melanochloros*. The nominate subspecies is found in southern and southeastern Brazil, southeastern Paraguay, northeastern Argentina (Misiones) and Uruguay.
- *C. m. nattereri*. It is found in northeastern and south-central Brazil south to eastern Bolivia (Santa Cruz). It resembles the nominate, but is smaller, shorter-billed, more yellow, with the spots below often very small or streak-like.

Golden-breasted group:

- *C. m. melanolaimus*. It is found in the arid upland valleys in central and southern Bolivia. The male has a black forehead and crown, becoming red on the nape, with contrasting olive-whitish lores, cheeks and ear-coverts. There is a long, broad black malar stripe extending to sides of throat, anterior portion with red feather tips. The pale chin and throat are heavily streaked black. The upper parts, including the upper wing-coverts and tertials, are light greenish, barred dark brown. The rump is paler and almost unbarred. The upper tail-coverts are buff with black bars. The flight-feathers are dark greenish-brown, narrowly barred paler, with olive-green shafts. The upper tail is black, at outer feathers barred pale. The under parts are white with a golden tinge on the breast, all with prominent black spots. These often tending towards heart-shaped marks on upper flanks and towards bars on lower flanks, spots becoming smaller or non-existent on the belly. The under wing is yellowish-white and the under tail black with some paler barring. The bill is long and pointed with the culmen curved, narrow across nostrils and black. The iris is dark brown to chestnut-brown and the legs are gray, often tinged green. The female has a proportionately longer tail than male, long malar band, all black with a few insignificant gray tips. The juvenile is duller

than adult, the upper parts with barring broader and the under parts more barred than spotted.

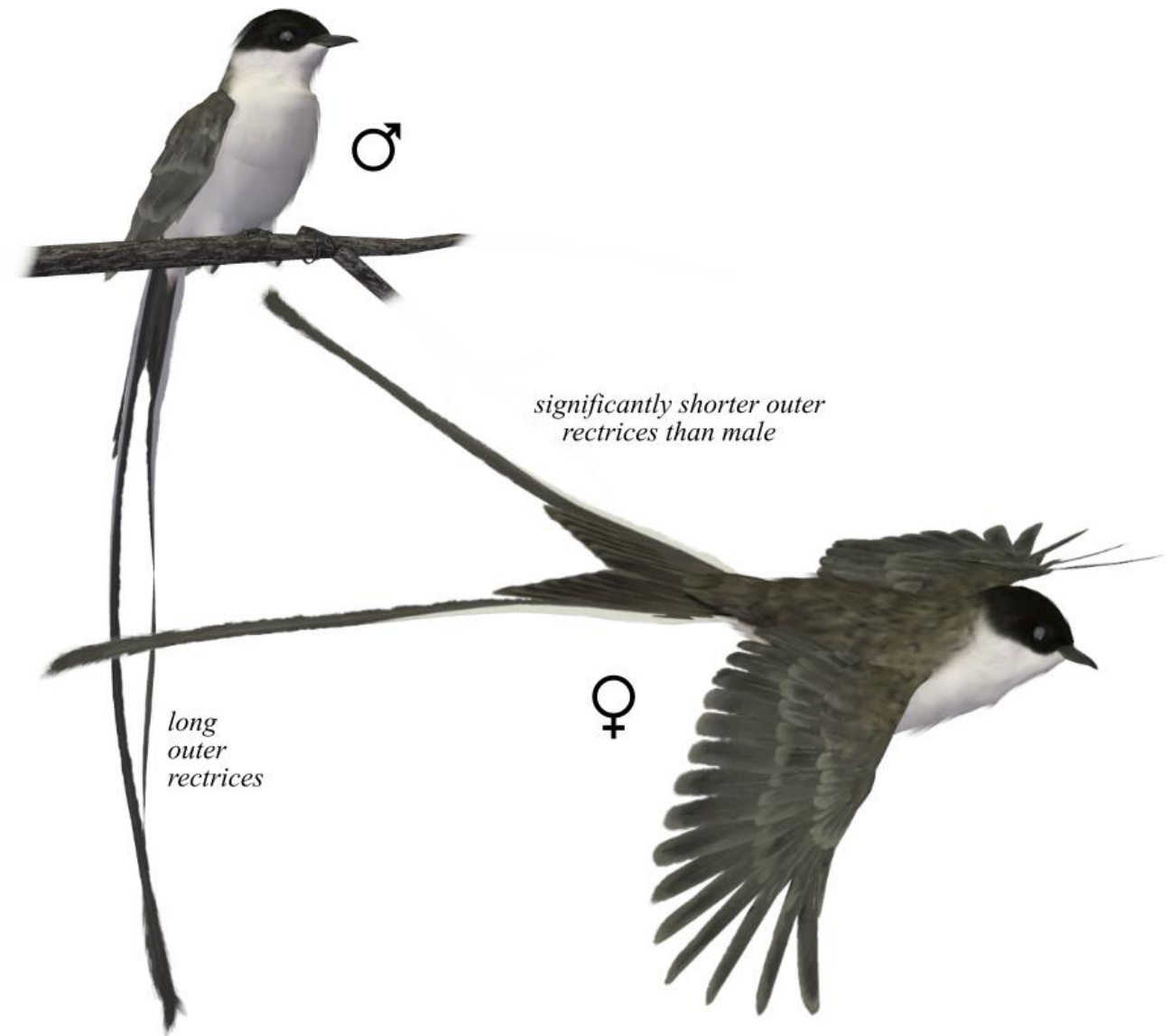
- *C. m. nigroviridis*. It is found in southern Bolivia, western Paraguay, northern and eastern Argentina (south to Córdoba and Buenos Aires) and western Uruguay. It is like nominate, but tends to be more greenish coloration above, the tail strongly barred, less golden on the breast, less black on the throat sides and the spots below are larger.
- *C. m. leucofrenatus*. It is found in northwestern and west-central Argentina (south to Neuquén, western Río Negro). This race is large, browner above, even golden-brown, with white rump, whitish bars and edges, the breast is golden to orange, the flanks are strongly barred with large spots or arrowhead marks below.

Common Name: Fork-tailed Flycatcher

Scientific Name: *Tyrannus savana*

Size: 14-16 inches (Males are 37–41 cm in length; females, 28–30 cm)

Habitat: North and South America. Its breeding range is found from central Mexico to central Argentina where it is usually found year round except for the southern parts of its range where it retreats northward for the winter. This species is also known to wander widely. It has occurred on a few occasions in the United States and Canada.



It usually is seen below 1000 m, occupying a variety of open habitats, including forest edges, secondary vegetation, savannas, pastures, residential areas, lawns, woodlands, cerrado (tropical savanna), and mangroves. In central Brazil, it

prefers to nest in more open cerrado habitats rather than more closed ones with higher tree densities. During migration can be found in a wide variety of habitats, including tall humid forest canopy.

