



Avian Models for 3D Applications

Characters and Texture Mapping by Ken Gilliland

Songbird ReMix

KIWIS

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Songbird ReMix

KIWIS

Introduction

Kiwi are flightless birds endemic to New Zealand. They are mostly nocturnal and live underground in burrows. At around the size of a domestic chicken, kiwi are by far the smallest living ratites (which also consist of ostriches, emus, rheas, and cassowaries). For their relative body size, they lay the largest egg of any species of bird in the world. There are five recognized species, with several subspecies and variants. All species of Kiwi are included in this Songbird ReMix volume.

The model is full featured with layered fur-like feathers, easy-to-use controls for posing and even full use of its tiny wings (which can be revealed from under the layered fur).

Overview

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

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

Poser Use

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

DAZ Studio Use

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

Where to find your birds

Type Folder	Bird Species
<i>Kiwis (Order Apterygiformes)</i>	Great Spotted Kiwi Little Spotted Kiwi Northern Brown Kiwi Southern Brown Kiwi Ōkārito Kiwi

Where to find your poses

Type Folder	For what species?
<i>Kiwis (Order Apterygiformes)</i>	Kiwis

Morphs and their Use

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

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

BODY section:

● Action Controls

■ Common Controls

- ◆ EyesFwdBack - Controls the forward and backward movement of the eyes
- ◆ EyesUpDown - Controls the up and down movement of the eyes
- ◆ PupilsDilate - Controls the pupil size of the eyes.
- ◆ EyeLidsClose - Controls the opening and closing of both eyelids. The Individual EyeLid Controls should not be used in conjunction with this morph.
- ◆ BillOpenClose - Controls the opening and closing of the bill

■ Expressions

- ◆ SmileFrown - Creates a smile (+1) or Frown (-1) expression.
- ◆ ExpandBrow - Enlarges the eyebrow area.
- ◆ CheekPuff - Puffs out the cheek area.
- ◆ ForeheadForward - Pushes the forehead forward - giving an 'angry' look.

- **Individual Eyelids Controls** has individual controls for left and right EyeWink. These individual EyeWink controls will not work properly when the master EyeLidsCloseOpen morph is used.

- **Tongue Controls** has various morphs to control the movement of the tongue in three areas, the tip, the middle and the back. The tip, middle and back morphs are meant to be used in bend or side combinations to avoid 'poke-through' on the bill.

- **Flexible Bill Controls.** Yes, Kiwis bills do bend slightly.

- ◆ BillFlexibleSide - Allows the bill to bend slightly from side-to-side
- ◆ BillFlexibleUpDown - Allows the bill to bend slightly up and down.

- **Wing Controls.** Kiwis do have wings but they are rarely seen and have no practical use. They have been included in the model primarily for users who want to create imaginary kiwi flight.

- ◆ UnhideWings - This control must be turned on to use the other dials in this section.
- ◆ WingsFlap - Flaps the wings up and down.

- ◆ WingsForwardBack- Moves the wings forward and back.
- ◆ WingsPartialFold- Brings the wings to a folded position, visible and outside of the body fur.
- **Feather Fluff Controls**
 - ◆ FluffCrestUp- Pulls the crest up/out.
 - ◆ FluffCheekOut- Pulls the cheek fluff out.
 - ◆ FluffThroatOut- Pulls the throat fluff down/out.
 - ◆ BristlesForward- Pulls the bill bristles forward
 - ◆ FluffNeckOut- Pulls the neck fluff out on the Head and Neck1 through Neck5 parts.
 - ◆ FluffNeckLength- Extends the length of the neck fluff on the Head and Neck1 through Neck5 parts.
 - ◆ FluffChestDroop- Makes the Fluff areas on the front of the neck/chest area droop/hang more loosely.
 - ◆ FluffBackOut- Pulls the top of the back fluff out.
 - ◆ FluffRumpOut- Pulls the base of the rump fluff out.
 - ◆ FluffTailOut- Pulls the tail fluff out.
 - ◆ FluffTailLength- Extend the length of the tail fluff.
 - ◆ FluffThighsOut- Pulls the fluff outwards on both thighs.
 - ◆ FluffThighsLength- Extends the fluff length on both thighs.

● Adjustment Controls

- lEyelidAdjust and rEyelidAdjust- Extends the edge of the eyelid. This control is used in the wink and eyelid close controls to avoid eyeball poke-throughs. In some cases, the automatic settings aren't enough. These manual controls will further correct those issues.
- BellyOut- Expands the belly. This can be a useful morph in sitting positions.

● Creation Controls

- **Body Shaping**
 - ◆ LongerBristlesFrnt- Lengths the bill bristles.
 - ◆ ThickerNeck- Adds girth to the neck from the Abdomen to the head.
 - ◆ Thickerlegs- Adds girth to the legs.
 - ◆ FootScale- Increases and decreases the size of the feet.
 - ◆ BirdSize- Controls the size of the model. The scale is proportional to the standard human characters in Poser and DAZ Studio.
- **Bill Shaping**
 - ◆ BillDecurved- Bend the bill downwards.
 - ◆ BillShorten- Shortens the bill.
 - ◆ BillWidth- Adds width to the bill.
 - ◆ BillHeight- Lessens the height of the lower and upper bill.
 - ◆ BillTipThicker- Enlarges the tip of the upper bill.
 - ◆ BillTipThickerLower- Enlarges the tip of the lower bill.
 - ◆ TongueLength- Adds length to the tongue.
 - ◆ TongueWidth- Adds width to the tongue.

