

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

### **Songbird ReMix**

### **Threatened, Endangered, Extinct Volume 2**

#### <u>Manual</u>

Introduction	3
Overview and Use	3
Using this Product in Poser and DAZ Studio	4
One Folder to Rule Them All (Passerines)	4
Physical-based Rendering	5
Posing & Shaping Considerations	5
Where to Find Your Birds and Poses	6

#### **Field Guide**

List of Species	7
Extinct/Presumed Extinct Species	
O'o nuku'umu (Black Mamo)	8
Robust Silver-Èye	10
Bonin Wood Pigeon	12
Cuban Red Macaw	14
Po'o-uli (Black-faced Honeycreeper)	16
Extinct in the Wild Species	
'alalā (Hawaiian Crow)	18
Critically Endangered/Endangered Species	
Coxen's Fig Parrot	22
Kakapo	25
Yellow-breasted Bunting	29
'Akepa	33
Black-eared Miner	36
Banded Wattle-Eye	38
Black-Hooded Red Siskin	40
Threatened/Near Threatened Species	
White-browed Bushchat	43
Kirtland's Warbler	45
Cerulean Warbler	49
Vulnerable Species	
Azores Bullfinch	51
What makes a Bird Endangered?	53
Reasons why Species go Extinct	53
What You Can Do: Making Easy Choices	55
A Hard Look in the Mirror: Making Tougher Choices	57
Resources, Credits and Thanks	42

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### **Songbird ReMix** Threatened, Endangered, Extinct v2

### Introduction

"Threatened, Endangered, Extinct v2" is a continuation of the Songbird ReMix themed series that focuses on birds on the brink. This particular package has a two-fold purpose; one, to provide high-quality digital birds for the purpose of animation and still imagery and two; to raise awareness for these and other species plights and in doing so, help to turn the tables on possible extinctions. In using these digital birds it is the author's hope that the users will also help to create public awareness through their art.

### **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):
  - Pigeons and Doves (Order Columbiformes)
  - Parrots and Cockatoos (Order Psittaciformes)
  - Perching Birds (Order Passerines)
- **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**. <u>Note:</u> Using the "Apply this Character to the currently selected Figure(s)" option **will not** properly apply the correct scaling to the bird selected. 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 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.
- **Tongue poke-through** (especially when the beak is open). This can be easily solved by using the **Throat-Fuller1 & 2** morphs (*found in Creation Control/Head Shapes*).

#### **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.

#### Where to find your birds

Type Folder	Bird Species
Pigeons and Doves (Order Columbiformes)	Bonin Wood Pigeon
Parrots and Cockatoos (Order Psittaciformes)	Cuban Red Macaw Coxen's Fig Parrot Kakapo
Perching Birds (Order Passeriformes) Butcherbirds & their Allies	Banded Wattle-eye
<b>Perching Birds (Order Passeriformes)</b> Cardinals, Tanagers & their Allies	Yellow-breasted Bunting
Perching Birds (Order Passeriformes) Crows, Jays and their Allies	ʻalalā (Hawaiian Crow)
<b>Perching Birds (Order Passeriformes)</b> Fairywrens, Scrubwrens & their Allies	Black-eared Miner
<b>Perching Birds (Order Passeriformes)</b> Hawaiian Honeycreeper Finches	'Akepa O'o nuku'umu (Black Mamo) Po'o'uli (Black-faced Honeycreeper)
<b>Perching Birds (Order Passeriformes)</b> Finches, Old World Sparrows & their Allies	Azores Bullfinch Black-hooded Red Siskin
Perching Birds (Order Passeriformes) NW Warblers & their Allies	Cerulean Warbler Kirtland's Warbler
Perching Birds (Order Passeriformes) OW Warblers & their Allies	Robust Silvereye
Perching Birds (Order Passeriformes) Thrushes, Oxpeckers & their Allies	White-browed Bushchat

### Where to find your poses

Type Folder	For what species?
Perching Birds (Order Passeriformes) Poses can be found in "Universal Poses" & "type" folders	All Songbirds
Pigeons and Doves (Order Columbiformes)	All Pigeons & Doves
Parrots and Cockatoos (Order Psittaciformes)	All Parrots

## Threatened, Endangered, Extinct v2 Field Guide

### **EXTINCT/PRESUMED EXTINCT**

O'o nuku'umu (Black Mamo) Robust Silvereye Bonin Wood Pigeon Cuban Red Macaw Po'o'uli (Black-faced Honeycreeper)

### **EXTINCT IN THE WILD**

'alalā (Hawaiian Crow)

### CRITICALLY ENDANGERED/ENDANGERED

Coxen's Fig Parrot Kakapo Yellow-breasted Bunting 'Akepa Black-eared Miner Banded Wattle-eye Black Hooded Red Siskin

### **THREATENED/ NEAR-THREATENED**

White-browed Bushchat Kirtland's Warbler Cerulean Warbler

### VULNERABLE

Azores Bullfinch

#### **Common Name:** O'o nuku'umu (Black Mamo) **Scientific Name:** *Drepanis funerea*

Size: 8 inches (20 cm)

**Habitat**: Oceania; Hawaiian Islands (Moloka'i, Hawai'i and fossils found Mau'i). Found in forest under-story.

**Status: Extinct. Global Population:** 0. The Black Mamo was one of the last Hawaiian honeycreepers discovered and one of the least colorful. The little we know of the Black Mamo comes mainly from R. C. L. Perkins, who discovered the species on Moloka'i in 1893, and William Alanson Bryan, who collected the last specimens in 1907. Collectors zeal to find the last of Hawai'i's disappearing endemic birds at the time was lampooned at the time as an activity that



"amounted to wanton slaughter" of the birds. Despite their activities, science is indebted to them for saving what they could before it was too late.

Barbara and Richard Mearns accurately state, "The extirpation of many of the forest birds of the Hawaiian Islands has been caused by the destruction of

habitat, the introduction of ground predators and by mosquito-borne diseases, three factors that continue to be a problem and are likely to lead to further extinctions. The collecting activities of the early naturalists had little effect on the bird populations and but for their efforts some species would not be known to us at all."

Diet: Flower nectar (primarily arboreal lobelia and Ohi'a-lehua) and some insects.

They spend only a few seconds over each flower, darting their tongues very rapidly in and out.

**Nesting:** Both sexes were alike although the beak of the male is perhaps longer and the female may be generally smaller.

**Cool Facts:** R.C.L. Perkins first discovered this beautiful jet-black bird in 1893 in Pelekunu Valley on Moloka'i. The last sightings of the bird were in 1907, but they were seen further to the east on the island. A survey on Moloka'i in 1936 for it failed to find any specimens. Perkins believed that in most respects, including the voice, this species closely resembled the Hawaii mamo, *Drepanis pacifica*. Black mamos were so tame that their discoverer was able to watch them at very close quarters as they worked their way from one large flower to another.

The last Black Mamos were observed in 1907 by a collector, Alanson Bryan, who had shot three birds. Tim Flannery quoted him as having written, "To my joy I found the mangled remains hanging in the tree in a thick bunch of leaves, six feet or more beyond where it had been sitting."

"If you take care of the birds, you take care of most of the big problems of the world"

> -Dr. Thomas Lovejoy Science & Policy, George Mason University

## **Common Name**: Robust Silver-eye **Scientific Name**: *Zosterops strenuus*

**Size**: 4<sup>1</sup>/<sub>2</sub> to 6 inches (10-15 cm)

Habitat: Oceania; Australia. It was endemic to Lord Howe Island.

It was common in lowland forests, palm glades and the scrubby vegetation of more open and settled areas on Lord Howe Island.

**Status: Extinct. Global Population:** 0. The species did not come under threat until 1918, when a shipwreck resulted in colonization of the island by rats, which fed on eggs and nestlings. By 1928, the bird was extinct.

**Diet:** Silver- and White-eyes are highly flexible foragers. It fed on fruit (so much so that it was regarded as a pest of crops), insects, flowers and other birds' eggs.



Foliage gleaning is the most common mode of foraging, but they also hawk, snap prey from a substrate (even small insects caught in spiders' webs), probe small clefts in clumps of leaves, bark, buds, flowers, and nests of other birds by forcefully opening the bill to widen the clefts in search of arthropod prey, and scavenge on the ground.

Flocking in winter helps to locate sources of food in woodlands as well as to detect predators. They collect nectar with a brush-tipped tongue, peck succulent

fruit, and swallow berries. They are known to disperse figs and other seeds of trees and shrubs.

**Breeding:** It was olive to olive-brown above, with a broad white ring around each eye, and a patch of gray across the shoulders and upper back. It was brown to gray-brown below, with a yellow throat, cream belly, cream thighs and a yellow under tail. It had brown irises, a long and slender, blue-black bill, and blue-gray legs and feet. The sexes were reportedly similar in appearance.

The nest is cup-shaped and mostly made of plant fibers. It is usually slung in a slender fork under cover of vegetation at any height.

**Cool Facts:** Silver or White-Eyes get their names from rings of white feathers around their eyes.

John Gould, the famed Australian ornithologist wrote of the Silver-eyes in 1865 'The present new species is the largest member yet discovered of a group of birds comprising numerous species'.

## "You cannot escape the responsibility of tomorrow by evading it today."

-Abraham Lincoln

## **Common Name:** Bonin Wood Pigeon **Scientific Name:** *Columba versicolor*

Size: 17.5 -18 inches (45 cm)

**Habitat**: Asia; Japan. Endemic to Nakodo-jima and Chichi-jima in the Ogasawara Islands off the coast of Japan.

It lived in conifer forests.

**Status: Extinct**. **Global Population:** 0. Its extinction was caused by hunting, deforestation, and predation, by introduced rats and domestic cats. The last known live Bonin Wood-pigeon was taken in 1889.

**Diet:** Fruits, seeds and buds.

**Nesting:** A medium sized pigeon. The upper parts of the pigeon's body were grayish-black with iridescence except on the wing and tail. The crown has a green-purple iridescence, the mantle to rump iridescent reflecting violet, amethyst and turquoise. The scapulars and remaining mantle were glossed golden green with bronze reflections. The wing coverts were dark turquoise green suffused with deep blue. The upper tail of the pigeon coverts broadly



tipped with golden green. The breast to belly fringed with deep green and violet iridescence, being strongest on the breast. The iris was blue or probably dark blue and the bill greenish-yellow with a pale tip. The legs and the feet were dark red.

The Bonin wood pigeons usually mated in the trees or in the forests. Their eggs were particularly vulnerable to crows and other natural predators. They each normally laid two eggs and the eggs usually took 17 to 19 days to hatch into a young Bonin wood pigeon, just like extant wood pigeons.

**Cool Facts:** The Bonin wood-pigeon is recorded from just two islands in the Ogasawara Group-Peel Island, where it was discovered by naturalists travelling with Captain Beechey on the Blossom in 1827, and Nakondo-shima, where the last specimen was taken in 1889. Friedrich von Kittlitz also collected it on Peel in 1828.

The last animal seen was a male obtained by a Mr Holst, who was collecting for the British ornithologist Henry Seebohm. It was a large and beautiful pigeon, and may have always been rather uncommon. Almost nothing is known of its natural history, although Errol Fuller, a researcher on obscure and extinct birds, considers that it fed on fruits, seeds and buds. Three specimens exist, in museums in Russia, Germany and Britain.