Status: Least Concern. **Global Population:** 21,100,000 Mature individuals with a stable population trend. It is believed that nesting densities of Fork-tailed Flycatchers are higher in cerrado habitat that has been altered by human activities, compared to pristine cerrado, possibly because the species prefers to nest in more open landscapes with fewer trees.

Diet: Insects and other arthropods. It will switch to berries and small fruits during winter if insects become scarce.

It sallies after flying arthropods or gleans them from leaves or the ground. It can be seen usually perching at relatively low levels (<1 m) on fences, power lines and exposed branches of trees and shrubs.

Breeding: Sexes are alike, except for length of tail, which is longer in males. Most of its head and upper nape are black with a semi-concealed yellow crown patch. The upper parts are gray, the upper tail coverts are black and the wings are blackish brown. The wing coverts and secondaries are edged with pale gray. The tail is black with extremely elongated outer rectrices which are basally edged white. The underparts are white.

Juveniles are duller than adults with much shorter tails, especially when compared to adult males. They have sooty gray heads, more brown on their backs, and pale cinnamon margins on upper tail and wing coverts. Juveniles and immatures may also have some brown on the crown either lack or have a reduced yellow crown patch.

Breeding season occurs March-June in Costa Rica, January-May in Colombia, March-May in Venezuela, September-December in central Brazil, April-August in Belize and October-January in Argentina. They build a shallow cup nest 1-10m in a shrub or short tree. Females normally lay 2-3 eggs.

Cool Facts: The Fork-tailed Flycatcher has the longest tail in the Flycatcher family, even longer than its cousin, the Scissor-tailed flycatcher. During migration Fork-tailed Flycatchers are very gregarious and may roost in flocks of up to 10,000 individuals.

The Ferruginous Pygmy-Owl (*Glaucidium brasilianum*) and American Kestrel (*Falco sparverius*) preys on adult flycatchers.

- *T. s. savana*. First reported by Vieillot in 1808. The nominate subspecies is found in central, southern and southeasterly Brazil (Rondônia and southern Mato Grosso eastward to Tocantins and south Piauí, southward to

Mato Grosso do Sul, Minas Gerais, Rio de Janeiro and Rio Grande do Sul), northern and eastern Bolivia, Paraguay, Argentina (south to Río Negro, occasionally to northeastern Chubut and even Patagonia) and Uruguay. Southern populations migrate north to Colombia, Venezuela, the Guianas and Amazonia. The nominate subspecies has a darker gray back compared to race *monachus* and *sanctaemartae*, whose lighter gray backs contrast markedly with their black heads.

- *T. s. monachus*. First reported by Hartlaub in 1844. It is found in southern Mexico (central and southern Veracruz, N Oaxaca, NE Chiapas, Tabasco, southwestern Campeche) south to Colombia (except in the north, but generally east of the Andes southward to Meta and Vichada) and much of Venezuela (eastward to Orinoco Delta, south to northern Amazonas and northern Bolívar, and several offshore islands). It is also found in southern Suriname (Sipaliwini) and north-central Brazil (Roraima, the lower Negro River, perhaps Amapá). The white collar is also fuller and more distinct than in the nominate subspecies.
- *T. s. sanctaemartae*. First reported by Zimmer in 1937. This race is found in northern Colombia (Caribbean coastal region and the Santa Marta Mountains area) and extreme northwestern Venezuela (northwestern Zulia).
- *T. s. circumdatus*. First reported by Zimmer in 1937. It is endemic to northern Brazil in eastern Amazonas (occasionally west to Manaus) and Pará and Amapá (the southern bank of the Amazon River, islands near Santarém, and both banks of the Tapajós River).

Common Name: Belted Kingfisher
Scientific Name: *Megaceryle alcyon*

Size: 11-14 inches (28-35 cm)

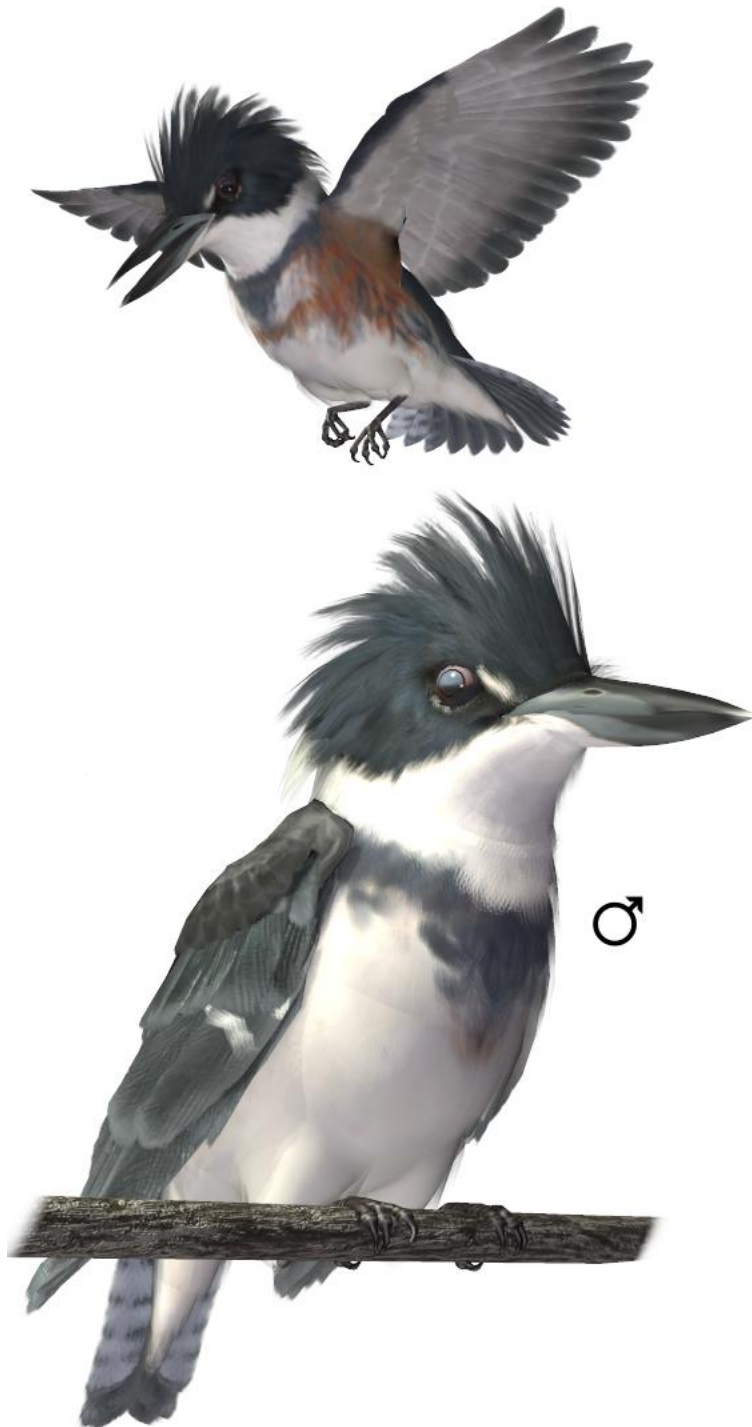
Habitat: North America. *Summers:* Breeds from Alaska to Newfoundland, southward to southern United States. *Winters:* from southern Canada southward to northern South America.