Songbird ReMix

KIWIS

Field Guide

GREAT SPOTTED KiWi

LITTLE SPOTTED KiWi

NORTHERN BROWN KiWi

SOUTHERN BROWN KiWi

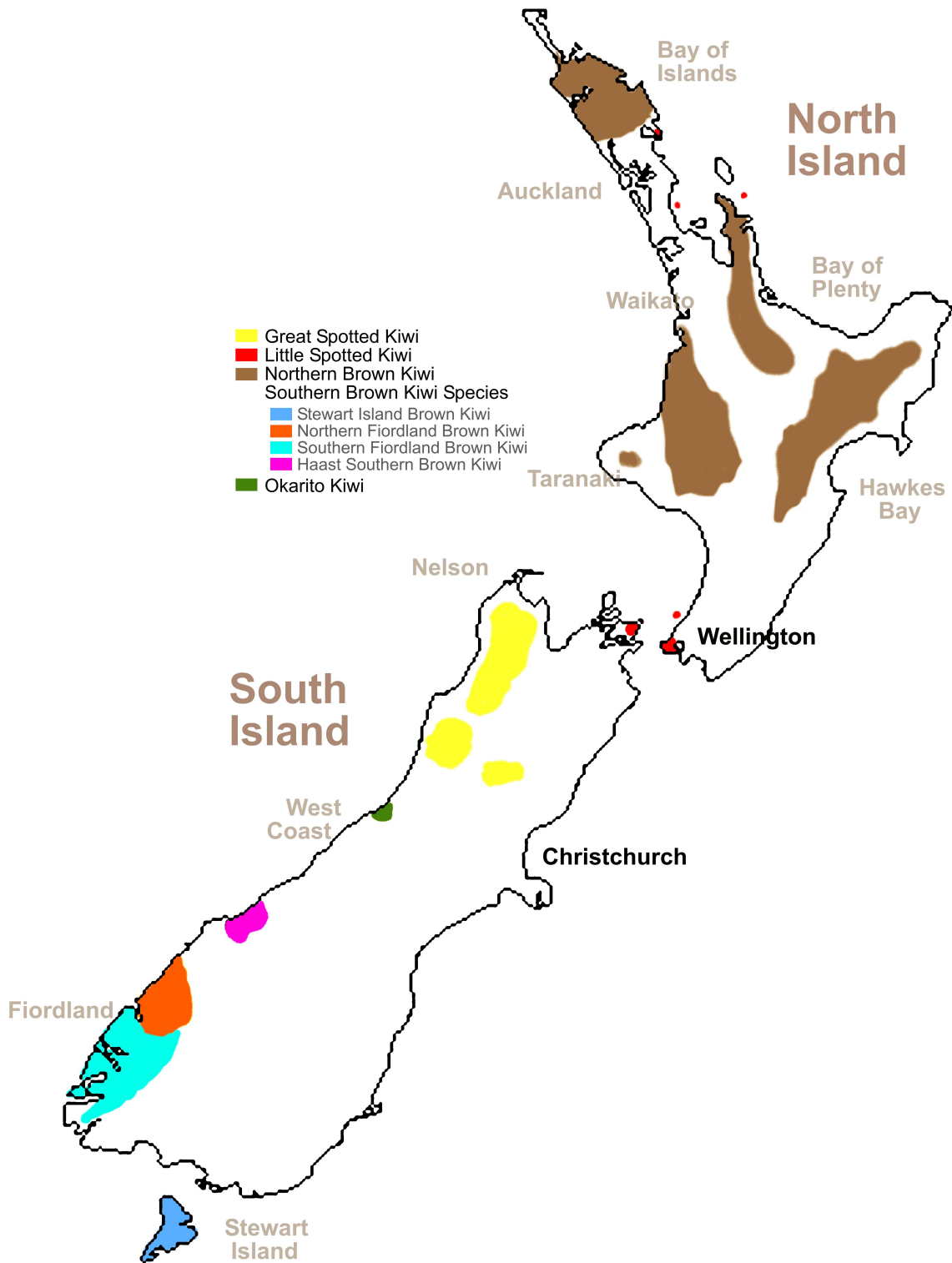
ŌKāRiTO KiWi

General Information about Kiwis

Kiwi or kiwis are flightless birds native to New Zealand, in the genus *Apteryx* and family *Apterygidae*. There are five recognized species, two of which are currently vulnerable, one of which is endangered, and one of which is critically endangered. All species have been negatively affected by historic deforestation but currently the remaining large areas of their forest habitat are well protected in reserves and national parks. At present, the greatest threat to their survival is predation by invasive mammalian predators.

Kiwi Cool Facts:

- They are the smallest living ratites (which also consist of ostriches, emus, rheas, and cassowaries families).
- They lay the largest egg in relation to their body size of any species of bird in the world. The egg may reach 1/4 of the mother's weight.
- The young chicks are not fed by parents when fledging. They survive on a large reserve of the yolk in their bellies. Chicks fledge after 6-10 days.
- The kiwi is the sole survivor of an ancient order of birds. DNA sequence comparisons have yielded the surprising conclusion that kiwi are much more closely related to the extinct Malagasy elephant birds than to the moa with which they shared New Zealand.
- The kiwi's long slender bill has nostrils at the lower end, giving it an excellent sense of smell.
- The kiwi bill, unlike most bird bills, has some flexibility. This helps it root out earthworms, grubs and other insects and plant material it finds in the soil.
- The kiwi had no natural predators until the Māori arrived. All their current predators were introduced by humans.
- Despite the awkward appearance of the Kiwi , it can outrun a human and uses its sharp claws to kick and slash an enemy.
- The Māori believed the Brown Kiwi emitted a high pitched "keeeweee" cry, from which their name was derived.
- New Zealanders throughout the world are called "Kiwis". This is probably due to a first World War New Zealand battalion that used the kiwi as its emblem and later was used in association with the New Zealand Army Football team.



Common Name: Great Spotted Kiwi

Māori Name: Roroa

Scientific Name: *Apteryx haastii*

Size: 19.6-23.6 inches (50-60 cm); **Bill Length:** 3.5-3.9 inches (9-10 cm) in the male, 4.9-5.3 inches (12.5-13.5 cm) in the female.