"Birds matter because they are our most immediate reminders of the natural world. There is something about even the red breast of an American robin that says, "Hey look at me. I'm part of this world too."

> -Jim Briggs Kittitas Audubon Society

## **Common Name:** Cuban Red Macaw **Scientific Name:** *Ara tricolor*

Size: 18-20 inches (45-50 cm)

**Habitat**: North America; Cuba and the Isla de la Juventud.

The habitat of the Cuban macaw was open savanna terrain with scattered trees, typical of the Zapata Swamp area. Cuba was originally widely covered in forest, much of which has since been converted to cropland and pastures. Lomas de Rompe, where the macaw was also reported, had rainforest-like gallery forest.

**Status: Extinct. Global Population:** 0. The Cuban Red Macaw was fairly common around 1800. During the early 19th century, the human population in its home range increased dramatically, leading to widespread deforestation. The bird was also hunted for food, and nests were plundered or disturbed to acquire young birds to keep as pets. Until 1849, the species seems to have been able to hold its own at least in remote areas, but subsequently, the population crashed never to recover.

Unconfirmed records suggest that birds persisted there until 1885. The Cuban Macaw is an extinct parrot that was endemic to Cuba and possibly Isla de la Juventud. As recently as 1800, the species was common on the island, but faced a swift decline at the hand of man.

Threats that led to the extinction of the species included deforestation, hunting, and the capture of young macaws by humans to be kept as pets. A hurricane in 1844 is said to have wiped out the population of Cuban macaws from Pinar del Río. Subsequent hurricanes in 1846 and 1856 further destroyed their habitat in western Cuba and



scattered the remaining population. In addition, a tropical storm hit the Zapata Swamp in 1851. With a healthy macaw population, such events could have been beneficial by creating suitable habitat. However, given the species' precarious position, it may have resulted in fragmented habitat and caused them to seek food in areas where they were more vulnerable to hunting. The last confirmed Cuban Macaw on Earth was shot near Zapata Swamp in 1864.

**Diet:** Fruits and seed. Macaws are known to eat clay, which is believed to work as an antidote to the poisonous seeds they eat. The chemicals in the clay mix with the poison allowing it to pass through the bird's digestive system without harming the bird.

Little is known about the behaviour of the Cuban macaw and its extinct Caribbean relatives. Gundlach reported that it vocalized loudly like its Central American relatives and that it lived in pairs or families. Its speech imitation abilities were reportedly inferior to those of other parrots.

**Nesting:** One of the smallest macaws. It had a red forehead fading to orange and then to yellow at the nape of the neck. It had white unfeathered areas around the eyes, and yellow irises. The face, chin, chest, abdomen and thighs were orange. The upper back was brownish red with feathers scalloped with green. The rump, under-tail feathers, and lower back were blue. The wing feathers were brown, red and purplish blue. The upper surface of the tail was dark red fading to blue at the tip, and the under surface of the tail was brownish red. The beak has variously been described as dark, all-black, and grayish black. The legs were brown. The sexes were identical in external appearance, as with other macaws. The Cuban macaw was physically distinct from the scarlet macaw in its lack of a yellow shoulder patch, its all-black beak, and its smaller size.

Macaws are monogamous and mate for life. They lay 1-2 eggs per season.

**Cool Facts:** A pair of Cuban Red Macaws was kept in the royal menagerie of Schönbrunn Castle, Vienna, from 1760.

On the basis of old descriptions, it has been proposed to treat the parrots from the latter island as a separate subspecies, since their bill is somewhat smaller and the bare parts of the face have a slightly different coloration. The latter feature is of little use, since the color of the cheeks of a parrot may change with its moods. A macaw which becomes aggressive or excited will start to 'blush'.

The last record of the Cuban Macaw was of a specimen shot on Cuba in 1864 at La Vega, in the neighborhood of Zapata Swamp. The species may have survived for another 20 years or so. Only 19 specimens of the Hispaniolan Macaw remain. They are in museums in New York, Washington, Havana, Tring, Paris and Vienna. The provenance of the Leiden specimen is unknown. It is simply labelled 'Cuba'.

## **Common Name:** Po'o-uli (Black-faced Honeycreeper) **Scientific Name:** *Melamprosops phaeosoma*

Size: 5.5inches (14 cm)

**Habitat**: Oceania; Hawaiian Islands North-eastern slopes of Haleakala on the island of Mau'i. It was found in the 'Ohi'a-lehua forests.

**Status: Extinct**. **Global Population:** 0. In 1973, the estimated population was felt to be less than 200 birds. The dramatic population decline has been attributed to a number of factors, including habitat loss, mosquito-borne diseases, predation by pigs, rats, domestic cats, and mongooses and a decline in the native tree snails that the Po'o-uli relies on for food. By the original printing of this manual in 2007, it was believed that there were only two males left with the last remaining female dying in late 2004.



A 2018 study recommended declaring the species extinct, citing bird population decline patterns and the lack of any confirmed sightings since 2004, and in 2019, the species was declared extinct.

Diet: Snails, insects, spiders; rarely fruit.

**Nesting:** A medium-sized, robust Hawaiian honeycreeper; the only one with black mask and brown body. The wings were short and rounded. The tail so short that bird appears almost tail-less with it being notched and curved downward. The feathers were unusually pliable. The legs were sturdy and feet large. The bill conical, finchlike, slightly hooked and black. The dimorphic differences in size are unknown. All ages and both sexes easily distinguished from other honeycreepers by combination of extensive black mask, whitish cheek-patch and throat, brown dorsal plumage, and very short tail. Adult males were creamy white below while females were gray below. Juveniles had smaller masks than those of adults and were whitish below. Immature males were more similar to adult females.

The nests were built of twigs and mosses and were located in leafy branches of Ohi'a-lehua trees. Generally, 1-2 eggs were laid.

**Cool Facts:** Po'o-uli, in Hawaiian loosely translates, "Dark Head" or "Bandit Mask".

There was a desperate attempt to save a species.

"In 2002, a female was captured and taken to a male's home range in an attempt to get them to breed. The female, however, had flown back to her own nest, which was a mile and a half away, by the next day. There was also a ten-day expedition which was scheduled to begin on April 27, 2004. The goal of this was to capture all three birds, and bring them to a bird conservation center on the island in the hope they would produce offspring.

On September 9, 2004, a male Po'o-uli was captured and taken to the Maui Bird Conservation Center in Olinda, in an attempt to captively breed the bird. However, biologists could not find a mate for the male before it died of avian malaria on November 28, 2004. Biologists are now searching for the two remaining birds, which have not been seen for over a year and are probably dead too. Tissue samples have been taken from the male for possible future cloning, but as neither birds of the opposite sex are now available nor natural behavior can be imprinted on possible cloned individuals (assuming that cloning of birds will actually be established as a working technique, which currently is not the case), this does not seem probable. As such efforts would likely compete with conservation funding of extant bird species, it may not even be desirable as a cloning attempt would both be highly likely to fail and at the same time jeopardize the survival of other highly threatened species". (VanderWerf et al. (2006)).

#### **Common Name:** 'alalā (Hawaiian Crow) **Scientific Name:** *Corvus hawaiiensis*

Size: 19-20 inches (48-50 cm)

Habitat: Oceania; Hawaiian Islands.

Before the Hawaiian crow became extinct in the wild, the species was found only in the western and southeastern parts of Hawaii. It inhabited dry and mesic forests on the slopes of Mauna Loa and Hualālai at elevations of 3,000 to 6,000 feet. Ōhi'a lehua (*Metrosideros polymorpha*) and koa (*Acacia koa*) were important tree species in its wild habitat. Extensive under-story cover was



necessary to protect the crow from predation by the Hawaiian Hawk, (*Buteo solitarius*). Nesting sites of the 'alalā received 600–2,500 mm (24–98 in) of annual rainfall. Fossil remains indicate that the Hawaiian crow used to be relatively abundant on all the main islands of Hawaii, along with four other extinct crow species.

**Status: Extinct in the wild. Global Population:** 114 mature individuals. The reason of its decline and extinction in the wild is unknown, although avian malaria passed by the non-endemic mosquito is believed to be a contributing factor. Although the 'alalā survived human colonization of the islands, beginning about 1,600 years ago, it is besieged by formidable threats and is one of the most highly threatened species in the world.

The last two known wild individuals of this species disappeared in 2002. There are some individuals in captive breeding facilities, but attempts to reintroduce captive-bred birds into the wild have been hampered by predation by the Hawaiian hawk or 'Io (which is also endangered). While some scientists believe that the small number of remaining individuals may be too small to offer a diverse gene pool, the San Diego Zoological Society's breeding program produced 11 new fledglings in 2010 giving this species hope to survive.

Activity within the captive flock has been relatively low and unreliable since 'alalā were first captured for captive propagation in 1973. Of 27 'alalā released to the wild during 1993–1999, 21 disappeared or died mainly because of diseases, predation by 'lo, and possibly poor nutrition (USFWS). None produced eggs, although many survived to sexual maturity and two 4-yr-olds paired and constructed nests. The 6 surviving 'alalā were captured in 1999 and have been held with other captive-reared birds for protection and breeding until limiting factors in the wild can be reduced.

There have been attempts to reintroduce the 'alalā to the forests since 2016. Out of the 30 birds released, only these five had survived. The five birds were recaptured, one of those is named Kia'ikūmokuhāli'i (Guardian of the Forest). In the days before his recapture, researchers could hear Kia'ikūmokuhāli'i making alarm calls as an 'lo (Hawaiian Hawk) was seen circling the area. But he stood his ground quite well.

"We call him the 'champion bird," project coordinator Jackie Guadioso-Levita says, citing his survival skills. "He can be aggressive and has been seen mobbing 'lo."

"These five birds can serve as really valuable mentors," she says. "We want to make sure that their skills and wild culture can be passed on to future release birds."

Since the captive 'alalā have been given a more natural diet, the birds have started engaging in courtship behaviors and formed multiple breeding pairs, many of which went on to display preliminary nest-building efforts (though only one pair successfully completed a nest).

Most of the mated pairs chose to make their nest attempts in the 'Ōhi'a tree, a native flowering evergreen preferred by breeding 'Alalā. Unfortunately for the

project, the species' reliance on these trees adds a layer of complexity to the reintroduction effort. The 'Ōhi'a is threatened by an invasive fungal species that swiftly kills the trees, which make up a large portion of Hawaii's forests.

Such complications are what make any reintroduction difficult, and though the crows have shown encouraging progress, the researchers are aware of how fragile the situation remains. Next up in the plans is to release birds in areas other than the Pu'u Maka'ala Natural Area Reserve and to continue spreading awareness to local communities about the importance of restoring 'Alalā to their natural habitat.

"It's really important to keep in mind that it takes many years to establish a species back to the wild," says Gaudioso-Levita. "We're all in it for the long haul."