The most important requirements for breeding appear to be waters supporting aquatic animal populations and nearly vertical earth exposures for digging nesting burrows. Species favors streams, rivers, ponds, lakes, and estuaries or calm marine waters in which prey are clearly visible..

Status: Least Concern. **Global**

Population:

25,400,000 mature adults with a stable population trend. Species appears less susceptible to environmental contaminants than other fish-eating birds, possibly because smaller fish tend to have lower accumulations of toxins. Kingfishers are sensitive to disturbance and may avoid or vacate



habitats that are frequented by humans, particularly when breeding.

Diet: Fish, aquatic invertebrates, insects, and small vertebrates.

It hovers above, searching for prey and dives to strike, often submersing its self into the water.

It will often detect prey from sitting on a bare overhead branch, telephone wires strung along a shoreline, or pilings of piers.

With eyes closed, a bird dives and grabs prey in its bill with a pincer-like action. Because prey are usually near the water surface, the bird typically does not submerge. Fish are generally about 4 inches (10 cm) in length

Breeding: A stocky, large headed kingfisher with conspicuous ragged double-pointed crest that covers the entire head from the base of the bill to the nape of the neck. It has a nearly complete white collar across the hindneck which contrasts with the uniform blue-gray back and wings. The sexes are distinguished by dichromatic pectoral bands on white underparts with the male exhibiting a single blue-gray band whereas the female has that plus rufous sides and an additional rufous band across the lower breast.

Pairing begins soon after males establish territory. Males feed mates during courtship: after capturing a fish and returning to a perch, a potential mate will often approach and land nearby. Both birds then slide along the perch while executing 180° turns until they are side by side. The male then offers the female the fish which she swallows immediately and pairing usually begins.

The nest in burrow in a bank, always near water. The tunnel slopes upward from the entrance to keep water from entering the nest. Tunnel length ranges from 30 to 250 cm (1 to 8 ft). No lining used. 3-5 white eggs are laid.

Cool Facts: The breeding distribution of the Belted Kingfisher is limited in some areas by the availability of suitable nesting sites. Human activity, such as road building and gravel pits, has created banks where kingfishers can nest and allowed the expansion of the breeding range.

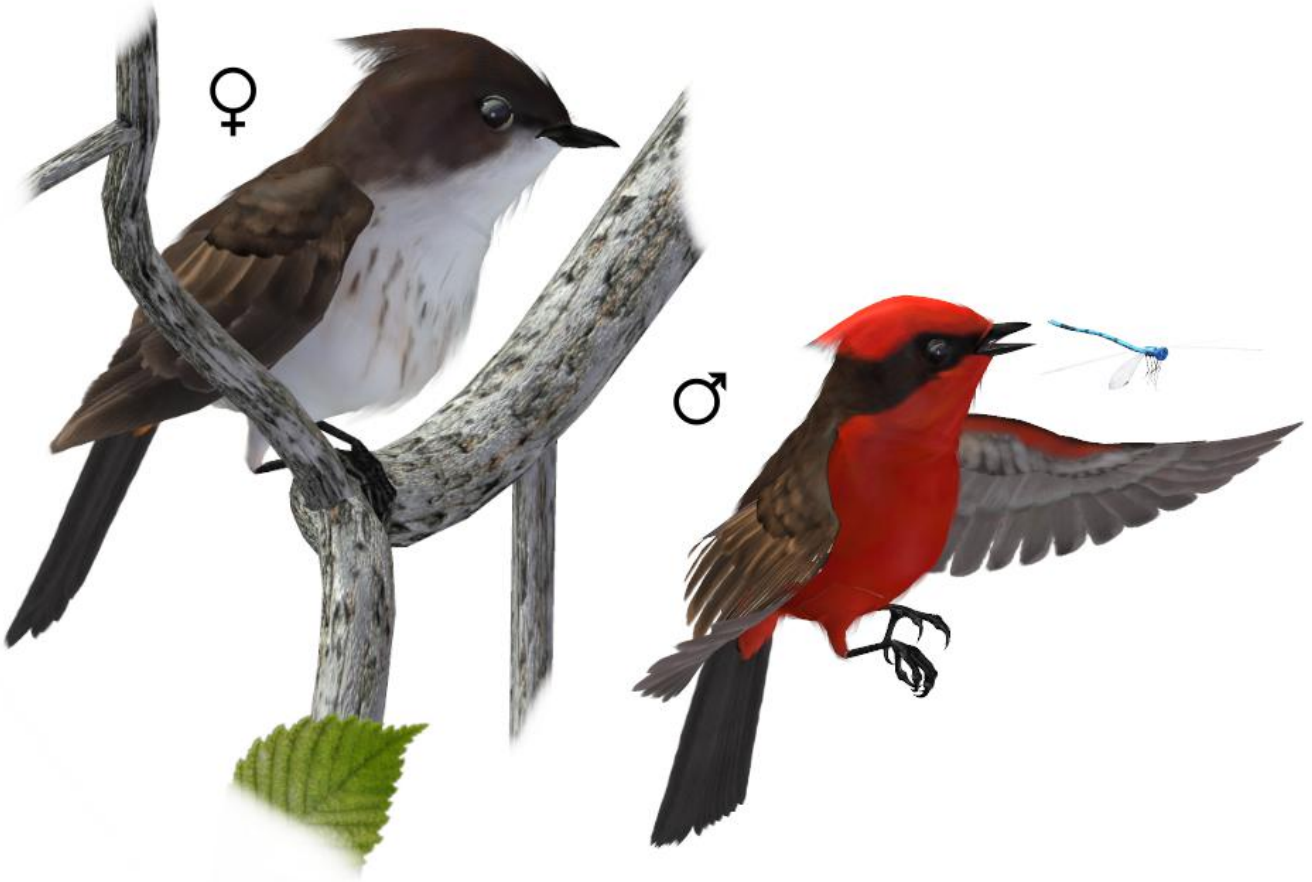
During breeding season the Belted Kingfisher pair defends a territory against other kingfishers. A territory along a stream includes just the streambed and the vegetation along it, and averages 1 km or ½ mile long. When a kingfisher suspects an intruder or anything amiss within its territory, it often alights on a perch and heaves its body up and down while erecting the shaggy crest feathers.

Common Name: Vermilion Flycatcher
Scientific Name: *Pyrocephalus rubinus*

Size: 5-5.5 inches (13-14 cm)

Habitat: North America. **Summers:** Breeds in southern Arizona, New Mexico, and Texas, and widely throughout Mexico, Central America, and much of South America, including the Galapagos Islands. **Winters:** Resident year-round throughout almost all of breeding range. Populations in the United States migrate or wander in winter.

It is found in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodland. It is usually found near water, but rarely found in canyons.



