

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

# Songbird ReMix Penguins

## Manual & Field Guide

### Contents

#### Manual

Introduction	3
Overview and Use	3
Conforming Crest Quick Reference	4
Tips for Vue Users	4
Creating a Songbird ReMix Bird with Poser	5
Using Conforming Crests with Poser	6
Creating a Songbird ReMix Bird with DAZ Studio	7
Using Conforming Crests with DAZ Studio	8

#### Field Guide

List of Species	9
General Information on Penguins	10
<u>Africa</u>	
African Penguin	13
<u>Antarctica</u>	
Emperor Penguin	15
Adélie Penguin	17
Chinstrap Penguin	19
Gentoo Penguin	21
<u>Galápagos</u>	
Galápagos Penguin	23
<u>New Zealand</u>	
Little Blue Penguin	25
Fiordland Penguin	27
<u>Sub-Antarctica</u>	
Southern Rockhopper Penguin	29
Resources, Credits and Thanks	31

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# Songbird ReMix Penguins

## Introduction

Penguins consist of 9 Penguin species found around the globe. Included is a good sampling from the largest of species, the Emperor Penguin, and star of the academy award winning documentary “March of the Penguins”, to the smallest, the Little Blue Penguin. There also is the most endangered Penguin on the planet from the Galápagos Islands as well as the most populous, the Chinstrap Penguin of Antarctica.

Whether you want lighthearted images of frolicking Penguins or serious scientific pursuits, Songbird Remix Penguins is bound to please...

Although “Songbird ReMix Penguins” falls under the Songbird ReMix product line umbrella, it can be used **without** any of the Songbird ReMix products and is a self-contained, standalone product and model.


## Overview and Use

Select **Figures** in Runtime Folder and go to the **Songbird ReMix** folder. Here you’ll find an assortment of files that are easily broken into 2 groups: **Conforming Parts** and **Bird Base models**. Let’s look at what they are and how you use them:

- **Bird Base Models**
  - **SBRM Penguin Model** - This model is used with all birds in this package.
- **Conforming Parts**
  - **No conforming parts are needed for this volume.** It is possible that with future add-on volumes and/or future free download Birds that they *may* be needed. (All Conforming Crests have alphanumeric icons in the lower right corners such as “**C09**”, “**C22**” or “**T03**”. This corresponds with characters in the Pose folders. All MAT/MOR files with the same icon use that particular Conforming Part. ***Be sure to read this:*** Most conforming parts are Crests, which cover the head part. When posing the Base Model, the Conforming Part will follow any Bend, Twist or Rotate Commands. It will not obey any **SCALE** or **MORPH** commands you give the Base Model. You must manually scale the Conforming Part and,

with morphs such as “OpenBeak” or “Stretch”, you must also set its counterpart in the head part of the Conforming Crest.

## Conforming Crest Quick Reference

Load Model(s)	To Create... (apply MAT/MOR files)
	<ul style="list-style-type: none"><li>• All Penguins included in this package</li></ul>

## Tips for Vue Users

Penguins imports from Poser to Vue very well. There are a few small issues...

- The EYE material should have the reflection turned down to about 10% in Vue... you can also drop the Poser EYE reflection map since the Vue environment provide some to reflect
- Dial 0.5 or more on HideTransThroat and HideTransTummy morphs found in the Transparencies section of the BODY. For some reason these don't look as good in Vue as they do in poser



## Creating a Songbird ReMix Bird with Poser

### Here's a step by step to create a bird in POSER:

1. Choose what you want to load. For this example, we'll create an "American Robin".
2. Load Poser and select **FIGURES** and the Songbird ReMix folder. Because the "American Robin" uses the basic "Songbird" base model we'll load that.
3. Go to the **POSES** folder and select the appropriate Songbird Remix library. In this case, we'll select the "American Robin" pose and apply it to our loaded Songbird ReMix base model. This pose contains morph and texture settings to turn the generic model into an "American Robin". As explained earlier in the Character Base Section, the Alphabet letter appearing on the base of a bird's Icon refers to what model it expects to adhere to. Thus the "Parrot" character is going to want the <P> Parrot Base Songbird ReMix Model. Birds with no icon usually want the Songbird Base.