**Diet:** A varied diet, including carrion, eggs and nestlings, other small creatures, fruits, and even human food and scraps. The main portion of their diet, and 50% of their feeding activity is spent foraging on trunks, branches, and foliage for invertebrates such as isopods, land snails, and arachnids. They feed in a woodpecker fashion, flaking bark and moss from trunks or branches to expose hidden insects, foraging mostly on ohia and koa, the tallest and most dominant trees in their habitats. Fruits are the second most dominant component in the Hawaiian crow's diet. The crows often collect kepau and olapa fruit clusters. Although hoawa and alani fruits have hard outer coverings, crows continue to exert energy prying them open. Passerine nestlings and eggs are consumed most frequently in April and May, during their breeding season. Other prey include red-billed leiothrix, Japanese white-eye, Hawai'i 'amakihi, 'l'iwi, 'elepaio, and 'apapane. The 'alala also commonly forages on flowers, especially from February through May. Nectar to feed the young are obtained from the ohia flower, oha kepau, and purple poka during the nestling period. Crows also foraged various plant parts, including the flower petals of kolea, koa, and mamane. The palila is the only other Hawaiian bird known to eat flower petals. The 'alala only occasionally forages on the ground, but only for a limited amount of time for risk of predators.

Captive individuals can use sticks as tools to extract food from holes drilled in logs. The juveniles exhibit tool use without training or social learning from adults, and it is believed to be a species-wide ability.

**Nesting:** It is similar to a carrion crow but with more rounded wings and a much thicker bill. It has soft, brownish-black plumage and long, bristly throat feathers; the feet, legs and bill are black.

Female crows are considered sexually mature at about 2 or 3 years of age and males at 4 years. The Hawaiian crow's breeding season lasts from March to July; it builds a nest in March or April, lays eggs in mid-to-late April, and the eggs hatch in mid-May. Both sexes construct nests with branches from the native ohi'a

tree strengthened with grasses. The crow typically lays one to five eggs (that are greenish-blue in color) per season, although at most only two will survive past the fledgling phase. Only the females incubate the 2–5 eggs for 19–22 days and brood the young, of which only 1–2 fledge about 40 days after hatching. If the first clutch is lost, the pair will re-lay, which serves to be helpful in captive breeding efforts. Juveniles rely on their parents for 8 months and will stay with the family group until the next breeding season

**Cool Facts:** The 'alalā was one of the largest native bird populations in Hawaii. Its disappearance in the wild has had cascading effects on the environment, especially with the seed dispersal of the native plants. Many of these plants rely on the 'alalā not only for seed dispersal, but also for seed germination as seeds are passed through the crow's digestive system. Without seed dispersal, the plants have no means of growing another generation. The 'alalā plays a key role in the maintenance of many indigenous plant species, which now could become a rarity in Hawaii's ecosystems, specifically the dry forests, without their main seed disperser. The Hawaiian crow has become known as an indicator species; the disappearance of the 'alalā indicates serious environmental problems.

"The rapidity with which the wildflowers are decreasing is most damning. If we do not begin to preserve them, the time will come when they will become extinct and live only in history."

> -Theodore Payne, 1916 Pioneer in the Cultivation of Native Plants

#### **Common Name:** Coxen's Fig Parrot **Scientific Name:** *Cyclopsitta diophthalma coxeni*

Size: 6 inches (15 cm)

**Habitat**: Oceania; Australia. East of the Great Dividing Range between Port Maquarie in New South Wales and near Gladstone in Queensland. However, within this small range it is fragmented into even smaller populations.

Small patches of subtropical rainforest or edges of larger areas and often at ecotone between rainforest and sclerophyll assemblages, especially areas with large Ficus trees. Was formerly probably concentrated in alluvial forest.



**Status: Critically endangered. Global Population:** 50–250 Mature individuals with a stable population trend. It has been found at scattered sites from Bundaberg southward to Hastings River and inland to the Bunya Mountains and Main and Koreelah Ranges, but considered to be highly fragmented following

declines since 1950 due to habitat loss. Four sub-populations are thought to remain, in the greater Bundaberg region, Maleny/Imbil/Kin Kin Creek area, the Queensland/New South Wales border area (Lamington National Park, Whian Whian State Forest, Alstonville plateau), and the upper Hastings River catchment, with no more than 50 individuals in each.

Widespread clearance of lowland rainforests have meant only small fragments of former habitat remain and are vulnerable to spread of invasive weeds, while isolated stands of fig trees (probably important source of food in winter) may be lost due to lack of natural recruitment. Probably associated impacts from fragmentation, poor quality and small area of remaining habitat, and small population size, with lack of connections between habitat patches a possible barrier to dispersal, making it difficult for birds to find sufficient food, especially in winter, the may have increased degree of competition between it and other species of birds.

**Diet:** Diet is largely comprised of figs, with seeds being preferred to fruit, but no detailed studies.

Usually encountered in pairs or small groups.

**Nesting:** The smallest Australian parrot, it is plump-bodied and short-tailed and largely bright green, with blue forehead. There is a red band on ear-coverts, the cheeks to lores are flecked yellow and there is a violet-blue band across lower face. There is bright violet-blue on the outer wing. Sexes similar, but the orange-red virtually absent on lores of female. Immatures are basically like the females with young malea acquiring adult plumage in 14 months.

Nests are excavated from the dead limbs of tall trees in, or close to rainforests. Nest construction is thought to begin in August and breeding occurs from October to December or January. The normal clutch size is probably two.

**Cool Facts:** Coxen's fig-parrot is one of Australia's rarest and least known birds. It has been recorded on just over 200 occasions since Gould described it in 1867. Confirmed or credible sighting reports continue to be made in both range states, including about 30 records in north-east New South Wales since 1970 and twice this number in south-east Queensland over the last decade alone.

Coxen's fig-parrot is cryptic and extremely difficult to see in its habitat and may therefore be more common than the number of sightings suggest.

- *C. d. coxeni.* "Coxen's Fig Parrot" is found in southeastern Queensland and northeastern New South Wales, in coastal eastern Australia.
- *C. d. diophthalma*. The nominate subspecies is found on the western part of the Papuan Islands (Waigeo, Kofiau, Salawati, Misool) and the western and northern regions of New Guinea.

- *C. d. aruensis.* It is endemic to Aru Island.
- *C. d. coccineifrons.* It is found from east-central to southeastern New Guinea (eastward from the Central Highlands).
- *C. d. virago.* It is endemic to the D'Entrecasteaux Islands (Goodenough Island and Fergusson Island).
- C. d. inseparabilis. It is endemic to Tagula Island (Louisiade Archipelago).
- *C. d. marshalli.* It is found in extreme northern Queensland (eastern Cape York Peninsula), in extreme northeastern Australia.
- C. d. macleayana. It is found in northeastern Queensland.

"Birds should be saved for utilitarian reasons; and, moreover, they should be saved because of reasons unconnected with dollars and cents...

The extermination of the Passenger Pigeon meant that mankind was just so much poorer... And to lose the chance to see frigate-birds soaring in circles above the storm, or a file of pelicans winging their way homeward across the crimson afterglow of the sunset, or a myriad of terns flashing in the bright light of midday as they hover in a shifting maze above the beach— why, the loss is like the loss of a gallery of the masterpieces of the artists of old time."

-Theodore Roosevelt, 1916

#### Common Name: Kakapo Scientific Name: Strigops habroptila

**Size**: 23-25 inches (59-64 cm)

**Habitat**: Oceania; New Zealand. Once widespread within the North, South and Stewart Islands, but is now extinct throughout this former range. Between 1980 and 1997, all kakapo remaining on Stewart Island were transported to offshore, predator-free islands in order to protect them from introduced mammalian carnivores. The species now occurs on Codfish and Chalky Islands.

A model of kakapo fossil records and habitat types has indicated that the species previously occurred in mountain beech and Hall's totara or broadleaf forests with moderate to high precipitation and milder winters.

**Status: Critically Endangered**. **Global Population:** 209 mature individuals. Formerly occurred throughout New Zealand's North and South Island and Stewart Island from sea level to alpine regions. Its range contracted substantially following first human (Maori) occupation of New Zealand about 1,200 years ago. Kakapo were hunted as food and to make clothing, but burning of its habitat,



hunting by dogs (*Canis domesticus*) and especially predation by introduced Polynesian rats (*Rattus exulans*) indirectly hastened its demise. In steady retreat since then, it appears to have begun its catastrophic decline when European settlement resulted in the establishment of alien predators, notably the stoat (*Mustela erminea*) and black rat (*Rattus rattus*), although on Stewart Island, the principal cause of decline was feral cats, and it is now judged that Polynesian rats are serious threats to nesting birds.

Some of its biological traits, such as the males' habit of clustering at leks and the five-month long involvement of females in ground-nesting, have made it vulnerable to predation. Last accepted North Island sighting was in 1927, last South Island sighting (three males in Fiordland) in 1987. The Stewart Island population of 100–200 birds was only discovered in 1977, and judged to be rapidly declining, mainly due to predation by introduced domestic cats. The absence of mustelids probably spared this population from extinction.

Between 1980 and 1997 all 62 remaining birds on Stewart Island were translocated to the predator-free islands of Codfish, Maud and Mana (failing to establish on Mana), so that with a population already transferred to Little Barrier Island, the species is now extinct throughout its natural range. Intensive management of each individual kakapo and nest at the new sites has allowed the Kakapo to make a gradual comeback. By 2005, Kakapo populations occupied four islands – Codfish, Chalky, Anchor and Maud numbered 86 birds, of which 52 were breeding adults (21 females and 31 males) and 34 were juveniles.

After a favorable breeding season, this increased to 124 birds in 2009, and 126 in early 2012, of which 78 were breeding adults. The future of this species is still entirely dependent on continued conservation management.

**Diet:** A versatile and opportunistic vegetarian with a taste for different seasonal diets including fruits, berries, nuts, seeds, green shoots, leaf buds, roots, rhizomes, tubers, bark, stems, moss and fungi. On Stewart Island, the main food plants are fern fronds, followed by *Dracophyllum, Gahnia* and *Astelia*, plus *Lycopodium, Schizaea, Cyathodes, Olearia, Thelymitra, Oreobolus* and *Carex.* New growth and developing foliage are targeted in spring and summer, and subterranean parts of plants are foraged from autumn through to early spring. The fruit of Fuchsia is important, and crops of some birds were filled with moss.

Absence of reproductive behaviour in certain years is linked to erratic availability of certain food, once thought to be tussock and grass seed, but apparently (on Stewart Island and Codfish Island) autumn mast production of podocarps. Even chicks in first weeks of life are not fed animal food, but *Agathis australis* leaves apparently important and fruits and leaves of rimu (*Dacrydium cupressinum*).

**Nesting:** It is green above with mottled with blackish chevrons and brownish blotches. The tail is patterned greenish yellow, brown and black, It is yellowish below, with notches and bars of buff and green. The superciliary stripe is lemon yellow and the forehead, face and ear-coverts are yellowish brown with elongate rictal bristles. Females are no different in size but less plump. Immatures are duller with browner faces.

The Kakapo is the only parrot to have a lek mating system; early in the breeding season (December through April), males gather on display grounds where a number of bowl shaped depressions are dug out in the ground. Having competed for access to the best locations, a male settles into a bowl and then begins to 'boom' to attract females. This strange, very low frequency call can be heard up to 5 km away, and obtains its resonance via inflatable throat air sacs; lek-displaying males also make a metallic, high pitched 'ching' call. After mating, females incubate the eggs and rear the chicks alone. Two to three eggs are usually produced and the chicks hatch after 30 days. Sexual maturity is not reached until 9 - 10 years of age; furthermore, breeding is erratic and slow, occurring every 2 - 5 years and is dictated by the infrequent availability of super-abundant food supplies. One such event is the 'mast fruiting' of the 'rimu' tree (*Dacrydium cupressinum*), which only occurs every 2 - 5 years.