Status: Least Concern. **Global Population:** 32,400,000 mature individuals with an overall increasing population trend. Common in most of its range. Human water use and land development have caused drastic declines in Vermilion Flycatcher populations in the lower Colorado River Valley. Habitat destruction poses threats to the species in various parts of its range.

Diet: A variety of aerial and terrestrial arthropods including butterflies, grasshoppers, beetles, termites, and spiders.

It sits and waits on an open perch, locates prey, and pursues it. It often takes prey on the wing, from ground level to a height of about 10 m (33 ft).

Breeding: The plumage is sexually dichromatic. The adult males top of head and under parts are a bright vermilion, scarlet, or orange. The lores, ear coverts, and nape together form a dark blackish-brown mask with the remaining upper parts, including wings and tail blackish brown. The adult females top of head, ear coverts, and remaining upper parts (including wings and tail) are a grayish brown, becoming darkest on tail. The forehead and its indistinct superciliary stripe are a grayish white while the remiges and wing coverts are margined paler (forming wing-bars on the greater and median coverts). The under parts are whitish becoming pale red to salmon-colored on the rump, and finely streaked with gray on breast, sides, and flanks. The adult plumages are similar throughout the year.

The immature female similar to the adult female, except the posterior under parts are yellowish. The immature males show delayed plumage maturation and is similar to adult female throughout summer of the second calendar year but the under parts are more extensively suffused with salmon pink or pale orange-red.

The nest is a loose cup of twigs, grasses, and fibers, lined with down, feathers, and hair, usually built by the female. It is placed in a fork in a horizontal tree branch, about 8-20 feet off the ground. 2 to 4 white or creamy colored eggs, with bold dark blotches and small lighter spots are laid.

Cool Facts: The male often seeks to initiate courtship by delivering a butterfly or other showy insect to the female. The average male Vermilion Flycatcher spends about 90 percent of the day perched.

There are 11 subspecies; divided into two groups. Nine subspecies are in the *rubinus* group, which is distributed over most of the species' geographic range and the last two are in the *nanus* group (which are residents on the Galápagos Islands and possibly a separate species, the Galapagos Flycatcher).

Rubinus group (known as the Vermilion Flycatcher):

- *P. r. flammeus*. First reported by van Rossem in 1934. It breeds from southeastern California east to western Oklahoma (panhandle) and western Texas (Trans-Pecos region) south to Baja California peninsula and Nayarit. The northern populations are migratory, generally moving south into Mexico, with some lingering in southern United States. There are records of scattered vagrants north and east of usual range. It intergrades with the *mexicanus* race in southwestern Texas and northern-central Mexico. It is similar to the

mexicanus race, but the blackish-brown color of the back is paler, with a more grayish tinge. Also the red areas of adult male are more orange-red, often with a lighter orangish mottling in crown and breast, and females somewhat less heavily streaked.

- *P. r. mexicanus*. First reported by Sclater in 1859. It breeds from south-central Texas southward into Michocán, Guerrero, Oaxaca, Puebla, and Veracruz. It winters throughout its breeding range but also spreads northward and eastward to southern Louisiana, southern Mississippi, and northwestern Florida. It can be a rarer accidental visitor north and east as far as Toronto, Ontario. The blackish-brown color of back is the blackest among North American races. The red of adult male is a deep red without any pale mottling, in shade between red of races *flammeus* and *blatteus*.
- *P. r. blatteus*. First reported by Bangs in 1911. It is a resident from southeastern Mexico in southern Veracruz, the Yucatan Peninsula, and Chiapas southward through Belize and Guatemala. It intergrades in the Atlantic region of Oaxaca with *mexicanus*. It is similar to race *mexicanus* but the back is paler and browner and the red of the adult male more cardinal or geranium red than red-orange. It also averages smaller than *mexicanus* and *flammeus*. The bill said to be broader than that of northern subspecies.
- *P. r. pinicola*. First reported by Howell in 1965. It is a resident of the lowland pine savanna of Mosquitia region from eastern Honduras to northeastern Nicaragua. The males color is similar to race *blatteus*, but the females are more broadly and prominently streaked across breast, and red of their under parts is more scarlet-orange than the pinkish scarlet of *blatteus*. This race is also smaller than *blatteus*.
- *P. r. rubinus*. First reported by Boddaert in 1783. The nominate subspecies breeds from southeastern Bolivia and northern Argentina east to southeastern Brazil. It winters north across Brazil to middle Rio Negro and northwest to southeastern Colombia. Relative to the other South American subspecies, wing tends to be more pointed, the male tends to darker (black) dorsally, and the female tends to lack pink on belly or have the lower belly tinged pale yellow and to be more extensively streaked ventrally, down over flanks and sometimes the entire belly.
- *P. r. saturatus*. First reported by Berlepsch and Hartert in 1902. It is a resident of northeastern Colombia eastward across Venezuela to Guyana and north-central Brazil. It is like the nominate but the female has rosy pink on belly.
- *P. r. ardens*. First reported by Zimmer in 1941. It is endemic to north-central Peru. It is like race *obscurus* but the male is more “fiery red” (less rosy) and the female is unique in having the forecrown pinkish and the whole of lower ventrum clear red, and not broadly whitish at the middle.
- *P. r. obscurus*. First reported by Gould in 1839. It is a resident from western Colombia (west of the Andes) south through western Ecuador to western Peru. It is similar to the nominate but the mantle color is slightly paler and browner. A dark morph accounts for roughly half of the population in western

Peru, but isn't found in northwestern Peru. The bill length is clinally shorter to northern populations.

- *P. r. cocachacrae*. First reported by Zimmer in 1941. A resident of southwestern Peru and adjoining northern Chile. It is like race *obscurus* but the male has browner and a paler gray mantle and a rosier (less scarlet) ventrum. Females are whiter (less buffy) on ventrum. They average slightly larger.

Nanus group (known as the Galápagos Flycatcher):

- *P. r. nanus*. First reported by Gould in 1839. It is endemic on all major islands of the Galápagos archipelago, except San Cristóbal Island. It is smaller than mainland subspecies, with the feet slightly larger. The males mantle is blackish brown. The female is extensively buff or tawny-yellow ventrally streaked finely gray-brown, with only the throat white.
- *P. r. dubius*. First reported by Gould in 1839. A rare (perhaps extinct) resident of Isla San Cristóbal in the Galápagos archipelago. It looks like race *nanus* except the females lack ventral streaks and the throat grayish buff.