## Scaling and Square Shadows in Poser

All the birds in this package have to scaled proportionally to DAZ 3D's Victoria and Michael models. The smallest of the included birds (such as the Robins) **MAY** render with a Square shadow or improper lighting. This is a bug in Poser. Poser can't figure out how to render a shadow for something really small, so it creates a square shadow. The solution is to put a larger item that casts a normal Poser shadow in the scene (even if it is off camera) and the square shadows will be fixed or BODY scale the bird to a larger size.

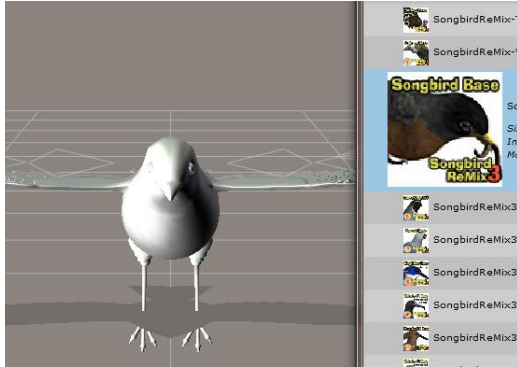


without prop off screen

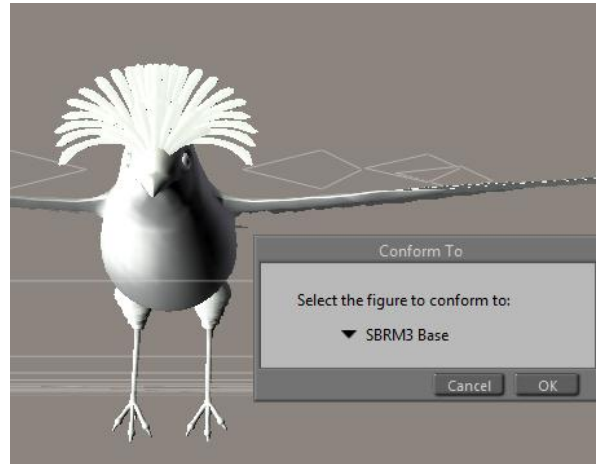


with prop off screen, lights/shadows will properly render

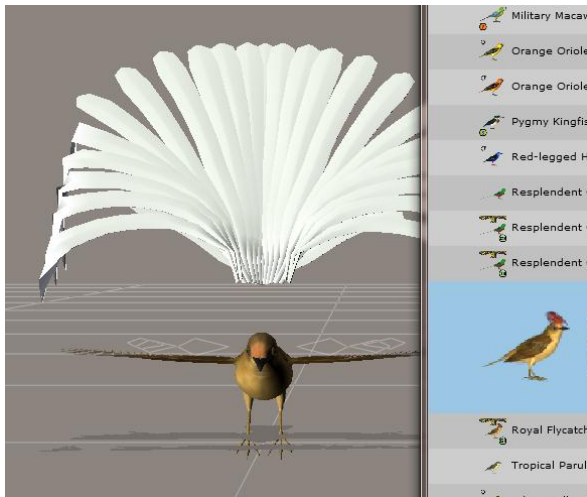
# How to build a Songbird ReMix Character with a Conforming Crest in Poser



1. In the Figures section, load a Bird base Model. Then load the appropriate conforming part for the bird you're trying to create.
2. **Conform it** to the bird base model.



3. Select the Base Model and go to **POSES**. Select and apply the appropriate Character/Material pose setting for the bird you're creating.



4. The Conforming part will look wrong. That's okay—we're going to fix that now. Select the conforming part and apply appropriate Character/Material pose for the part.