**Cool Facts:** Kakapo is also known as the "owl parrot" and is nocturnal. It is a classic example of evolution on an isolated island; and has a number of characteristic features that make this species unique. It is the only member of the subfamily Strigopinae and although it has fully developed wings, it is the only flightless parrot in the world. The reason why this parrot is flightless is because there is no sternal keel for attachment of the wing muscles. It is also the largest parrot known and is possibly the longest-lived. The oldest known bird was elderly when found in 1975 and still lives. Its eating habits are unique. The parrots chew the leaves and stems of plants, extracting the juice, and leave behind fibrous, chewed balls dangling from the plants that often bleach white in the sun.

The Kakapo has a rich tradition of Māori folklore and beliefs associated with it as a species. Their irregular breeding cycle was noted to be associated with heavy fruiting seasons of particular plant species, which led the Māori to credit the bird with the ability to foretell the future. Used to substantiate this claim were reported observations of these birds dropping the berries of the Hinau and Tawa trees (when they were in season) into secluded pools of water to preserve them as a food supply for the summer ahead; the Māori practice of immersing food in water for the same purpose is believed to originate from these observations.

As the Kakapo were generally considered to be good nourishment, they were once hunted for this purpose during the time they were still widespread. In breeding years, the loud booming calls of the males at their mating arenas made it easy for Māori hunting parties to track them down, while they were also hunted while feeding or when having dust baths in dry weather. The birds were caught, generally at night, using snares, pitfall traps, or by groups of domesticated Polynesian dogs which accompanied the hunting parties—sometimes the hunters would use fire sticks of various sorts to dazzle the birds in the darkness, stopping them in their tracks and making capture easier. Also taken by the Māori were the bird's eggs, which they described to be "whitish but not pure white". As well as eating the birds they killed, Māori used their skins—with the feathers still attached—to create cloaks and capes. To the Māori, these clothing items were very valuable, and the few still in existence today are considered taonga (treasures). Kakapo feathers were also used to decorate the heads of taiaha (spear-like weapons), but were removed before actual use in combat

Despite all, the Kakapo was also regarded as an affectionate pet by the Māori. This was corroborated by European settlers in New Zealand in the 19th century, among them George Edward gray, who once wrote in a letter to an associate that his pet Kakapo's behavior towards him and his friends was "more like that of a dog than a bird.

Each of the remaining Kakapo has been named.

"Everyone likes birds. What wild creature is more accessible to our eyes and ears, as close to us and everyone in the world, as universal as a bird?"

-David Attenborough

## **Common Name:** Yellow-breasted Bunting **Scientific Name:** *Emberiza aureola*

**Size**: 5 ½ inches (14 cm)

**Habitat**: Eurasia. Summer Range: Finland and Russia. Winter Range: Southern China and India. Breeds in wet meadows with tall vegetation and scattered scrub, riverside thickets, and secondary scrub. Winters in large flocks in cultivated areas, rice fields, reed beds, and grasslands.



**Status: Critically Endangered. Global Population:** 120,000 - 1,000,000 Mature individuals and declining. Threatened due habitat destruction and human disturbances to nesting areas. Main reasons for this bunting's decline thought to be hunting on wintering grounds, especially in China, and conversion of many areas of suitable habitat to agricultural use in same region. As numbers even on pristine breeding grounds have dropped very rapidly, primary cause probably excessive trapping at migration sites and, especially, wintering sites. Flocks roosting in reedbeds are flushed and then caught in mist-nets, cooked and sold as food (described as "sparrows" or "rice-birds"); this practice, previously restricted to small area of southern China, has become more widespread, and hunters must now travel widely in order to find sufficient birds. In addition, each year, in China, thousands of males are killed, stuffed and sold as mascots, their presence in the home being believed to bring happiness to the human occupants.

Formerly one of the most numerous songbirds of the Palaearctic, it was not considered of conservation concern prior to 2004; reflecting growing information on the ongoing population crash, this species' conservation status has progressively worsened, changing (in 2013) from Vulnerable to Endangered and then (in 2017) to Critically Endangered.

**Diet:** Seeds and some insects; vegetable items taken throughout year. Recorded invertebrates in diet are damselflies and dragonflies, stoneflies, grasshoppers and allies, bugs, Lepidoptera, lacewings, caddis flies, larval flies (Diptera), Hymenoptera, beetles, spiders and snails. The egetable material taken includes seeds and other parts of roses, grasses, wheat, rice, Sorghum, bamboo and Milium. Nestlings are fed almost entirely with invertebrates.

On arrival on breeding grounds in Russia, this bunting forages on low herbs and grasses, taking insects and seeds, and is seen frequently on bushes such as rose, but rarely on the bare ground. In Hokkaido (northern Japan), in contrast, it forages mainly on ground in the summer period. Outside the breeding season, it forages in flocks, sometimes with hundreds of individuals, It roosts communally, usually in bushes.

**Nesting:** A medium-sized bunting, with longish bill; distinctive in most plumages. The male nominate race (breeding) has the lower forehead, chin and upper throat back to the ear-coverts black. The upper forehead, crown, nape and upper parts are deep rufous-brown with a few traces of pale fringes on the nape, mantle and rump. The tail is dark brown, with the outermost rectrices white on the outer web. The lesser upper wing-coverts are dark gray with white on the lower row of feathers. The median coverts are white (white areas merging to form a prominent white patch). The greater coverts are rufous-brown on the outer webs. The primaries and secondaries are brown, narrowly edged pale. The lower throat is yellow, this extending as band across lower side of the neck, contrasting with the narrow red-brown breast band. The rest of under parts are yellow, the flanks have heavy blackish streaks. The iris is dark chestnut-brown and the upper mandible is dark gray, the cutting edges and lower mandible are pink. The legs are pinkish to dull fleshy-brown.

The male non-breeding is very similar to the breeding plumage, but with pale fringes on head, buffish lores, supercilium and center of ear-coverts. The fringes

on upper parts are broader, and the chin, throat and malar region are yellow. The breast band is obscured by buffish fringes.

The female breeding is similar to first-winter male, but with worn and bleached plumage. The upper wingbar (on median coverts) narrower and lower wingbar (greater coverts) is whiter, and the breast band is usually absent (some females extremely similar to first-summer male). The iris is dark chestnut-brown. The female non-breeding has upper parts similar to first-winter male, but the tones are warmer brown. Juveniles are broadly similar to female breeding, but exhibiting very fresh plumage, the breast prominently streaked and the iris is dark gray-brown.

The first-winter male like the adult non-breeding plumage, but with less apparent rufous tones, a lateral crown-stripe and the border around ear-coverts blacker and more prominent. The nape is rufescent grayish-brown with some streaks, the mantle is brown with blackish streaks (feathers lacking rufous-brown centers). The back to upper tail-coverts are grayish-brown with faintly dark streaks and the breast band largely replaced by diffuse streaking. The iris is dark gray-brown.

The first-summer male similar to male breeding, but with some characters more like those of female. The second-winter male is intermediate between adult and first-winter, with the head and breast patterns mostly like adult, but the crown more grayish-brown. The second-summer male is very like adult, but more prominent streaks on the mantle. The first-winter female is very similar to adult non-breeding, but paler below and the iris is dark gray-brown.

The breeding season normally starts from second half June to beginning July. There is usually only one brood. The nest built by female alone, taking 3–5 days and consists of dry grass and stalks, lined with soft pieces of grass, rootlets and sometimes hair, placed on ground in depression under tussock or roots, or slightly above ground in willow, shrub or other kind of well-covered vegetation. The clutch is 3–7 eggs and is incubated by both sexes, male doing less of the work (does not develop brood patch). The incubation period lasts 13–14 days and the nestling period 11–14 days. The young leave nest before able to fly, and gain independence after a further 7–14 days. Breeding success is highly variable, ranging from 50% to 15%, due to disturbances and predation.

**Cool Facts:** The European stronghold for this species has always been on the shores of Liminka Bay near Oulu in Finland but even here the population has crashed to less than 10 pairs in 1995, of which two pairs could be found near the World Wildlife Fund Information Centre. Further singing males are usually found in small numbers at scattered sites in southeast Finland. They may arrive as late as mid-June and depart again from late July onwards. The major population nests in Siberia.

- *E. a. aureola.* The nominate subspecies is found in western Russia eastward to River Kolyma, southward to northern Ukraine, northern Kazakhstan and western and central Mongolia, formerly eastern Finland; winters in southern and southeastern Asia.
- *E. a. ornata.* It is found in eastern Transbaikalia, northeastern Mongolia and northeastern China (Heilongjiang) eastward to Anadyrland, Kamchatka, Sea of Okhotsk coast, Sakhalin, and northern Japan and Kuril Island. It winters in the northern Indian Subcontinent, southern China and southeastern Asia. Race ornata is like the nominate, but darker, and with yellow of the under parts brighter and richer in tone, and also tends to have more extensive black on the forecrown.

A true conservationist is a man who knows that the world is not given by his fathers, but borrowed from his children.

- John James Audubon

#### Common Name: 'Akepa Scientific Name: Loxops coccineus

Size: 4 inches (10 cm)

**Habitat**: Oceania; Hawaiian Islands. Found on the island of Hawai'i, Mau'i and Kaua`i. Fossil evidence shows it was once found in O'ahu as well.

It is found most commonly in 'Ohi'a-lehua and Koa-`Ohi`a forests above 3,000 feet.



**Status: Endangered. Global Population:** 9,300 mature individuals with a declining population trend. Once found throughout Hawai'i in suitable habitat, but by 1980s occupied only 10% of former range. Currently, it has fragmented distribution above 1100 m, with three largest segments on windward eastern slope of Mauna Kea, on eastern flank of Mauna Loa, and in Ka'u Forest Reserve (on southern flank of Mauna Loa); also, two tiny relict populations in central Kona (western slope of Mauna Loa) and one on northern slope of Hualalai Volcano.

The total population at end of 20th century was estimated at about 14,000. At Hakalau Forest National Wildlife Refuge, a University of Hawaii team claims a huge population crash has occurred since 2000, caused by introduced organisms, particularly Japanese White-eyes (Zosterops japonicus), that have depleted akepa food supplies and thereby reduced nesting success and fledgling survival, and biased the sex ratio so that males far outnumber females in some age classes. Studies by refuge biologists and others have not been able to corroborate these findings, and have found no drastic declines since 2000 and no negative correlation with white-eye populations or indications of food competition with them. Independent panel in 2008 concluded that management of feral ungulates was a higher priority than management of white-eyes in the wildlife refuge. As in other Hawaiian forest bird species, distribution may be restricted by presence of malaria-carrying mosquitoes (Culicidae) at lower elevations; rising global temperatures, allowing mosquitoes to spread into higher elevations, may therefore pose a significant threat; a model predicts that under a likely scenario of continued disease-driven distribution limitation this species will lose c. 90% of its range by 2100.

**Diet:** Feeds extensively on small insects, spiders, and caterpillars. It very rarely appears to feed on nectar, but may instead be searching flowers for insects.