Habitat: Oceania; endemic to New Zealand. Found in the Northwest of South Island, mainly West of the main divide. It has also been introduced to Little Barrier Island, off Northwestern North Island.

This kiwi is found in a variety of habitats including tussock grasslands, damp, mossy southern beech (*Nothofagus*) forests, dry, alluvial podocarps, hardwood forests, and scrub-covered coastal pastures.



Status: Vulnerable. **Global population:** 5,300-5,500 adult individuals with a declining trend of 2.5-5.8% per year. Apparently, this species has always been confined to the South Island, but its range has contracted, becoming

considerably fragmented, with the species disappearing from several areas, since the period of European settlement. Before settlers arrived, about 12 million great spotted kiwis lived in New Zealand. In 1996 the population was estimated to be 22,000.

The early losses were probably due to the use of poisons and traps for other animals and to the introduction of mammalian predators. Introduced predators, chiefly domesticated cats and dogs, but also pigs, mustelids and brush-tailed possum remain the greatest threats. Chick survival is very low, with the great majority of chicks (94%) not surviving to maturity due to introduced predators. Survival is far better in very wet highland areas of its range, where predators are more scarce. One small population in the east part of the Southern Alps is managed intensively through active control of predators. Survival is far better in the very wet highland area of its range, where predators are more scarce. The monitoring of this species is intensive and nationally coordinated. One small population in the east part of the Southern Alps is managed intensively through active control of predators. This is the only kiwi species confined to the mainland, with no secure populations on islands. A small-scale translocation experiment to Rotoiti Island in Nelson Lakes National Park began in 2004.

Diet: Mostly invertebrates, especially beetle larvae and earthworms. In summer there are also large crickets and spiders. Snails (including giant land-snails of genus *Paryphanta*) are also recorded in their diet, as are freshwater crayfish, which are taken when they leave flooded streams. Fallen fruit and leaves may also be eaten.

Foraging is nocturnal and often in pairs. They search for food by probing in soil and natural hollows, including rotten logs and grass tussocks. They use their bills to pierce snail shells. They are able to reach items up to 3 feet (1 m) above ground by walking along trees leaning out from hillsides.

Nesting: Sexes are similar in plumage, however the female is larger and longer-billed than the male. It is a flightless nocturnal bird with rotund appearance. It lacks a visible tail and has a very long, straight-looking bill and short, thick legs. The plumage appears hair-like. The head is dark blackish-gray, becoming paler in the neck area. There is a small patch of darker color below each eye and long black bristles around the base of the bill. The hind neck and upper-parts are yellow-gray with the back tinged chestnut. There is irregularly barred brownish-black markings throughout the torso. The chest is light gray with darker barring and the lower belly is paler and tinged buffish. Some individuals are mottled gray all over, while others are more ginger in color. The iris is blackish-brown and the bill is pale horn to pink-cream colored. Sometimes the upper mandible is gray. The legs are brown with darker scutes (bony plates over the toes) and paler skin between them. The claws are off-white with variable dark pigmentation. This species differs from *A. owenii* by its' larger size, grayer appearance, and more regular plumage pattern with larger black spots. The juvenile is similar to adult,

but with smaller, softer feathers. There is no real 'downy stage' in this species. The claws in juveniles are black.

Kiwis are monogamous, although females in lowland sites can sometimes be polyandrous. Breeding season occurs from July through November. The nest is built in a natural hollow, sometimes under vegetation, or in a short burrow at least 20 inches (50 cm) deep, that is dug by the birds themselves. The nest is lined at its end with a thick layer of plant material. Great spotted kiwis are distinguishable from other kiwi species by the fact that they can only produce one egg a year, as it takes so much energy to produce the massive egg. The coloring is white with pale bluish or greenish tinge. Unlike other species of kiwi, incubation is performed by both sexes with the female taking nest duties at night. Kiwis hatch fully feathered and leave the nest unaccompanied at 1 week of age. This kiwi has the average life expectancy of 15 years.

Cool Facts: Kiwis have a good sense of smell which is unusual in most species of bird.

They reside in complex, maze-like burrows that they construct. Up to fifty burrows can exist in one bird's territory. They will often move around, staying in a different burrow every day. Bird's Nest Fungus (a fungi that resembles small bird eggs and feeds on organic matter) sometimes grows in these burrows.