Common Name: Hooded Oriole
Scientific Name: *Icterus cucullatus*

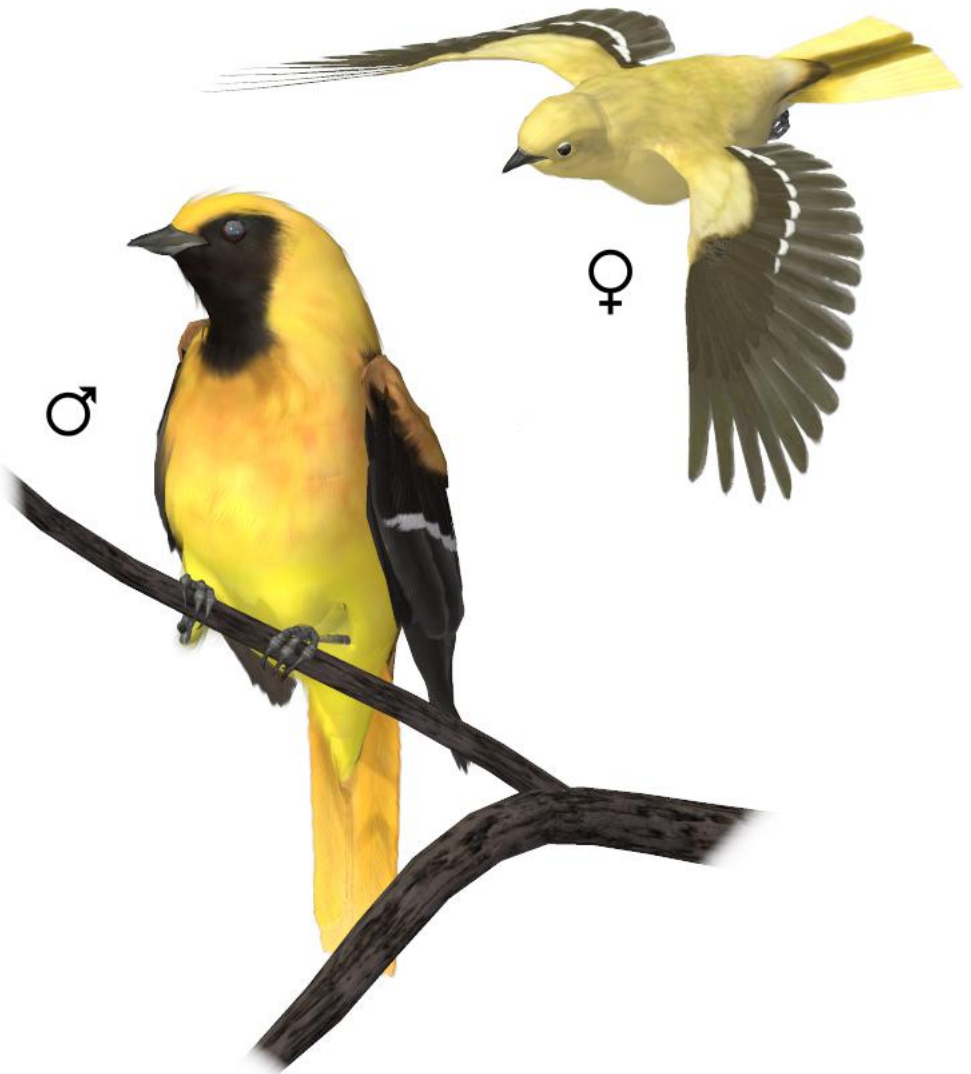
Size: 7-8 inches (18-20 cm)

Habitat: North America. **Summers:** Breeds in lowlands of western and southern California, eastward to Arizona and southwestern New Mexico, and southward into Mexico. Also in southern Texas and eastern Mexico and Belize. **Winters:** in Mexico and a few in California and Arizona each year.

It breeds in areas with scattered trees, such as desert oases, along streams and in mesquite brush. It is common in urban and suburban areas. It is fond of palm trees.

Status: Least Concern. **Global Population:** 3,670,000 mature individuals with an increasing population trend. Numbers and range of the species seems to be expanding in several areas, while other locations have seen marked declines in numbers. Tendency to nest in ornamental plantings such as palms may have contributed to increased numbers and range expansion along United States west coast. The Lower Rio Grande population decreased markedly

in 20th century. The decline has been attributed to increase in numbers of cowbirds in this area following a disastrous freeze during winter of 1951 which resulted in a shift away from citrus crops to vegetables and pastures. Such



conditions led to increased numbers of cowbirds. Similarly, the expanding croplands in the northeast Mexico has not suitable habitat for Hooded Orioles.

Diet: Insects, spiders, nectar, and fruit.

It feeds in trees, shrubs, and in brushy vegetation bordering its nesting areas. It has a wide range of foraging heights, from canopies of large trees to close to ground. It is rarely seen on ground. It will take nectar from flowering plants, including trees, shrubs such as tree tobacco (*Nicotiana glauca*), and herbaceous plants such as figwort (*Scrophularia californica*). It will visit hummingbird and oriole feeders.

Breeding: It has a rather delicate build, relatively long, rounded tail, and long, slender, decurved bill. The sexes are dichromatic in plumage with females averaging slightly smaller than males.

The male adult has entirely orange or orange-yellow head, nape, rump, and underparts (color most intense on head, even tinged scarlet in some races); a black bib, and narrow mask extends from lores and anterior cheeks (auriculars) from just behind eye down to upper breast in a nearly straight line; back black, although fringed with olive and appearing scalloped when in fresh plumage (late fall and winter); tail black, slender, relatively long, and strongly graduated, giving it a rounded tip, which is narrowly fringed with white when feathers are fresh (winter); wings black with 2 white wing-bars, upper one (tips of median coverts) wide and bold, lower one narrow (created by narrow white edging to greater coverts, this edging widest on tips of feathers) and narrowly whitish- or grayish-edged flight feathers (remiges), especially tertials.

Female (Definitive Basic) similar in shape to male but quite different in plumage, being olive-yellow on head, rump, tail (more olive with greenish edging), and underparts, which are variably brighter yellow, especially breast, on some individuals (flanks washed with gray in some races); back dull grayish olive contrasting with yellower and greener head and rump (gray may be tinged brownish and extends faintly up hindneck to nape and crown); wings dusky (grayish black) and patterned as male with 2 wing-bars, the upper one stronger and wider.

Immature male resembles adult female but with black bib and mask that is somewhat less extensive than in adult male (some adult females may have a few black feathers on throat, however). Immature female like adult female. Juvenile also like adult female but with buffy wing-bars, duller coloration tinged olive-brown on upper parts; bill often short and not noticeably decurved, as on adult.

It is assumed to be monogamous. During courtship, the male moves from branch to branch, noisily fluttering his wings, bowing, and bobbing, while female follows. The male keeps wings down when perched and sings softly.

The nest is a cup of woven plant fibers, suspended from leaves of trees. May be hanging or attached by sides of nest as well as rim. 3 to 7 white eggs with irregular brown spots around large end.

Cool Facts: When the nest is suspended from palm leaves, the female pokes holes in the leaf from below and pushes the fibers through, effectively sewing the nest to the leaf.