**Nesting:** A very small finch-like passerine with a conical bill. The tips of mandibles slightly crossed, mainly by deflection of upper mandible to right or left (roughly equal proportions). The male is a brilliant red-orange or vermilion, including on the shoulder. The primaries, secondaries and their coverts and tail feathers are contrastingly brownish-black, narrowly edged red on the outer webs. The iris very dark brown (appearing black) and the orbital ring is black. The bill is pale gray to straw-yellow, sometimes with dark tip. The legs are black with the toe pads more grayish. Females are dark gray-green above and much paler below, with a pale face and diffuse supercilium, and broad pale yellowish-orange breast band. Juveniles of both sexes are olive-gray above, pale cream or off-white below and on face and supercilium. They have darker wing feathers edged olive-gray and the bill is brownish-gray. Second-year malea are orange-brown above, irregularly blotchy dull orange, yellow and vermilion below and the bill becoming irregularly lighter. Males reaches adult plumage in three years.

'Akepas on Hawai'i nest only in cavities in large, old-growth 'Ohi'a and Koa trees. Since no Hawaiian birds are known to excavate tree cavities, 'Akepas are dependent on naturally occurring cavities for nesting sites. Females are solely responsible for nest construction, which is unusual among the insectivorous and nectarivorous members of the Hawaiian honeycreepers group. Typical clutches have only one or two eggs, which results in an unusually low annual reproductive output for a small songbird. Another interesting aspect of 'Akepas' breeding behavior is that males perform large, lek-like group displays, despite the fact that 'Akepas are monogamous birds that form long-term pair bonds. Since this species is an obligate tree cavity nester, the logging of old, mature trees has eliminated potential nesting sites and decreased available foraging habitat.

**Cool Facts:** 'Akepa in Hawaiian means nimble or quick. `Akepa is also known as `Akakane, and the Maui `Akepa as `Akepeu`ie. They use their bills to pry open `ohi`a buds, small seed pods, and galls in search of food. They have been known to drink nectar from `ohi`a and other flowers. Their "kee-wit" calls are quiet and their songs are a short, warbling trill.

The Mau'i and Hawai'i 'Akepa were listed as an endangered species on October 13, 1970. A large population of 'Akepas on Hawaii is protected at the Hakalau Forest NWR, which was created in 1985 to protect native Hawaiian forest birds and their habitats. A threatened population of these birds is protected by the Pu'u Wa'awa'a State Wildlife Preserve on northern Hualalai. 'Akepas also receive lesser protection at the Ka'u Forest Reserve, Kulani Prison, and Kilauea-Keauhou forests. Current conservation efforts on Hawaii include the introduction of artificial nest cavities at Hakalau Forest NWR. While only one artificial cavity (out of 69) has been used by 'Akepas, that one cavity was used successfully by a pair two years in a row.

While the reasons for the decline of 'Akepas on Mau'i are not understood, conservation efforts on that island have included the virtual elimination of feral pigs from important natural areas, as well as attempts to control rat populations. Despite these efforts, Mau'i 'Akepas have continued to decline, and may well be extinct.

What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another.

- Gandhi

## **Common Name:** Black-eared Miner **Scientific Name:** *Manorina melanotis*

**Size**: 9-10 ¼ inches (23-26 cm)

**Habitat**: Oceania; Australia. Murray Mallee region of South Australia, Victoria and New South Wales. It requires large blocks of long, unburnt and uncleared (older than 50 years), 5-8 m tall mallee type forest, with an under-story of small bushes, shrubs and chenopods. Its distribution in Victoria is positively correlated with stable dune fields with a relatively high loam level, amount of decorticating bark (from which it obtains much of its insect food), tree density, stem density, canopy cover and litter cover.



**Status: Endangered. Global Population:** 250-999 mature individuals with a declining population trend. It is endangered due to habitat destruction and alteration. This species has a very small population; numbers have declined and several locations have been lost. If present intensive conservation efforts are unable to stop the extirpation of the tiny sub-populations, then the species will be uplisted to Critically Endangered. However, if the early success of conservation actions is confirmed, the status of the species may improve.

Diet: Invertebrates and lerp.

**Nesting:** The plumage is largely gray above, with dull olive forehead merging into gray of crown, black facial mask (from bill narrowly over and below eye to ear-coverts) bordered below by an indistinct yellow moustachial stripe, gray submoustachial stripe and thin blackish malar stripe, and a small patch of bare yellow skin at rear of the eye (extending narrowly above and below rear half of the eye). In fresh plumage, there is fine gravish scaling on the side of neck and the mantle, back and scapulars. The upper tail is mostly gray-black with a broad paler gray tip and narrow olive-yellow edges at bases of the rectrices. The upper wing is black-brown, the secondary coverts and tertials are contrastingly dark gray, fine paler gray tips on median and greater coverts. The greaters are also with narrow with olive-yellow edges, olive-yellow outer edges of the remiges (prominent diffuse yellowish panel on folded wing). The outer primaries also have thin white tips when fresh. The chin to breast is with blackish-and-white scalloping merging into white below, gray wash on the flanks and thighs; sometimes yellowish tinge on chin. The under tail dark gray with slightly paler gray tip. The under wing is dark gray, with a diffuse whitish patch across bases of the primaries. The iris is dark brown and the bill and gape are yellow to orangeyellow. The legs are orange to brownish-orange.

Sexes alike in plumage with the male larger than the female. The juvenile is very much like the adult, differing in pale brown suffusion on upper body with no white scaling on side of neck, brownish suffusion on the tail tip, a more uniformly gray breast with less obvious scalloping and varying brown wash, narrow pale brown tips on median and greater upper wing-coverts (narrow wingbars). There are clearer whitish fringes at tips of the primaries, and the bill and eye patch slightly duller yellow.

Monogamous and pairs appear to remain together for life, only re-pairing upon the loss of a mate. Breeding males within a colony are close relatives, whereas females, the dispersing sex, are not. Nests have been found in all months. Nests are usually built in mallee eucalypts, either in upright forks, amongst small twigs and foliage, or on epicormic shoots, between 1.5-4.5m above ground.

**Cool Facts:** For years there has been controversy over the taxonomic status of the Black-eared Miner. Various authors have considered it a species, a subspecies or morphological variant of the Yellow-throated Miner and a subspecies of the Western Australian 'Dusky Miner'. There are morphological and behavioral differences between Black-eared and Yellow-throated Miners and evidence for marked ecological separation exists. DNA evidence finally brought the Black-eared Miner in to its own.

Black-eared Miners can interbreed with Yellow-throated Miners, resulting in fertile hybrids that display a range of intermediate plumages.

Like other Miners, the Black-eared is social and nest and roosts in small colonies.

## **Common Name:** Banded Wattle-Eye **Scientific Name:** *Platysteira laticincta*

Size: 5 inches (13 cm)

Habitat: Africa. Endemic to the Bamenda Highlands of western Cameroon.

It is found in montane forest, dominated by species such as Podocarpus, Schefflera and Prunus, where it inhabits thick forest under-story and seems to favor streams or dry stream courses.

**Status: Endangered. Global Population:** 2,500-9,999 mature individuals with a declining population trend. It is endangered because it is a restricted-range species. This species is confined to the Bamenda Highlands, and may persist in



small forest remnants. The main population is in forest of Kilum-Ijim, but it still occurs in many other surrounding forest patches. The site farthest north is Njising and the farthest south, discovered in May 2002, is Fossimondi, on the Bamboutos. It is absent from Mt. Cameroon and Mt. Manenguba, where *P. cyanea* is present (and where latter ascends higher than in Bamenda Highlands, where the two are altitudinally segregated).

It is threatened by clearance of montane forest patches. Its habitat was reduced by 50% through rapid deforestation in period, 1965–1985, and in 1985 it was feared that this species would become extinct unless forest habitat on Mt. Oku was preserved. Forest fires in dry season also a serious threat. in March of 2000, about 500 ha of forest burnt around Lake Oku in the Kilum-Ijim Forest, which is possibly the species' last stronghold, and is considered the first priority for its conservation. The population here was estimated at 3000 birds in 1994. Total population may be 3500–15,000 individuals according to BirdLife International (2014). Over 200,000 people depend on the Kilum-Ijim Forest for food, water, firewood, medicines, meat and increasingly, income from tourism. The engagement of local communities in conserving the montane forest and use of sustainable farming techniques is now of utmost importance.

Diet: Insects caught in flight.

It forages mostly in thick undergrowth, but can be found at all levels, up to canopy. It is a very active feeder, hawking insects in flight and snatching prey from leaves.

**Nesting:** A black and white flycatcher-like bird with a fleshy red eye wattle. The male is glossy bluish-black above and white with a glossy bluish-black breast band below. The wattle above the eye is scarlet and the iris is reddish-brown (sometimes brownish-gray or bluish). The bill is black and the legs are purplish-black. The female differs from the male in having the entire throat and upper breast glossy bluish-black with a white chin streak. Immatures have their upper parts brownish-gray, under parts brownish, mixed with black on the throat and sides of the breast. The vent patch is whitish.

It breeds in the early dry season, January-March, with nest-building starting in November. It builds a small nest of plant material (using mostly moss and lichen) which is wrapped with spider web and bark. The nest is placed 0.4–6 meters above ground in a fork of a tree. The clutch size is 1–3 eggs, which the female incubates for about 15–17 days.

**Cool Facts:** The Banded Wattle-bird is only likely to survive if the Kilum-Ijim forest, the largest remaining forest area in the region, is preserved. More sustainable farming techniques are being used to take pressure off the remaining forest. The condition of the Kilum-Ijim forest and its endemic birds is monitored, as well as the overall extent of forest cover in the Bamenda Highlands. Community based conservation activities were extended to other forest fragments in the Bamenda Highlands in 2000.

## **Common Name:** Black-hooded Red Siskin **Scientific Name:** Spinus cucullatus

Size: 4 inches (10 cm)

Habitat: South America. Northern Colombia and northern Venezuela.

Found in Lowland and foothill dry deciduous woodland and open country, edges of evergreen forest, scrub and grassland with occasional trees; at 200–1500 m, occasionally down to 100 m. In Guyana, inhabitats Trachypogon-Curatella savanna, but not found in large areas of similar habitat in Venezuela, where it is more closely associated with more humid foothills.



**Status: Endangered**. **Global Population:** 1,500-7,00 Mature individuals with a declining population trend. Endangered due to massive, illegal trapping for the cage bird trade. This is an attractive finch with a pleasant song, and its unique

coloration for a small finch (most are predominantly yellow) has led to it being used for interbreeding with domesticated Canaries to produce varieties with red in the plumage. The Red Siskin has been protected by the Venezuelan government since the 1940's, the Convention on International Trade in Endangered Species (CITES) since 1975, and has been listed as an endangered species by the U.S. Fish and Wildlife Service since 1976. The United States Fish and Wildlife Service considers any captive bred Siskins (including offspring or any hybridized young) as being protected under the Endangered Species Act. In the US it is unlawful to buy or sell these birds within or across state lines without a captive-bred wildlife endangered specie permit issued by the U.S. Fish & Wildlife. Individual states may require state endangered species or other permits as well.

**Diet:** Mostly seeds of various grasses, shrubs and trees, also flowerheads, fruit of cacti, figs and berries, including, in Venezuela, *Cordia, Trixis, Eupatorium, Wedelia* and *Urera baccifera*, and, in Guyana, flowerbuds and fruit of sandpaper tree (*Curatella americana*) and fruit of the mistletoe. They also feed on nectar and possibly some small insects.

It commonly forages on ground and low down in vegetation and bushes and higher up, in the trees. They are seen singly and in pairs. Following breeding season, they form into large flocks.