Common Name: Little Spotted Kiwi

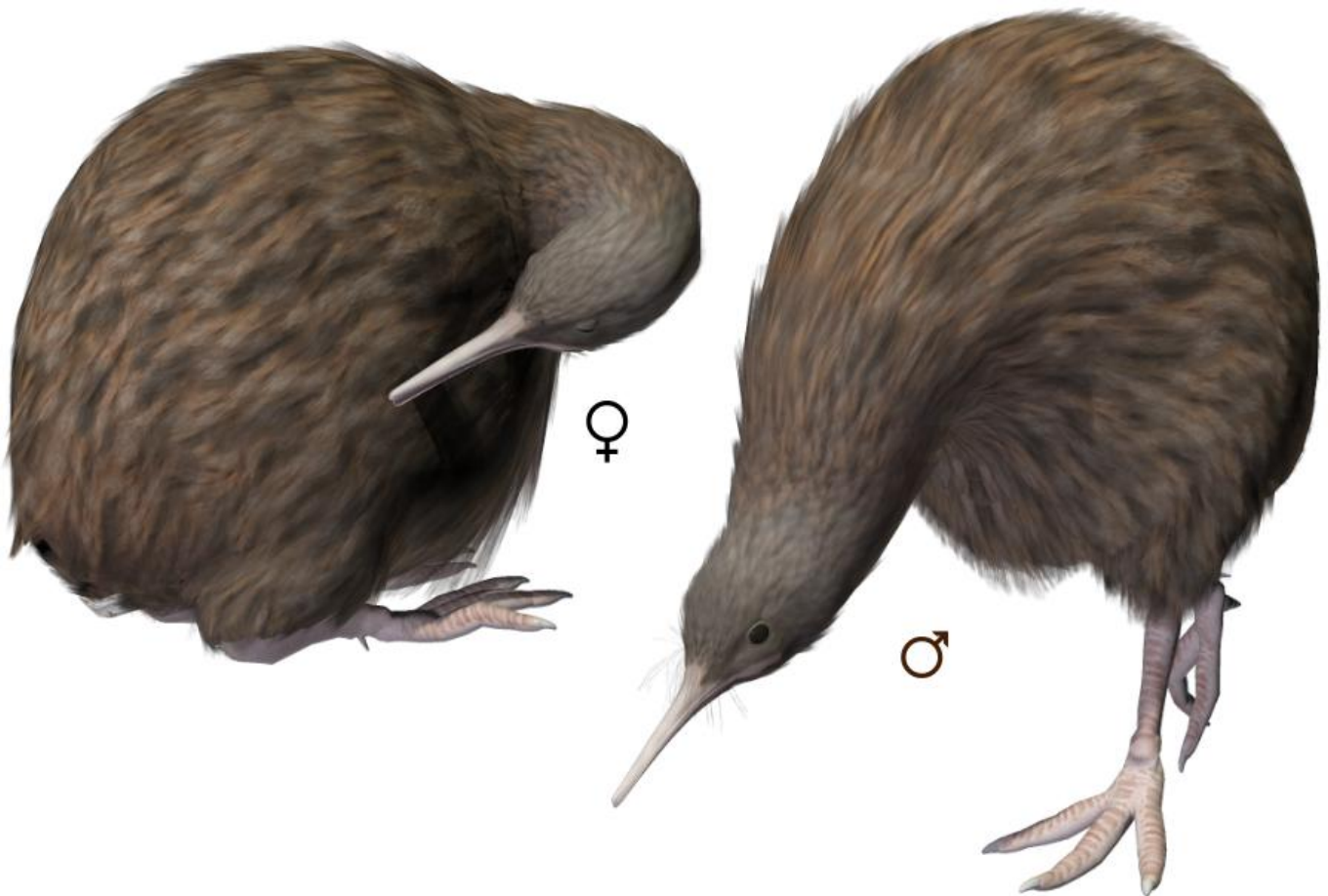
Māori Name: Kiwi pukupuku

Scientific Name: *Apteryx owenii*

Size: 13.8-17.7 inches (35-45 cm); **Bill Length:** 2.4-2.8 inches (6.3-7.2 cm) in the male, 2.9-3.7 inches (7.5-9.4 cm) in the female.

Habitat: Oceania; endemic to New Zealand. Found in the Karori Sanctuary (reintroduced) and on Kapiti Island, off the southwestern coast of North Island (introduced). It has also been introduced on four other islands off of North Island (Red Mercury, Hen, Tiritiri Matangi and Motuihe) and two islands off of northeastern and southwestern South Island (Long Island and Chalky Island) .

This kiwi is found in evergreen and mature deciduous forests with dense



undergrowth. It can also be found at the margins of forest-scrub and grasslands. In temperate regions, it is found from sea-level to an elevation of 3,280 ft (1000 m), mainly in hills. Formerly it probably occurred in plains and mountains

Status: Near Threatened. **Global population:** 800 adult individuals with a stable

population trend. Introduced predators (such as domestic dogs, cats and the weka) have caused the populations to plummet and remain the greatest threats. Reintroduction of this kiwi on predator free islands and removal of introduced predators from other species have helped to stabilize the populations. More islands have been examined for further introductions, but given the health of the present island populations, and their geographical spread, there is limited need for additional island populations. The genetic diversity of the species is being assessed to determine if they are severely bottle-necked and whether it might be possible to increase their genetic diversity by introducing new blood lines from Long Island, since currently all reintroduction birds are sourced from Kapiti Island (which may have had only five founders).

Diet: Mostly invertebrates, but also fallen fruit, leaves and fern sporangia may also be eaten. Invertebrates eaten range from 0.2-1.6 inches (5-40 mm) in size. Earthworms, spiders, millipedes, beetles and larva are the most commonly foraged.

Searches for food items are done by probing with the bill in soil, natural hollows and rotten logs. It is believed that they detect prey mainly by means of smell.

Nesting: Sexes are similar in plumage, however the female is larger and longer-billed than the male. It is a flightless nocturnal bird with a rotund appearance. It lacks a visible tail, and has a very long, straight-looking bill and short, thick legs. The plumage appears hair-like. The head is dark brown, becoming a paler, brownish-gray in the neck area. There are long black bristles around the base of the bill. The hind neck and upper-parts are brown to brown-black. There are irregularly barred yellowish-tinged, grayish-buff to whitish markings throughout the torso. The chest is similar but the pale barring is lighter. Albinism has been recorded in this species. The iris is blackish-brown and the bill is ivory to pink colored. The claws are off-white. The juvenile is similar to the adult, but with smaller, softer feathers. There is no real 'downy stage' in this species. The claws in juveniles are black.

Kiwis are monogamous with a life-long bond. Breeding season occurs from September through October. The nest is a horizontal or slightly upward-sloping burrow which is 7.8-78.7 inches (20–200 cm) long. The diameter of the burrow is 3.5-5.9 inches (9–15 cm) and it is dug by both sexes. The nest is sometimes in a drain or well concealed in the natural cavity of a log or beneath dense vegetation. Leaves and twigs are taken in as lining. A new nest site is used for each breeding attempt.

The clutch is 1 egg, rarely 2. The egg coloring is white to greenish-white. The incubation is performed by the male for 63-76 days. Kiwis hatch fully feathered and leave the nest unaccompanied at 1 week of age. This kiwi can live up to 83 years with an average life expectancy at 45 years.