Five subspecies recognized and divided into 2 groups:

Nelsoni Group

- *I. c. nelsoni*. First reported by Ridgway in 1885. This race breeds from northern California eastward through Arizona to western Texas (Trans-Pecos) and southwestern New Mexico south to northern Baja California, southern Sonora, and northern Chihuahua. Historically, it wintered from central Sonora to southern Sinaloa, but tendency to remain in northern parts of its breeding range throughout the year has been increasing. The male is yellowish orange (most yellow and the least orange of the races), with black of face not that extensive (yellow reaches the base of the culmen). The female is dull greenish yellow on the under parts and grayish olive on the upper parts. Its wing and bill long, but the tail is relatively short.
- *I. c. trochiloides*. First reported by Grinnell in 1927. It is a resident central and southern Baja California from San Ignacio south to Cape District. The males are a little more yellowy than race *nelsoni*, otherwise, it is similar. The bill averages longer and thinner than *nelsoni*. The wing length similar to race *nelsoni* but the tail slightly longer.

Cucullatus Group

- *I. c. cucullatus*. First reported by Swainson in 1827. The nominate subspecies breeds from the middle of the Rio Grande valley (northwest from Laredo and Del Rio to Boquillas) south through the aridlands along edge of Mexican Plateau of Chihuahua and Nuevo León to Puebla, Oaxaca, and southern Veracruz. It winters from Jalisco to Guerrero and central Veracruz. Hybridization between the nominate and race *sennetti* may occur along Rio Grande valley between Webb and Starr Counties in Texas, and in southern Tamaulipas. The male is orange to yellow-orange, usually with intense orange on head and black of face more extensive than *nelsoni* group (extending at least to the anterior and lateral portions of the forehead). The female is a deep yellow (to yellow-orange) on the under parts, which have contrasting gray flanks. The wing and bill relatively short compared to *nelsoni* group, but tail long.
- *I. c. sennetti*. First reported by Ridgway in 1901. It breeds in the coastal plain lowlands from southern Texas (Kleberg County) south through lower Rio

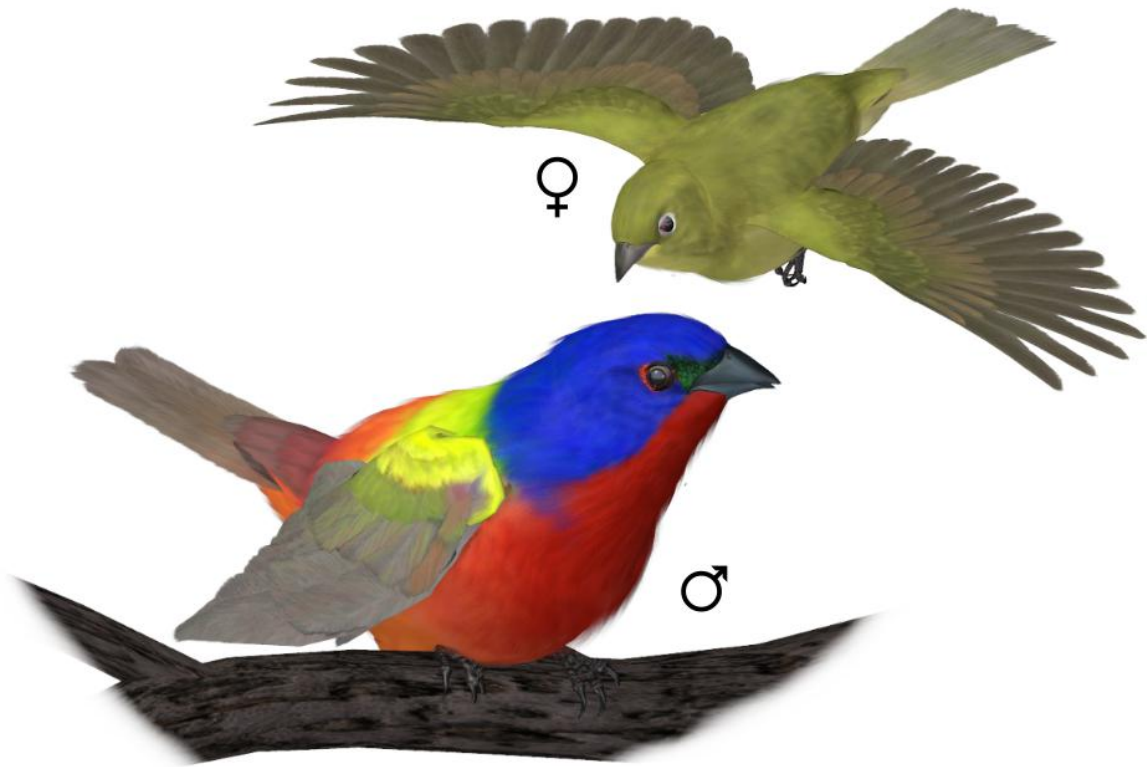
Grande valley to southern Tamaulipas, where intergrades with the nominate. It winters from southern Texas south to northern Guerrero and Morelos. The northern extent of the winter range may be expanding. It is similar to the nominate, but yellower (yellow-orange) and paler in both sexes.

- *I. c. igneus*. First reported by Ridgway in 1885. It is a resident of southeastern Mexico from eastern Tabasco around Yucatán Peninsula and adjacent islands (Cozumel, Mujeres, Holbox, and Contoy) south to northern Chiapas and Belize. The male is the most richly colored among subspecies, with head and breast deep orange and often tinged scarlet and the black on the face is more extensive (especially across forehead) than the nominate and race *sennetti*. The female is very different from the nominate in being rich saffron yellow on the under parts, head, and rump. The wings are longer than the nominate, otherwise it is similar to the rest of the *cucullatus* group in having relatively short wings, a long tail, and a short bill.

Common Name: Painted Bunting
Scientific Name: *Passerina ciris*

Size: 5.5 inches (12-13 cm)

Habitat: North America. **Summers:** Breeds in two different regions. Western population ranges from southern Missouri and Kansas to the Gulf Coast and northern Mexico. Eastern population breeds along the Atlantic coast from central North Carolina to north-central Florida. **Winters:** Western population winters in Mexico southward to Panama. Eastern population winters on the Florida peninsula, the Florida Keys, the Bahamas, and rarely in Cuba. Found in Open brush-lands, thickets, and scattered woodlands and along the Atlantic coast in hedges and yards.



Status: Least Concern. **Global Population:** 4,500,000 mature individuals with a stable population trend. Breeding Bird Surveys show a steady decline in overall population since 1965. Owing to their fairly limited distribution along the Atlantic coast, eastern populations more susceptible than western populations to loss and degradation of breeding habitat. Apparent decline in abundance during 1930s in Georgia is attributed to highway maintenance activities that cleared roadsides of shrubby vegetation favored for nesting. Since then, highway maintenance practices maintain even more sterile habitats. In the Painted Bunting's stronghold along the coast and on coastal islands, development of swamp thickets and woodland edges have reduced prime habitat; projected sea-

level rise would also reduce these habitats. The loss of riparian areas in the southwestern United States and northwestern Mexico used during molt-migration of western populations could have a disproportionate effect on population numbers. Males are targets of trappers for the pet bird trade, especially in Mexico and Cuba. Listed as a species of special concern on the "Partners in Flight" Watchlist.