**Nesting:** A small, reddish finch with sharply pointed bill and notched tail. The male has the head to side of the neck, chin and throat jet-black, the hind neck and upper parts are deep scarlet with gray or blackish feather bases. The lower back and the rump are paler red or pinkish-red. The tail is black with the base of feathers edged pale vermilion at side (not always visible in field). The upper wing-coverts are black, tipped deep vermilion. The alula, primary coverts and flight-feathers are black with a brighter vermilion patch at base of the outer secondaries and primaries. The tertials are black, edged pale pinkish and whiter at the tips. The under parts are vermilion, the belly and vent are whitish, tinged pink. The iris is black and the bill is dark grayish-horn or blackish. The legs are brown or dark brown.

Females have the head and upper parts (to lower back) gray, with the forehead to crown and the nape streaked darker, the face to chin and throat and the sides of neck pale gray (sometimes finely spotted red on lower throat). The mantle to scapulars lightly streaked darker and tinged reddish-pink on the lower back. The rump and upper tail-coverts vermilion, the tips of longest coverts gray, the tail is black, finely edged reddish at the side of the base. The wing is similar to the male, but the median and greater coverts more broadly black at the bases and tips paler orange-red, also the band at bases of the flight-feathers pale is orange-red, the tertials have white or whitish-buff tips. The breast to upper belly and the flanks are orange-red while the rest of the under parts are whitish. Juveniles resemble females, but are paler or grayer, with reduced amounts of orange-red.

The first-year male similar to adult, but the vermilion replaced by brown, the tips of the wing-coverts are yellowish or buff, the flight-feathers are black with pale or creamy-yellow bases and the under parts are brownish.

Breeding season lasts from May to early July, also from November to December. It usually nests solitary but is loosely colonial in Guyana, with breeding territories densely packed, apparently owing to superabundance of fruiting Curatella and Phoradendron.

The prominent aspects of breeding behaviour include mate-guarding, male-male and female-female chasing, display-flights, and stealing of nesting material. The nest is a deep cup of fibrous bark or grass strips, lined with fine cottonlike fibres. It is placed high up in bromeliad clump or in branch fork in tall forest tree, or in dense leaf cluster. The female lays 3-5 eggs and incubates alone. The female is fed by male with the incubation period lasting 11–13 days. The fledging lasts 14–16 days. The female does all the work. The male may remain with the female through incubation and hatching.

**Cool Facts:** Red Siskins are highly gregarious. When they were more numerous they formed semi-nomadic flocks.

Only after the last tree has been cut down. Only after the last river has been poisoned. Only after the last fish has been caught. Only then will you find that money cannot be eaten."

- Cree Indian Prophecy

## **Common Name:** White-browed Bushchat **Scientific Name:** *Saxicola macrorhynchus*

**Size**: 6 <sup>1</sup>/<sub>2</sub> -7 inches (17 cm)

**Habitat**: Asia; India and Pakistan. Generally occurs in subtropical thorn-scrub and sandy semi-desert.

It inhabits dry, sandy semi-deserts and desert plains with low herbs and scattered shrubs, where ground cover ranges between 25% and 50%.



**Status:** Threatened. **Global Population:** 2,500-9,999 mature individuals with a declining trend. The key threat is agricultural intensification and encroachment, primarily through the introduction of irrigation schemes to semi-arid areas and their subsequent conversion into croplands. Overgrazing by livestock may also reduce the extent of suitable habitat. These trends are expected to continue with the development of the Rajasthan Canal and widespread application of modern agricultural techniques.

Diet: Insects; mostly comprising beetles, ants or flying insects.

It forages from low open perch such as the tops of bushes or grass stems (it has been seen on pole wires), flying to ground to take food item or sallying in air. Unlike many chats, it often remains on ground, hopping, for several minutes at a time, rather than returning to perch. When actively feeding, average time lapse between aerial sallies is about 17 seconds. This type of foraging commonest in middle of day and in evening, when flying insects most abundant. In colder conditions, most foraging is terrestrial.

**Nesting:** The male is blackish-brown from the crown to upper rump, with whitish supercilium, a black face, a white band on the primary coverts and scapulars, a white lower rump and outer bases of the blackish tail. It is white below, with buff-stained breast and flanks. In fresh plumage, the black areas are buffer, with a broad dark malar, resembling winter male *S. rubetra* but much paler below, and the rump plain rufous-tinged buff. The bill and legs are black. The female is like fresh-plumaged male, but paler-faced and paler-backed, with no white in the wings or tail. The juvenile is like the female, but darker above and dark-dappled on the breast.

Juveniles have been sighted in August and September which suggests that breeding may occur from March to June, before the monsoon flooding, or at start of June, coinciding with start of monsoon (in areas where rains weakest).

**Cool Facts:** This bird is also known as Stoliczka's Bushchat, named after the discoverer, geologist and explorer Ferdinand Stoliczka.

"The outcries we hear against forest reservations come mostly from thieves who are wealthy and steal timber by wholesale."

-John Muir, "Our National Parks"

## **Common Name:** Kirtland's Warbler **Scientific Name:** *Setophaga kirtlandii*

**Size**: 6 inches (14-15 cm)

**Habitat**: North America. Breeding Range: The primary nesting grounds are earlysuccessional jack pine forests on well-drained, sandy soils found within 13 contiguous counties in northern Lower Michigan, the eastern Upper Peninsula of Michigan and 3 counties in Wisconsin. Winter Range: It winters throughout the Bahamian archipelago in early-successional broadleaf scrub or shrubby habitats. It is mostly found on the island of Eleuthera, where considerable human habitation exists. Sightings have also been reported in the Turks and Caicos islands.



Breeding Range habitat: Nests have been found in dense, young (5-23 year old) jack pine forests on nutrient-poor, sandy soils primarily in glacial outwash ecosystems of northern Lower Michigan, and limited areas in the Upper Peninsula of Michigan. Nearly all breeding habitat is restricted to 23 established Kirtland's Warbler Management Areas (KWMAs) in northern Lower Michigan that cover approximately 90,000 ha. Here, the region is level or gently rolling, and the outwash sands are excessively well drained and generally lack weatherable minerals. Late-spring and fall freezes are common due to the area's inland location and relatively high elevation, contributing to the area's unfavorable growing conditions.

These jack pine forests tend to be nearly pure, even-aged stands interspersed with openings and scattered clumps of pin oak (*Quercus ellipsoidalis*), trembling and big tooth aspen (*Populus tremuloides* and *P. grandidentata*), black cherry (*Prunus serotina*), and choke cherry (*Prunus virginiana*). The ground cover in these forests is predominately moss/lichen, grass/sedge (*Carex pensylvanica*), and low shrubs such as blueberry (*Vaccinium angustifolium*), sand cherry (*Prunus pumila*), sweet fern (*Comptonia peregrine*), and bearberry (*Arctostaphylos uvaursai*).

The suitability of habitat is a function of age and the associated habitat changes that occur with succession. Kirtland's Warblers enter jack pine habitat when the trees are near 1.7 m in height; numbers then rapidly increase with peak densities occurring when jack pines are 8-15 yr old, and then numbers start to decline quickly as trees reach 5.0 m in height, which is when the lower live branches begin to die and break off. The lower branches provide nesting and fledgling cover, and forage space for the females. The last residents of a tract are usually unmated males. Habitat is rarely occupied past 20 year of age.

Overwintering Range Habitat: Wintering Kirtland's Warblers use upland, earlysuccessional habitat with a low broad-leaved scrub component found in the Bahamian archipelago. Six broad habitats used on Eleuthera, Grand Turk, North Caicos, and Crooked Islands; Natural shrub, secondary scrub, low coppice, pineland under-story, saline/upland ecotone, and suburban. Tall broadleaf woodlands are not used. Wild sage (*Lantana involucrata*), snowberry (*Chiococca alba*) and black torch (*Erithalis fruticosa*) shrubs are important components of their wintering habitat. The greatest densities of birds in Eleuthra were found on goat farms where these shrubs were maintained by grazing. Using goats under power rights-of-ways is being explored as a way to create and maintain wintering habitat.

**Status:** Near Threatened. **Global Population:** 4500-5000 mature individuals with an increasing population trend. Lack of suitable breeding habitat has been a major threat to Kirtland's Warblers. They rely upon dense, young jack pine habitat; for when the trees reach seven meters, the birds no longer use them. Brown-headed Cowbirds have also been a serious threat to Kirtland's Warbler. Prior to current control measures, more than half the nests were being parasitized. Habitat fragmentation, recreational cabins, and predators including domestic cats are also threats. Populations appear to be increasing due to conservation programs.

The Kirtland's Warbler was designated as a "keystone" species by the National Fish and Wildlife Foundation in 2009. In May 2011 the key managing agencies, Michigan Department of Natural Resources, U. S. Fish and Wildlife Service, and U. S. Forest Service, signed a Memorandum of Understanding to develop a Conservation Plan and foster a public-private partnership for long-term conservation in the face of potential down-listing. The Conservation Plan is in preparation and the non-profit Kirtland's Warbler Alliance has been established and is working with the Recovery Team. This plan will guide future conservation actions through a combination of habitat management, cowbird control, minimizing land-use activities during breeding season, adaptive management (monitoring, research), information and education programs, and pursuing funding opportunities to provide financial support through a long-term trust fund to support Kirtland's Warbler and jack pine management.

**Diet:** In northern Michigan, the summer diet found to be primarily arthropods and blueberries. Major food items are spittlebugs and aphids (61%), ants and wasps (45%), blueberry (42%), beetles (25%), and moth larvae (22%).

In winter, it also feed on insects and small fruits). The fruit mostly consumed is from wild sage (*Lantana involucrate*), black torch (*Erithalis fruiticosa*), and snowberry (*Symphoricarpos*).

**Nesting:** Adult males have dark black stripes on blue or blue-gray back and head. Younger adult males have a more gray-brown head and back with brownish stripes. The stripes become darker on a more distinct blue-gray back with age. Younger males have rusty rather than brown or nearly black primary feathers. Adult males have bright, intense solid yellow throats, breast, and abdomen. These areas are lighter or faded yellow in younger males, and appear almost white in juveniles. The breast often has black streaking or spots, but it is not indicative of age. Adult males have distinct black lores or a black band across and below the eyes that looks like a mask. This mask is thin or vague in juvenile males and can appear missing in females. Adult females are much duller in color. Both males and females have white eyelids that form an incomplete eye ring, and there are white spots on the outer two tail feathers near the tips. Wing bars present but not conspicuous.

Nests are well hidden under pines in dense ground cover. Cups are made of grasses and roots and lined with grass, moss, and hair. 3 to 6 buff colored eggs are laid. They nest from May through June and sometimes double-brood, though survival rates for double-brooded young is low. The female Kirtland's Warbler is more selective than the male in her choice of habitat, and the best areas attract more females than males. The last residents of a tract that is getting too old are always unmated males.

**Cool Facts:** Apart from the Bachman's Warbler, which is probably extinct, the Kirtland's Warbler is the rarest warbler in North America. In the breeding season, these birds are limited to the jack pine forest habitat of north-central Michigan. This bird may well have gone extinct if it had not been for intensive habitat management and cowbird control measures. Land management measures, such as controlled burns, have been taken to ensure as much breeding habitat as

possible. Cowbird trapping has reduced parasitism rates from 70 percent to three percent, tripling the rate of warbler reproductive success.