Cool Facts: The Little Spotted Kiwi is the smallest of the Kiwis. The male gives a high-pitched ascending whistle, which is repeated up to 30 times in a series lasting up to 20 seconds, while the female's whistle is lower and more tremulous, making a rolling '*churr*' sound. Both sexes during foraging make grunting sounds. They also make snorting sounds in aggression and hiss and do bill-snaps in threatening situations.

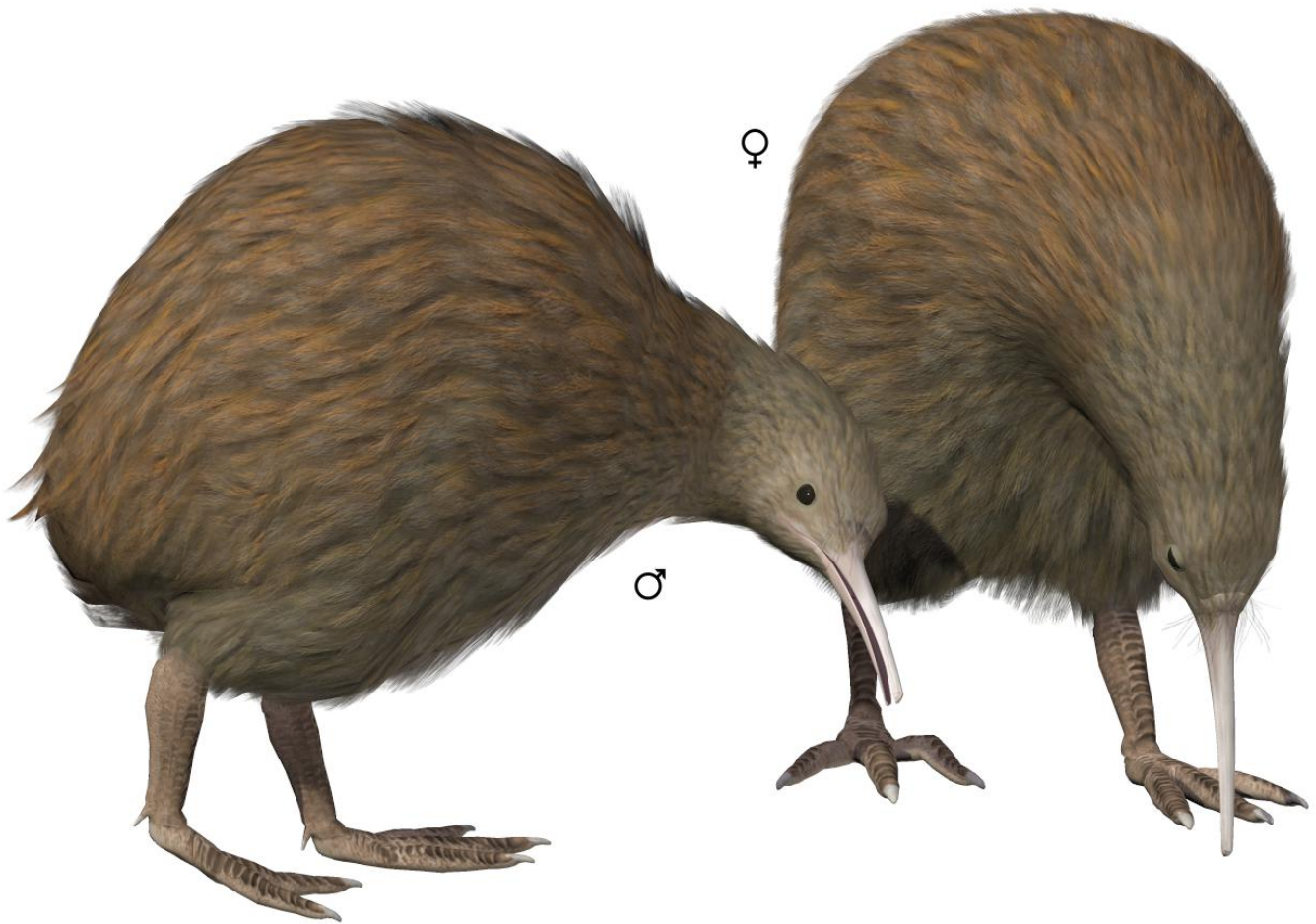
Common Name: Northern Brown Kiwi

Māori Name: Tokoeka

Scientific Name: *Apteryx mantelli*

Size: 19.7-25.6 inches (50-65 cm); **Bill Length:** 4.3-6.1 inches (11-15.5 cm) in the male, 5.1-8 inches (13-20.5 cm) in the female.

Habitat: Oceania; endemic to New Zealand. Found on the North Island and introduced to several small neighboring islands.



This kiwi is found in subtropical to temperate forests and shrub lands, especially wet forests of podocarps and hardwoods. It is found also in pine plantations and in farmlands and pastures.

Status: Endangered. **Global population:** 30,000 adult individuals or less with a declining population trend of 2.5% per year. Formerly widespread throughout

North Island and the northern part of South Island, but now the populations are fragmented. It is locally common in Northland, sparsely distributed in Coromandel Peninsula, the Bay of Plenty area, Gisborne south to the northern Ruahine Range and from Taranaki eastward to Tongariro. There are stable populations on Little Barrier Island (c. 1000 individuals), Kawau Island and Pounui Island. In 1996, the total population was estimated at 35,000 birds. It has probably declined by at least 90% since 1900, and is still declining at 2.5% per year at some unmanaged sites. The species disappeared from much of North Island following destruction of native woodland, but the largest counted population of this race (800–1000 birds) is in a commercial plantation at Waitangi. On North Island, at least 94% of chicks perish before reaching breeding age, about half of them killed by introduced predators, primarily stoat, domestic cats and domestic dogs. A single dog killed approximately 500 individuals in a period of six weeks. The continuing clearance of habitat fragments remains a threat to small populations.