Diet: Seeds, especially of grasses are eaten except during spring and early summer. Upon arrival on breeding grounds and for most of breeding season, arthropods (beetles, grasshoppers, crickets, true bugs, wasps, flies, caterpillars and spiders) are the predominant food source for adults and nestlings.

They usually forage on the ground, but during the breeding season the foraging habitat is much more diverse. In addition to ground foraging, birds regularly forage in marshes, forest edges and in trees (up to 10 m). They generally hop on the ground, but may walk in performing some displays.

Bow Display- This display is performed from a perch, at or above the level of the bird to which the display is directed to. It is given by male toward a conspecific bird. It rotates its body axis and raises its tail, and then lowers the head while lifting the wings from body and lowering them to expose the rump. The body and tail may end up perpendicular to the ground if the perch is essentially vertical (such as a grass stem), but from a horizontal perch, the angle of the body to the ground rarely exceeds 45°. It is given when other bunting moves or by a displaying bird immediately after changing its perch.

Wing-Quiver Display- This display is given by the male after perching next to another bunting. It erects its body feathers, lifts its wings from body and lowers and quivers them, and raises tail about 45°. The display ends when the non-displaying bird departs or is chased.

Breeding: Adult males and females differ significantly in plumage. In male adult plumage (Definitive), the head and nape are blue, the upper back is a lime-green, the lower back, rump and underparts (chin through vent) red to orange-yellow, contrasting with darker gray-brown wings and tail with tinges of green and orange. On the adult female, the upper parts are dark greenish and the under parts are yellow green. While the adult plumages are similar throughout the year in mature adults, during their first year, they are more similar to the adult female. Thus, in the year, males are identified from females by behavior (males sing while females do not).

Nests are a deep, neatly woven cup of plant fibers, lined with hair or fine grass. Usually placed in low vegetation. 3-4 Grayish or bluish-white eggs with gray or brown speckles are laid.

Cool Facts: The western population of Painted Buntings begins its fall migration before molting, molts in staging areas in southern Arizona and northern Mexico, then continues to migrate further south. This migration-molt pattern is common among waterfowl but very rare among songbirds. In contrast to the western population, the eastern population of Painted Buntings molts on its breeding grounds before migration. Only when male Painted Buntings acquire Second Basic Plumage in their second fall do they achieve the dramatic combination of blue, green, and red colors.

Male Painted Buntings are highly territorial and aggressive toward each other. Fights between males, which include pecking, beating with wings, and grappling, sometimes result in death.

There are two subspecies:

- *P. c. pallidior*. First reported by Mearns in 1911. It is found in the southern United States (southeastern Kansas eastward to western Tennessee and Mississippi, southward to central and southern New Mexico and Texas) and adjacent Mexico (Chihuahua eastward to northwestern Tamaulipas). It does migrate to Mexico (south from central Sinaloa, southern San Luis Potosí and southern Tamaulipas, but absent from central highlands) and southward to western Panama. It is smaller than the nominate race and colors slightly lighter.
- *P. c. ciris*. First reported by Linnaeus in 1758. The nominate subspecies is found on the United States Atlantic seaboard from North Carolina south to central Florida. It migrates to southern Florida, Bahamas and Cuba.

Common Name: Painted Redstart
Scientific Name: *Myioborus pictus*

Size: 5-6 inches (13-15 cm)

Habitat: North America. East Arizona, West New Mexico, Southwest Texas, Mexico and the Yucatan Peninsula.

It occupies similar habitat during breeding and wintering season, but may move to lower altitudes during the winter. In northern Arizona, it occupies oak and oak-



pine riparian woodlands with dense overstories, thick undergrowth and permanent or seasonal ponds. It is found in oak-juniper woodland and riparian woodland of Chiricahua Mountains, Arizona. In Central America, it prefers arid to semi-humid oak and oak-pine woodlands.

Status: Least Threatened. **Global Population:** 600,000 mature individuals with a declining population trend (Partners in Flight 2019).

Diet: Mostly insects; also some tree sap, sugar water, peanut butter, and suet.

It gleans insects from leaves, trunks, and branches. Also, it hawks insects in the air. It actively fans its tail and wings to elicit movement by prey. It will also turn its body back and forth to flush insects.

Breeding: Sexes are very similar (females range from identical to a slightly paler breast). On the male, the head, throat, upper breast, and upper parts are jet black with very slight gloss. There is a prominent white crescent below the eye. The breast and upper belly are bright red, contrasting with the black breast sides and upper flanks. The lower flanks are slate gray. The longer underlying under tail-coverts are mostly black while the shorter overlying under tail-coverts are white with broad black centers, giving the under tail area a mixed slate and white appearance. The lesser wing coverts are slate colored and the median wing coverts are broadly tipped white and greater wing coverts are completely white on the outer webs. These white areas form a prominent white patch on the blackish wings. The tertials and inner secondaries also have white margins on the outer web, appearing broadest on the tertials. The remainder of remiges blackish-brown. The rectrices are black except visible portion of outer 2 pairs, which are pure white, and third pair is white on the outer web, and tipped white on the inner web. The axillars and under wing coverts white-gray.

Nests are a cup of coarse grasses and pine needles, located on the ground, on slopes, or rock walls. 3 to 7 white eggs with brown speckles, especially at the larger end are laid.

Cool Facts: Despite its common name, the Painted Redstart is not particularly closely related to the American Redstart. Members of its genus, common in the Neotropics, are sometimes known as "whitestarts" to distinguish them. The name "redstart" was taken from a European thrush that has a bold reddish tail pattern.

Like other "redstarts" in its genus, the Painted Redstart flashes its white wing patches and outer tail feathers when foraging. These actions appear to flush insects that the redstart then pursues and captures.

There are two subspecies:

- *M. p. pictus*. First reported by Swainson in 1829. The nominate subspecies breeds from the northern part of its range (Arizona, New Mexico, western Texas) south to Oaxaca and Veracruz. It is migratory in the northernmost part of its range, wintering chiefly from southern Sonora, southern Chihuahua, southern Nuevo León, and southern Tamaulipas.
- *M. p. guatemalae*. First reported by Sharpe in 1885. It is a resident in the mountains south of Isthmus of Tehuantepec from Chiapas, Mexico, to Guatemala, Honduras, and northern Nicaragua. The fourth rectrix entirely black or has very little white on inner web at tip. The innermost secondaries with little, if any, white edging.

Common Name: Black-throated Sparrow
Scientific Name: *Amphispiza bilineata*

Size: 5-6 inches (12-14 cm)

Habitat: North America. **Summers:** Breeds from southern Oregon and Idaho southward to central Mexico and central Texas. Also locally in Washington and central California. **Winters:** From southern Nevada and central Texas southward.

Throughout its range, it generally prefers semi-open habitat with evenly spaced shrubs and trees. It is common in desert alluvial fans, canyons, washes, flats, badlands, and desert scrub type such as creosote bush, ocotillo, cholla, mesquite, catclaw acacia, blackbrush, sagebrush, antelope brush, and rabbitbrush, interspersed with taller plants such as Joshua trees, piñon-juniper, and crucifixion thorn. Habitat and vegetation density may influence habitat



selection more than specific shrub species, although closely associated with creosote bush throughout southern part of its range. At higher elevations, it is often found in piñon-juniper forests.