The Kirtland's Warbler requires areas with small jack pines for nesting. The jack pine requires fire to open its cones and spread its seeds. The warbler first appears in an area about six years after a fire when the new growth is dense and is about 1.5 to 2.0 meters high. After about 15 years, when the trees are 3.0 to 5.0 meters high, the warbler leaves the area.

"So far our government has done nothing effective with its forests, though the best in the world, but is like a rich and foolish spendthrift who has inherited a magnificent estate in perfect order, and then has left his fields and meadows, forests and parks, to be sold and plundered and wasted at will..."

-John Muir, "Our National Parks"

## **Common Name:** Cerulean Warbler **Scientific Name:** *Setophaga cerulea*

Size: 4 inches (11 cm)

**Habitat**: North and South America. Summer Range: Breeds locally from central Minnesota to central New York, southward to Arkansas and North Carolina. Winter Range: Mountains of northern South America. Found in tall deciduous trees and open under-story, such as wet bottomlands and dry slopes.

**Status:** Near Threatened. **Global Population:** 570,000 mature individuals with a declining population trend. Formerly one of the most abundant breeding warblers in Ohio and the Mississippi River Valleys, its population plummeted in the 1900's. Cerulean Warbler is one of the species of highest concern in the eastern United States because of a small total population size and significant declines throughout its range. The main threat is from habitat degradation and



forest fragmentation as the human population increases and land uses change. Breeding habitat is degraded when mature deciduous forests, especially riparian forests, are lost and remaining forests are fragmented and isolated Also, less deciduous forests reach maturity because of shorter rotation periods and evenaged management and key tree species are lost because of disease. Winter habitat is being destroyed for the production of coffee beans and coca as the demand for coffee and illegal cocaine-based drugs grows.

Diet: Insects; some seed and plant material in winter.

**Nesting:** A small wood-warbler with relatively long, pointed wings and short tail with long under tail-coverts. The adult male is deep cerulean blue above, white below, with a black band of variable width across the upper breast. The adult female is bluish green above, white washed with yellow below, with a distinct white or yellowish line over the eye. Both sexes in all plumages have 2 white wing-bars and white tail-spots. Males have streaked backs in all plumages; females do not. Seasonal variation in adult plumage is less than that among individuals. Some fall males show greenish edges to back feathers. First-fall (Basic I plumage) individuals are similar to adult female in general appearance, with upper parts gray-green to olive (female) or bluish to blue-gray washed with green (male), prominent pale superciliary stripe, dark ear coverts, dull whitish underparts, and 2 white wing-bars. In first-fall males, streaking is present above but may be limited to sides of back, the adult breast band is lacking or restricted to the sides of the breast, and underparts have blurry streaking. The combination of a bluish crown, pale supercilium, blurred ventral streaking and wing-bars is fairly distinctive. In first-fall females (the most greenish and yellowish plumage), the upperparts are unstreaked and the underparts are only indistinctly streaked. First-fall individuals of both sexes are variably yellowish below, with females more extensively yellow than are males. First-spring (Alternate I plumage) individuals similar to adults but are on average duller and have smaller tail spots and narrower breast bands, but overlap between age classes occurs.

Nests are an open cup shape of bark fibers, grass stems, and hair bound together with spider web, placed on a lateral limb of a deciduous tree in mid to upper canopy. Usually concealed from above by leaves or twigs on the nest branch. The female lays 3-4 gray to greenish-white eggs.

**Cool Facts:** The female Cerulean Warbler has an unusual way of leaving a nest after sitting on it a while. Some people call it "bungee-jumping." She drops from the side of the nest, keeping her wings folded to her sides, and opens her wings to fly only when she is well below the nest.

It nests and forages higher in the canopy than most other warblers. When renesting after a failed first nest, the female often uses spider web from the old nest to start construction on the new nest. Fresh lining is gathered for the new nest, but spider web may be too valuable and time-consuming to waste.

On the wintering grounds in South America the Cerulean Warbler usually is found in mixed-species foraging flocks, associating with tropical tanagers and other resident species.

#### **Common Name:** Azores Bullfinch **Scientific Name:** *Pyrrhula murina*

**Size**: 6 <sup>1</sup>⁄<sub>2</sub>-7 inches (17 cm)

Habitat: Portugal. Eastern São Miguel in the Azores.

It prefers native Azorean laurel forest on steep-sided valleys, and during May– Nov also herbaceous vegetation along forest edges and in introduced exotics, including Clethra, Japanese cedar (*Cryptomeria japonica*) plantations and cheesewood (*Pittosporum undulatum*) woodland, generally above 400 m; also lower-level woodland (down to 300 m) along streams.

**Status:** Vulnerable. **Global Population:** 627–1,996 mature individuals with a stable population trend. Its historical decline and current extremely small range are probably explained by widespread loss of native forest and invasion by exotic vegetation, which have largely overrun the remaining patches of natural vegetation within the species' breeding range. Food shortages are potentially a problem throughout the year, but most severe in late winter. Random environmental and demographic factors can affect such small populations and inbreeding may reduce reproductive output. Predation by feral cats and rats are potential threats.



Sightings are rare, it occurs at only one locality and has a very small range, confined to eastern end of island of São Miguel, in the eastern Azores. Despite the spread of invasive plant species, concerted conservation action has improved the prospects for the species, and consequently its threat status has progressively improved. Inaccessible terrain, dense vegetation and retiring habits make population estimated challenging. The majority of population lives in the Pico da Vara/Ribeira do Guilherme Special Protected Area, which was enlarged to 6067 ha in 2005. The EU Species Action Plan aims to achieve and maintain a population of > 1000 pairs.

Diet: Seed. This species appears entirely dependent on native trees for food.

**Nesting:** Medium-large, plump finch with strong, deep bill and short, rounded wings. Male has crown to nape, lores and chin glossy purplish-black, upper-parts dark gray-brown, rump pale buff, uppertail-coverts dingy gray-brown; tail and upper wing glossy purplish-black, greater coverts dark blue, broadly tipped dingy gray, outer web of upper tertial narrowly orange-pink; lower face pale warm buff, more buffish-orange on ear-coverts; throat and underparts light buff-brown, often tinged warmer tawny-brown on flanks and under tail-coverts ; iris black; bill black; legs dark brown. Female is very like male, but slightly less dark on back, lacks tawny wash on lower underparts. Juvenile is very similar to adult, with broad buffish fringes on greater coverts.

Birds breed from mid-June to late August, apparently in *C. japonica* trees.

**Cool Facts:** In 2007, this was Europe's rarest songbird, which had been in decline since the early 1990s, with fewer than 300 individuals left. Conservation efforts have brought this species back from the brink of extinction to a population of 1,300 birds in 2011.

### What makes a bird endangered?

While it's easy to understand why a bird like the Kakapo is endangered with 86 birds left on the planet, some other species may be harder to figure. So why is a bird such as the 'Akepa from Hawai'i (estimated population 6,000) more endangered than the Yellow-breasted Bunting (estimated population 2,300+)? The reason is that the number of birds, while an important factor, is only part of the consideration in endangerment. The easiest way to explain the criteria is to review the R-E-D system. R-E-D stands for RARITY - ENDANGERMENT – DIVERSITY. The total number of birds would relate to rarity. The perils facing the birds would be endangerment. Diversity relates to how far the species extend over physical terrain. For instance, a species limited to a single island would be more at risk than a species spread over a continent.

So let's take the case of the 'Akepa and Yellow-breasted Bunting and apply the R-E-D system. Rarity: The Bunting population is less than the 'Akepas. Chalk one up for the Buntings. Endangerment: The 'Akepa require old growth Koa forests that are almost extinct from the Hawaiian Islands. Also the 'Akepa has little to no immunity to avian malaria. The Buntings have issues with nesting and human populations which are much less immediate threats than the 'Akepa so the 'Akepa wins the "E" round. Diversity: The 'Akepa are on a secluded part of an island within an specific elevation. The Buntings are throughout North-eastern Europe and Asia. Diversity is clearly an issue with the 'Akepa. Chalk one up for the 'Akepa. While the Bunting won the "R" round, the 'Akepas decisively won the "E" and "D" rounds and that's why the 'Akepas are considered Endangered while having greater numbers.

# Reasons why Species today are going extinct

It is said that within 100 years, half of all species of life on earth will be extinct. Many industrialized governments tell us its' natural selection. Is it? Let's look at the birds depicted in this volume and reasons why they went extinct or are at risk.

*"Its extinction was probably largely caused by the destruction of its understory habitat by introduced cattle and deer, and predation of its nests by introduced rats and mongooses."* 

*"Endangered by massive illegal trapping for the cage bird trade."* 

"Vulnerable due to habitat destruction and human disturbances to nesting areas."

"Endangered due to habitat destruction and alteration. "

*"Its extinction was caused by deforestation, hunting and predation by introduced rats and cats."* 

Hmmm... starting to notice a trend? Human involvement appears to have a whole lot to do with that "natural selection" argument offered. Okay, fine... so we are causing some species to go extinct. What difference does that make? Well, apart from the obvious moral and quality of life issues, loss of species can harm us and our existence in ways we're only starting to understand. The birds, as well as bees and butterflies of our planet are important pollinators. Without pollinators, crops may flower but won't fruit, hence no food makes it to the supermarket making higher prices and less food available. Hmmm, that could be problem, couldn't it?

Woodpeckers around the globe are in serious decline. So what happens when there are no more woodpeckers to keep beetles and other wood eaters from decimating our forests? When forests go into decline it causes not only lumber shortages but higher forest fire risks. Forests provide shelter and habitat to a number of other creatures. Without the symbiotic bond, both suffer and populations decline more quickly. Even for the less eco friendly, the decline in forests can be troubling. For hunters, poor forest health means less game. For business, it means less product from trees; less timber, less paper, even less maple syrup. For all of us, since scientists consider the forests of the world the earth's lungs, less forests means less ozone.

Flycatchers spend their days eating mosquitoes and biting insects. Let them go extinct and suddenly, beside more welts on your skin, there's a big increase in disease; not just for humans but for all creatures, accelerating the extinction patterns.

These three examples are trends we know about... what about all the hundreds of connections we don't know exist? If we break too many of these, are we tipping the scales towards our own extinction?

Audubon recently reported that based on the last 40 years of data, even common species will not be so common tomorrow. Since 1967 the average population of common birds in the United Sates have fallen 70% from 17.6 million to 5.35 million individuals. Certain areas, such as California, are showing declines as much as 95% in some species. So the threat of extinction isn't limited to obscure and rare species in someone else's yard-- it's the jay in your yard, the hummingbird working your flowers, the finches chattering in your tree... and their survival is your responsibility.

### **Making Easy Choices**

**Do great art.** This one's real easy. The primary idea behind the "Threatened, Endangered, Extinct" theme is that artist will be able to create imagery using the included bird species and help spread awareness. You have some tools with the "More Threatened, Endangered, Extinct" Songbird ReMix package. Use them and make a difference. Post your artwork featuring the endangered birds and tell your audience of their plights. Use the text in the Field Guide or write your own. I guarantee you someone will be moved, and perhaps, moved enough to also make a difference.