Diet: Mostly invertebrates from soil and leaf litter. Prey includes spiders, beetles, millipedes, centipedes, earthworms and larva.

The kiwi searches ground and detects prey mainly by smell. its bill is then inserted and prey is uncovered by a back-and-forth levering motion of head and neck.

Nesting: Sexes are similar in plumage, however the female is larger and longer-billed than the male. It is a flightless, nocturnal bird with a rotund appearance, that lacks a visible tail, and has a very long, slightly decurved bill and short, thick legs. The plumage appears hair-like and stiffer than the Southern Brown Kiwi. The head is brownish-gray. There are long black bristles around the base of the bill. The hind neck and upper-parts are rufous-colored, with heavier dark streaking. The iris is blackish-brown and the bill is gray. The legs are lighter gray with the the scutes (bony plates over the toes) ranging from dark gray to brown. The skin between the scutes is much paler. The juvenile is similar to the adult, but with smaller, softer feathers. There is no real 'downy stage' in this species.

Kiwis are monogamous with a life-long bond. Breeding season occurs from June through February. The nest is a horizontal or slightly upward-sloping burrow which is 15.6-49.2 inches (40–125 cm) long and has a diameter of 4-8 inches (10–20 cm). It is dug by both sexes. Other times the nest will be in a well concealed, natural cavity in a log or beneath dense vegetation. Fern fronds are taken in as lining. A new nest site is used for each breeding attempt.

The clutch is 1-2 eggs, rarely 3. The egg coloring is white to greenish-white. The incubation is performed by both sexes for 75-84 days. Kiwis hatch fully feathered and leave the nest unaccompanied at 2-3 weeks of age. This kiwi has the average life expectancy of 20 years.

Cool Facts: More chicks were found to hatch in reused nests than in previously

unused burrows.

Males give a loud, rising and then falling whistle, transcribed as “ah-eel”, less than 1 second long, repeated about 20 times in a series. This is used as a contact and territorial call and is audible to about a mile (1.5 km) in distance. The female version of this is a shorter, more guttural “ah-eh”, in a somewhat slower series repeated up to 20 times. This call usually follows the male call. Both sexes also give off nasal grunts during feeding (which may be a contact call) and various growls for aggression. In aggressive encounters at territorial borders, snorting sounds and bill-snapping is frequent.

Common Name: Southern Brown Kiwi

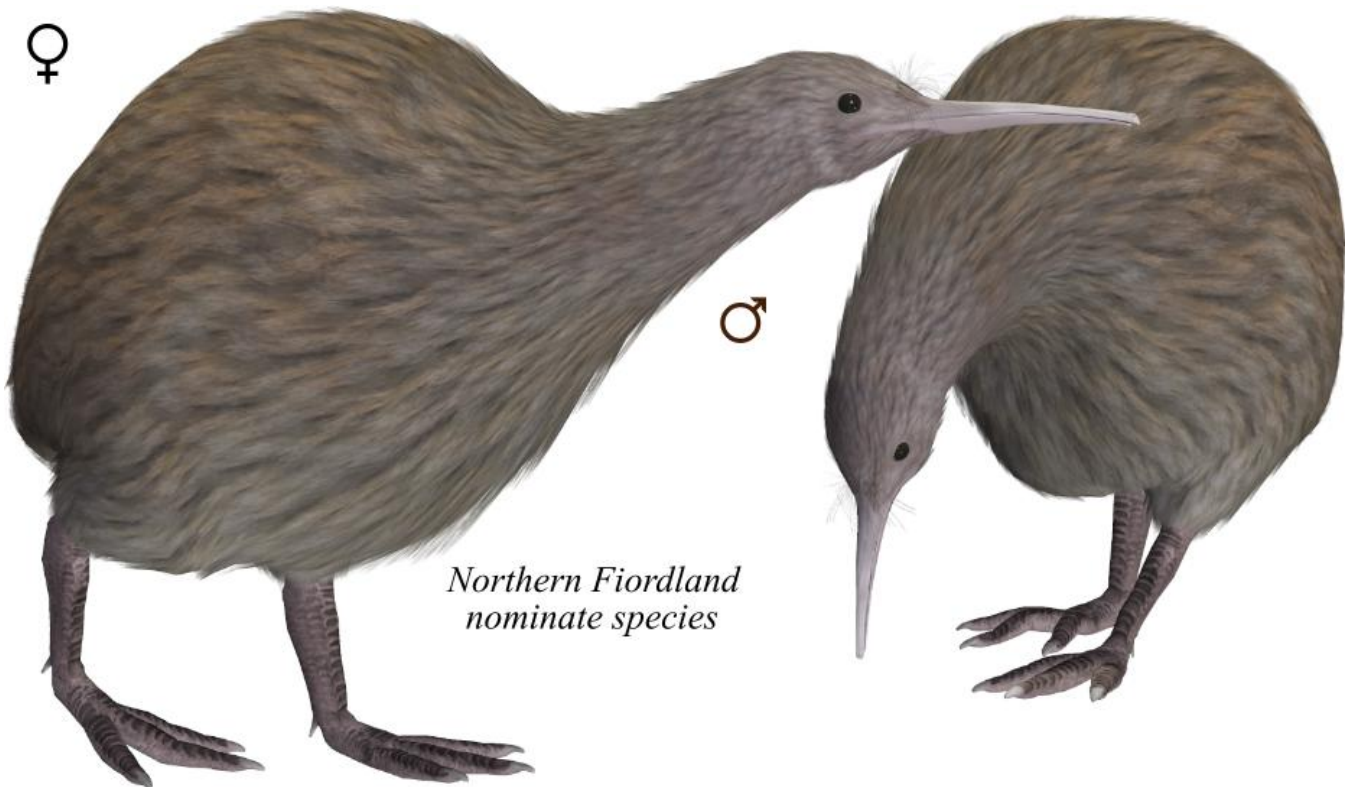
Māori Name: Tokoeka

Scientific Name: *Apteryx australis*

Size: 19.7-25.6 inches (50-65 cm); **Bill Length:** 4.3-6.1 inches (11-15.5 cm) in the male, 5.1-8 inches (13-20.5 cm) in the female.