Status: Least Concern. **Global Population:** 3,960,000 mature adults. Declining across range in United States, probably because of habitat loss to urban development.

Diet: Foods taken during breeding season include grasshoppers, butterflies, moths, mantids, robber flies, walking sticks, and dragonflies. Non-breeding season foods include seeds, large grasses, small grasses, plant material (such as creosote), and prickly-pear cactus.

It primarily forages on the ground, usually near or under shrub edges of creosote bush, mesquite, acacia, canotia species, and cactus species. It will glean prey from lower and mid-level main stems of shrubs.

Breeding: It is a medium-sized sparrow that is sexually monomorphic. Males are slightly larger than females. The adult plumage is plain grayish brown above and white below, with a prominent black triangular throat patch and white supercilium and malar lines. The tail is blackish with the tips of the outer-most rectrices and the outer edge of the outermost rectrix is white. The juvenile resembles adult in face pattern (with a white supercilium) but lacks the black breast, instead having the chin, throat and upper breast white, dusky streaks and spots across the breast. The upper parts are faintly streaked. Immatures are similar to juveniles but have a more extensive black patch on the chin, throat, and upper breast.

Sparrows are generally ground nesters.

Cool Facts: The song is a series of two opening notes followed by a buzz or trill, or sometimes several. Black-throated Sparrows are often found in mixed flocks of White-crowned Sparrows and Brewer's Sparrows in the winter. The Black-throated Sparrow is the king of the desert-adapted sparrows as it can satisfy all its water requirements from the seeds and insects it eats. It will, however, take advantage of spring water if available.

The Black-throated Sparrow establishes a large territory it defends during nest construction and egg laying. Once incubation starts, males are less responsive to intruders and their territory boundary shrinks.

Ten subspecies recognized. Subspecies are distinguished chiefly by differences in size, dorsal coloration, and extent of white on tips of outer rectrices.

- *A. b. bilineata*. First reported by Cassin in 1850. The nominate subspecies breeds in north-central Texas south to eastern Coahuila, Nuevo León, and lower elevations of Tamaulipas; most birds in northern and central Texas move south for the winter. It is similar to race *opuntia*, but the mantle medium to dark grayish brown and the white tips to outer rectrices are large. It is small overall.
- *A. b. opuntia*. First reported by Burleigh and Lowery in 1939. It breeds from southeastern Colorado and the western tip of the Oklahoma panhandle south through eastern New Mexico and western Texas to northern Chihuahua and northwestern Coahuila. It is similar to race *deserticola*, but grayer (less brown) and averages larger.

- *A. b. deserticola*. First reported by Ridgway in 1898. Breeds from eastern California east to southwestern Wyoming, western Colorado, westernmost Texas and south to the center of the Baja California peninsula, northern Sonora, and northwestern Chihuahua. It winters from southeastern California east to extreme southwestern Utah and western Texas and south to central Baja California and central Sonora. The mantle is grayish brown, the white tips to the outer rectrices are small and the ventrum whitish. The culmen straight is its size is moderate.
- *A. b. bangsi*. First reported by Grinnell in 1927. A resident in the southern half of Baja California Sur and on nearby islands (except Islas Tortuga and Cerralvo). It is similar to race *deserticola*, but grayer (less brown) and darker and the white tips to the outer rectrices are larger. It averages smaller in all dimensions except bill length.
- *A. b. tortugae*. First reported by van Rossem in 1930. It is a resident on Isla Tortuga in the central Gulf of California. It is similar to race *bangsi*, but the mantle is slate-gray (and darker) and the ventrum is grayer (less white).
- *A. b. carmenae*. First reported by unknown. It is endemic to Isla Carmen (Gulf of California)
- *A. b. belvederei*. First reported by Banks in 1963. It is a resident on Isla Cerralvo in the Gulf of California. It is similar to race *bangsi*, but the mantle grayer still and the culmen is curved slightly.
- *A. b. cana*. First reported by van Rossem in 1930. it is endemic to Isla San Estéban in the Gulf of California. It is similar to race *deserticola*, but grayer and the white tips to the outer rectrices are more extensive. It averages slightly smaller.
- *A. b. pacifica*. First reported by Nelson in 1900. It is a resident from southern Sonora, including on Islas Tiburón and San Pedro Nolasco, south to northern Sinaloa. It is similar to race *deserticola*, but darker and the tail averages shorter.
- *A. b. grisea*. First reported by Nelson in 1898. It is a resident on the Mexican Plateau from central Chihuahua east to southwestern Tamaulipas and south to northern Jalisco east to Hidalgo. It is similar to race *bilineata*, but darker overall, the mantle grayer (even less brown), and the white tips to the outer rectrices are small.

Special Thanks to...

....my beta testing teams:

2007 original release: Bea, Jan, Kelvin, Nancy and Sandra

2011 re-release: FlintHawk, Kat, Linda, Jan, and Sandra

2021 re-release: Alisa and FlintHawk

Species Accuracy and Reference Materials

Many birds of the same species do vary considerably in color. This package tries to emulate the colors and markings in the most commonly found variants.

The author-artist has tried to make these species as accurate to their real life counterparts as possible. With the use of one generic model to create dozens of unique bird species, some give and take is bound to occur. The texture maps were created in Painter with as much accuracy as possible. Photographic references from photographs from various Internet searches and several field guides were used.

Field Guide Sources:

- **Cornell Lab of Ornithology** (<http://www.birds.cornell.edu>)
- **National Audubon Society Watchlist** (<http://www.audubon.org>)
- **Honolulu Zoo** (<http://www.honolulu zoo.org>)
- **Wikipedia** (<http://www.wikipedia.com>)
- **“Birdlife International”** (<http://www.birdlife.org>) (for population estimates)

Shirts, jerseys, sweatshirts, prints, cards, posters, pillows, coffee cups, calendars & more

The image displays a variety of bird-themed merchandise. At the top left is a white long-sleeved shirt with the text "Birds of Hawaiian Island" and a grid of small bird illustrations. To its right is a white t-shirt with the text "Pelicans of the World" and a grid of pelican illustrations. Below the Hawaiian shirt is a framed print of birds in flight. In the center is a white t-shirt with a graphic of a bird wearing a graduation cap, surrounded by mathematical formulas like $E=mc^2$, $A+B=C$, and $s-q$, with the text "Songbird ReMix" and "BIRD BRAINS" at the bottom. To the left of this t-shirt is a white mug featuring a yellow bird. To the right is a calendar for January 2010 showing penguins on the dates. Below the calendar is a sign that reads "NO MINORS ALLOWED PREMISES" with a bird illustration. The text "Songbird ReMix" is prominently displayed in large, bold letters over the calendar.

Songbird ReMix

www.empken.com/store