**Heal the earth one garden at a time.** One of the primary causes for endangerment and extinction is habitat loss. While few of us can purchase tracts of land to protect and save habitat, almost everyone can garden. Here's your opportunity to give back to the planet. If you have planting space, whether it be acres or a couple pots on your balcony, use it and plant **native plants**. You know, the ones that actually belong there. If you're not aware of what's native to your area, contact your local native plant society or do internet searches. Native plants and the birds, insects and other wildlife have ancient relationships. Once you start planting the right plants, the wildlife will rekindle these relationships. From my own experience, our bird count when from 40 different species a year to over 100 within a three year period. The types of butterflies tripled and the native mammals and insects I didn't even know existed in our area now are frequent visitors.

### I go to nature to be soothed and healed, and to have my senses put in order.

-John Burroughs

Provide water sources on your property. Whether it's a bird bath, a mister, a pond or stream, a water source is probably the most important feature you can put on your property for birds. Feeder, nesting boxes, or secluded cover (trees, shrubs, thickets) are also important. Don't rake away all the leaves. Natural mulch is important to the health of native plants. For many birds, mulch is their forage area. The National Wildlife Federation (<u>http://www.nwf.org/backyard/</u>) and Audubon (<u>http://www.audubon.org/bird/at\_home/</u>) have home wildlife habitat programs. If you have native plants, shelter, food sources and water for wildlife you can be certified as a NWF "Backyard Wildlife Habitat" and for a small fee even get a placard to display out in your yard or on your fence saying so. If

neighbors pass by and look at your garden, wondering why it looks a little different (native plants), tell them why. That too, has the snowball effect.

**Shop and live green.** This is easy to do. If you drink coffee, buy shade grown coffee. Buy organically grown products. Yes, there a little more expensive, but they're generally better for you. If your city has a recycling service, use it. Also, many power companies offer "green power" options, sign up and if they don't have one, ask why. Use water, power and gas more wisely. Get energy saving bulbs and water saving toilets and showerheads.

When car shopping, consider less polluting vehicles or hybrids. Drive less by planning and grouping your stops ahead of time.

If you dabble in the stock market, consider a "green" mutual fund and if you own stock, demand at shareholder' meetings that the company become more ecofriendly. If a company is known to exploit the environment, don't buy their products and let them know why you're not. Write them. Call them. Email them. Believe it or not, they are concerned about losing your business which hurts their bottom line.

**Pets...** Before everyone starts with the hate mail—I do not hate cats. The average well-fed outdoor housecat kills over a dozen songbirds a year. The housecat being well fed, cared for, with a safe place to sleep has a much clearer advantage than real predators (such as coyotes or hawks). While housecats are predators, they are not endemic (meaning they are foreign to the ecosystem). Let me put it another way... what if lions or cougars were let loose in a shopping mall? Would that be *"nature taking its' course"*? No, big cats are not endemic to shopping malls or cities; they're dangerous and don't belong there. They belong in their natural habitat or locked up in a zoo. So why are domestic cats treated differently? **Simply said, cats are a domestic pet that belongs indoors**. If you want to give that tired "roam free" argument, get a Cougar or similar cat, then I'll listen... but my guess is the cougar will be more interested in the people within the house than a songbird outside.

**Be aware what goes on in your community.** Of all the government layers, the local levels are the most accessible to you. Hearings regarding important decisions in your community happen all the time. Attend some, and make a difference. I attended a hearing regarding the re-landscaping of a local park. Now they're going to be planting native plants in the park. My wife, neighbors and I commented on a housing project asking for radical zoning changes on an area, which is currently wilderness. Now the city has to consider whether it wants to rubber stamp the developer's vision or face the wrath of the community. Let your community leaders know you want "smart growth" and expect them to obey their own zoning laws. Building should occur in places where it's appropriate to build, not because it's the place where maximum profit can be achieved.

Building in inappropriate places is happening everywhere around the world. People develop areas that are prone to flooding, fire and mudslide, then are shocked when disaster strikes. They build houses on the wilderness edges, then complain about the displaced coyotes and mountain lions attacking their children and pets. They plow over the last refuges that birds have and then complain when they share our outdoor dining facilities or poop on their cars.

The real problem is us; the human race. We're supposedly the smart ones on the planet, yet we level and pollute our surroundings, then overpopulate it with reckless abandonment and don't expect consequences. At the rate we're going, we will soon find our planet on the endangered species list, thanks entirely to ourselves.

### "In nature, there are neither rewards nor punishments; there are consequences."

– Robert Ingersoll

**Vote Smart.** When deciding whom to vote for, don't trust the mailers or the candidate's lip service. Just because they may title initiatives "Clean Air" or "Healthy Forests" doesn't make it so. Check their records. How did they really vote? The internet is great for that. The League of Women Voters (www.lwv.org) even has environmental score cards. The National Audubon Society (http://www.audubon.org/campaign) has an "Advisory" newsletter it emails out that states what going on in the Capital and even provides links to your elected officials along with editable form letters to express your concerns.

Even more important is phone calls and letters to your elected officials expressing how important environmental issues are to you. Consider this, PR firms, lobbyists and others make **daily contact** with your representatives "helping" to explain the "needs" of their constituents. I'm sure your representatives hearing this day in and day out might start to believe that's what you want. Call them and set them straight.

Yes, you can make a difference, if you want to...

### **Tougher Choices: Look in the Mirror**

So far I've given easy things to do; ones that require little to no sacrifice. But now let's go a step further and really look in the mirror. Walk down a path alone. Stop, turn around and see how many footprints you left. Do you tread heavily on this path or do you do try to walk in harmony with your surroundings? Do you give at least as much as you take?

Here's another statistic using the United States. 80% of the population strongly supports protecting the environment. However, when this protection comes with a price tag, such as higher taxes or land use restrictions, the support drops well under 50%, showing the problem is not just governments and their policies, but the public as well.

"Somebody else will do it." "There are lots of organizations that help out with that." "Isn't that what we pay taxes for?" "Why doesn't somebody do something about this?" "How can they allow this to happen?" "Don't they have a conscience?"

Who are we really referring to when we blame "them"?

Take a look in the mirror. **"Them" is "us"**. Take responsibility and start to make changes. You'll find your neighbors, family and friends will be more likely to also change habits and take responsibility from your example.

No, I'm not saying everyone should get their taxes raised—but why not pay your fair share? For \$5 to \$20, you (and everyone in your car) can visit one of the US National Parks. That \$5 to \$20 is not for a day, but a **full week.** The US government has kept these prices low so that people of modest means can enjoy the natural beauty. Almost every visitor center has a donation box—a day at Disneyland or out at the movies would have cost you considerably more—pay your fair share.

As far as organizations helping out—yes, there are a lot of organizations that try to help the environments and there are a few of them that make a difference despite their meager resources. But remember this, there are more organizations bent on exploiting our planet's natural resources until these resources have been squeezed of their last penny of profit. Their financial resources dwarf the "tree huggers" financial abilities and their tactics are often without conscience whereas an environmental group has to play by the rules and is scrutanized making sure it fights its' battles fairly.

**Frustrate a developer...** Of course, not everyone can do this but I did... Two vacant weed lots near our house came up for sale. We (my wife and I) offered an amount that cut deep enough into the developers' profit margins that they backed away from bidding on it. We then turned the property in a native garden with the intention of never building on the property. We felt it was our turn to give back to the planet. The developer approached us a year later, insisting that I sell one of the lots to him because it didn't make any sense not to develop it. Standing there arguing with him in our native garden, I realized that greed blinds so many people. He could not see that the property had been developed (into a

beautiful native garden) nor could he see the wealth of natural beauty and life that surrounded him.

**Population—a sticky issue....** Of course, there's argument that the planet isn't over-populated—but then again there's argument that Global-warming isn't happening, the dinosaurs are simply a fairy tale and smoking is good for you. Consider this, it is predicted that within a decade there will not be not enough fresh water for the world population. Food is already in short supply in some portions of the world. The human population is the single largest factor in the depletion and destruction of our planet's resources and the sooner we face up to it, the better.

Recently I went to a family event celebrating my Grandfather's birthday. At dinner, to my astonishment, I noted that there were over 100 relatives in the room—his six kids—their children and their children's children—and that was just my Mother's side of the family. Both sides added up to over 150 people from two sets of grandparents. I love my family but I was troubled. I sat quietly thinking about all the resources, all the acres of additional land that had to be cleared, the species to be killed to accommodate my family and their needs. Do we have the right to reproduce like rabbits?

When family members asked my wife and I when we would be adding to the family tree, I dodged the question, but the truth is 'never". We decided some time ago that our family had long ago used up its replacement quota and we'd make a conscious effort not too add to an over-populated planet.

So what I am really saying here? Is there a real solution to the population issue. There is, and an easy one at that. If three or four generations of the world population were to stick to the replacement quota rule (2 kids or less), our world population problem would start to solve itself.

**Make responsible choices.** Advertisers thrive on you making as many irresponsible and impulsive choices as possible. Look in the mirror, be honest with yourself. Do you really need that huge SUV or 4,000 square foot home? Think of the resources and money you would save by living more modestly and environmentally friendly. Look at your footsteps.

**Work and Play responsibly.** Is it really faster to leaf blow your yard than using a rake? I can rake our yard just as fast as a "Mow and Blow" garderner can without the pollution, dust and noise and actually get some exercise and quality time in the garden. Plus, my yard waste ends up as mulch in the garden or is properly thrown in the green recycle barrel and not simply blown into the street and my adjacent neighbors' yard.

Off-roading has become increasingly popular, whether it's in a 4x4 truck, a snowmobile, a bike or on a motorized watertoy. What are the repercussions of this? Pollution, damaging fragile eco-systems (by crushing plants, leaking oil, distrubing areas with noise). Did you know that the wilderness that you've been playing in may mean the possible extinction of a species?

In the American Southwest, the trashing of the stream areas which happen to be the nesting and forage areas of the Least Bell's Vireo and Southern Willow Flycatcher are partially responsible for their endangerment. If you must play with your off-road toys, do it in areas designated for them and stay on the trails.

Want fun and adventure without destroying wildlife? Get out of the SUV or off your bike, use your legs and hike. Do it with your cellphone turned off, your iPod and laptop left at home. Let birdsong and the rustle of leaves in the trees be your music for a couple hours. Leave your work and troubles at home and go to a place where you can't find a trace of any man-made. Sit down, relax and wait for a half-hour. You'll see the natural world come alive around you. And if you listen and watch closely, you'll find the thrill of all things man-made begins pale to the beauty and wonders of the natural world.

"Everybody needs beauty as well as bread, places to play and pray in, where Nature may heal and cheer and give strength to body and soul alike."

-John Muir, "The Yosemite"

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### Species Accuracy and Reference Materials

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 Goggle searches and several field guides were used.

- "The Sibley Guide to Birds" by David Allen Sibley.
- "The Reed Field Guide to New Zealand Birds" by Geoff Moon
- **"The Birds of Hawaii & the Tropic Pacific"** by Douglas Pratt, Phllip L. Bruner and Delwyn G. Berrett.
- "What bird is That?" by Neville W. Cayley

### **Field Guide Sources:**

Cornell Lab of Ornithology (<u>http://www.birds.cornell.edu</u>) National Audubon Society Watchlist (<u>http://www.audubon.org</u>) US Fish and Wildlife Pacific Islands (<u>http://www.fws.gov/pacificislands</u>) Wikipedia (<u>http://www.wikipedia.com</u>) BirdGuides.com (<u>http://www.birdguides.com</u>)

### **Recommended reading:**

The Kakapo Recovery Center