Habitat: Oceania; endemic to New Zealand. Found on the southwestern South Island and Stewart Island.

This kiwi is found in subtropical to temperate forests and shrub lands, especially wet forests of podocarps and hardwoods. It is found also in pine plantations and in farmlands and pastures. The nominate race occurs in forests, subalpine scrub and tussock grasslands in Fiordland, and the *A. a. lawryi* race occurs in coastal sand dunes on Stewart Island.



Status: Vulnerable. **Global population:** 20,000 adult individuals or less with a declining population trend of 2% per year. The introduced brush-tailed possum and stoat eat kiwi eggs, while domestic cats eat the chicks and juveniles (up to 1,200), and dogs and ferrets kill juveniles and adults. The predation pressure is

possibly lower on Stewart Island where mustelids are absent, and dogs are prohibited from most of the island. However, cats are widespread and common. The rate of loss of native habitat has declined markedly and this is not currently considered a driver for population reductions. New avian diseases and pathogens are a potential threat, particularly with the importation of non-native but closely related ratites to New Zealand. The Haast population is at risk from random catastrophic events due to the small population size and isolation. It also suffers from low fertility rates.

Diet: Mostly invertebrates from soil and leaf litter. Prey includes spiders, beetles, millipedes, centipedes, earthworms and larva.

The kiwi searches the ground and detects prey mainly by smell. its bill is then inserted and the prey is uncovered by a back-and-forth levering motion of head and neck.

Nesting: Sexes are similar in plumage, however the female is larger and longer-billed than the male. It is a flightless nocturnal bird with rotund appearance, it lacks a visible tail, and has a very long, slightly decurved bill and short, thick legs. The plumage appears hair-like and softer than the Northern Brown Kiwi. The head is dark gray, palest in the face. There are long black bristles around the base of the bill. The hind neck and upper-parts are dark reddish-brown with black streaks (which can appear mostly black). The lower-parts are lighter gray to gray-brown. The iris is blackish-brown and the bill is ivory to pink creme. The legs are pinkish to brown. Race *A. a. lawryi* differs from the nominate race in having plumage that is less coarse and the feathers of the upper-part are smaller with the streaking finer. The bill is longer and darker (slate-colored, but often cream to light pinkish-horn, sometimes brown at the base). The legs may be blue-gray.

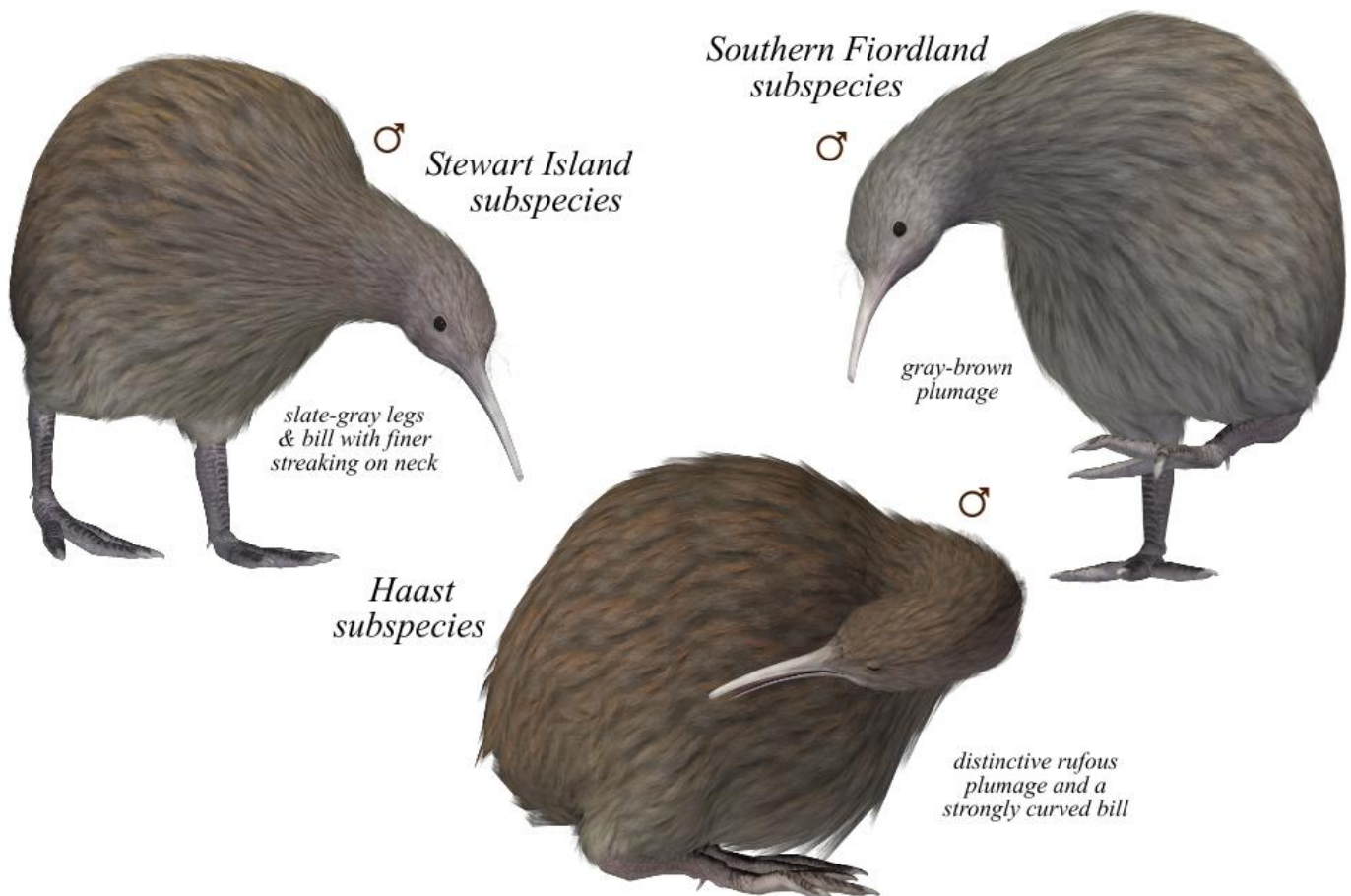
The juvenile is similar to the adult, but with smaller, softer feathers. There is no real 'downy stage' in this species.

Kiwis are monogamous with a life-long bond. Breeding season occurs from June through February. The nest is a horizontal or slightly upward-sloping burrow which is 15.6-49.2 inches (40–125 cm) long and has a diameter of 4-8 inches (10–20 cm). It is dug by both sexes. Other times the nest will be in a well concealed, natural cavity in a log or beneath dense vegetation. Fern fronds are taken in as lining. A new nest site is used for each breeding attempt.

The clutch is 1-2 eggs, with 3 being very rare. They are laid 3 to 4 weeks apart. The egg coloring is white to greenish-white. The incubation is performed by both sexes for 75-84 days. The Kiwi hatch fully feathered and leave the nest unaccompanied at 2-3 weeks of age. This kiwi has an average life expectancy of 20 years.

Cool Facts: There are several subspecies recognized:

- *A. a. lawryi*. The Stewart Island southern brown kiwi.
- *A. a. australis*. The nominate species is known as the Northern Fiordland Brown Kiwi and lives in the remote southwest part of the South Island (known as Fiordland). This sub-species of *Apteryx australis* is relatively common. There are two variants of the nominate species as well:
 - The Southern Fiordland Kiwi live in the remote southwest part of the South Island known as Fiordland. its plumage is gray-brown.
 - The 'Haast' Southern Brown Kiwi is the rarest subspecies of kiwi with only about 300 individuals. It was identified as a distinct form in 1993. It occurs only in a restricted area in the South Island's Haast Range of the Southern Alps at an altitude of 1,500 m (4,900 ft). This form is distinguished by a more strongly downcurved bill and its distinctively rufous plumage.



Common Name: Ōkārito Kiwi
Māori Name: Rowi
Scientific Name: *Apteryx rowi*

Size: 21.6 inches (55 cm); **Bill Length:** 3.7 inches (9.5 cm) in the male, 4.9 inches (12.5 cm) in the female.

Habitat: Oceania; endemic to New Zealand. Found in Ōkārito on the west coast of South Island. They have recently been introduced to Mana, Motuara and Blumine Islands, in the Cook Strait region. Before human settlement of New Zealand the species was widespread throughout the northern South Island and into the southern North Island, as far north as Lake Poukawa.

The native population is now restricted to the coastal podocarp-hardwood forest between the Ōkārito River and the Waiho River.



Status: Endangered. **Global population:** 200-400 adult individuals with an increasing population trend. Predation, mainly by introduced animals such as possums and stoats, as well as domesticated dogs and cats, remains a problem, despite a stoat-control program.

Diet: Mostly invertebrates, especially earthworms, larvae of beetles, cicadas and

moths.

It feeds by walking slowly along tapping the ground and probing its bill into leaf litter or rotten logs when food is detected.

Nesting: Sexes are similar in plumage, however the female is larger and longer-billed than the male. It is a flightless nocturnal bird with a rotund appearance, it lacks a visible tail, and has a relatively short, decurved bill and short, thick legs. The plumage appears hair-like. The head, neck and belly are noticeably gray with most individuals having some white feathering on the head, especially around the eyes. This species has very short black bristles around the base of the bill. The remainder of the bird is brown with dark streaks. The iris is blackish-brown and the bill is pink. The feet are pink or pale brown and the claws are off-white. The juvenile is similar to the adult, but with smaller, softer feathers. There is no real 'downy stage' in this species. The claws in juveniles are black.

This species is monogamous with most individuals pairing for life. Breeding season is from July through January. The nest is a concealed burrow or a natural cavity. The clutch is usually 1 egg, but can be up to 3 in a season. The egg coloring is white to greenish-white. The incubation is performed by both sexes. Kiwis hatch fully feathered and leave the nest unaccompanied at 1 week of age. This kiwi can live up to 100 years with the average life expectancy being 80 years.

Cool Facts: 'Operation Nest Egg' on Motuara Island (the removal of eggs or young chicks from the wild and rearing them in captivity until they are large enough to cope with the presence of stoats), allowed the population to increase to about 200 birds by 2000. A landscape-scale stoat trapping program, in South Ōkārito Forest from 2001-2005 largely failed to protect chicks from stoat predation 'Operation Nest Egg' was reinstated, leading to the recent rapid population growth. New populations have been established on Mana and Blumine Islands, but birds have yet to breed at these sites. The population has risen rapidly from 160 birds in 1995 to 375 in 2012 due to 'Operation Nest Egg'.

Studies of ancient DNA has revealed that, in prehuman times, this kiwi was far more widespread up the western coast of South Island, and it was present even in the lower half of North Island. The Ōkārito Kiwi Sanctuary, covering 11,000 ha of protected forest, was set up in the year 2000, specifically for the conservation of this species.

Special Thanks to...

...my **betatester** (Flinthawk) and Nerd3D (for his invaluable help in special Poser coding)

Species Accuracy and Reference Materials

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

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

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

Field Guide Sources:

"Illustrated Checklist of the Birds of the World. Volume 1: Non-passerines" by HBW and BirdLife International

Internet Sources:

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

Physical-based Rendering

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

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