5. Voila! Your bird is done. Just remember to select the bird base when posing and often there are additional morphs in the conforming part you can use.



# Creating a Songbird ReMix Bird with Studio

## Here's a step by step to create a bird in DAZ Studio:

1. Choose what you want to load. For this example, we'll create an "American Robin".
2. Load DAZ Studio and in Studio's **Runtime** Folder, select **FIGURES** and the Songbird ReMix folder. Because the "American Robin" uses the basic "Songbird" base model we'll load that.
3. Now, select the Studio **Content** Folder and go to the **Animals : SBRM : !CreateYour Own : Characters** folder and select the appropriate Songbird Remix library. In this case, we'll select the "American Robin" pose and apply it to our loaded Songbird ReMix base model. This pose contains morph and texture settings to turn the generic model into an "American Robin". As explained earlier in the Character Base Section, the Alphabet letter appearing on the base of a bird's Icon refers to what model it expects to adhere to. Thus the "Parrot" character is going to want the **<P>** Parrot Base Songbird ReMix Model. Birds with no icon usually want the Songbird Base,

## Known Issues with DAZ|Studio

### Propagating Scale Issues

Some versions of DAZ|Studio have problems with the Propagating Scale of the Feet in Songbird ReMix. Unfortunately, the only current solution is to manually scale all the digits on each foot. To determine if manual scaling is needed, look at the SCALE settings on rFoot or lFoot parts in DAZ|Studio. If the amount is more than 100%, then all the digits (rPinky1, rPinky2, rMid1, etc.) will need to be scaled accordingly. The " ! Scale Feet" folder will automatically correct this for you.

All the characters in this product have already been corrected.

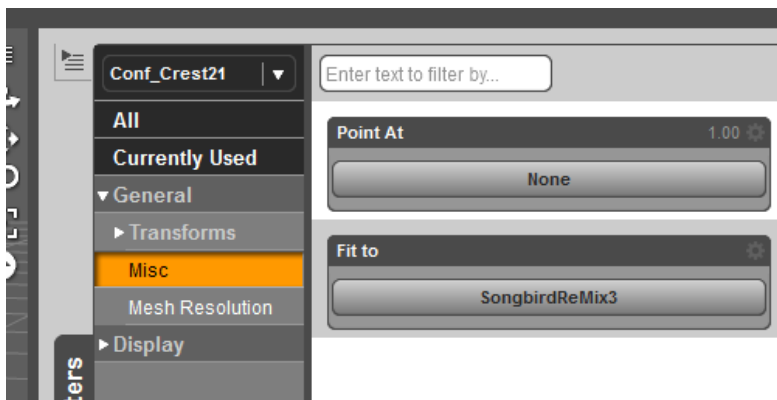
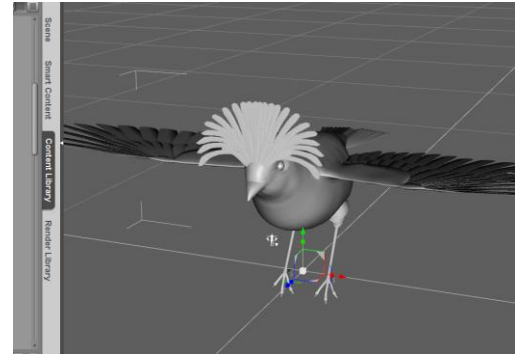
Earlier DAZ Studio versions of this product used Studio's scene files (.daz) to create pre-built birds. Unfortunately the programmers of Studio decided not to support "backwards compatibility" so older pre-built birds saved in .daz may no longer work. It is best to delete the older version of this product.

For more troubleshooting, visit the [Songbird ReMix FAQ](#)

## How to build a Songbird ReMix Character with a Conforming Crest in DAZ Studio

In the **Runtime** folder, select **Figures** and load the Songbird ReMix Model and the appropriate Conforming Crest in Studio. Select the Conforming Crest by selecting on the screen or in the **Scene** Tab.

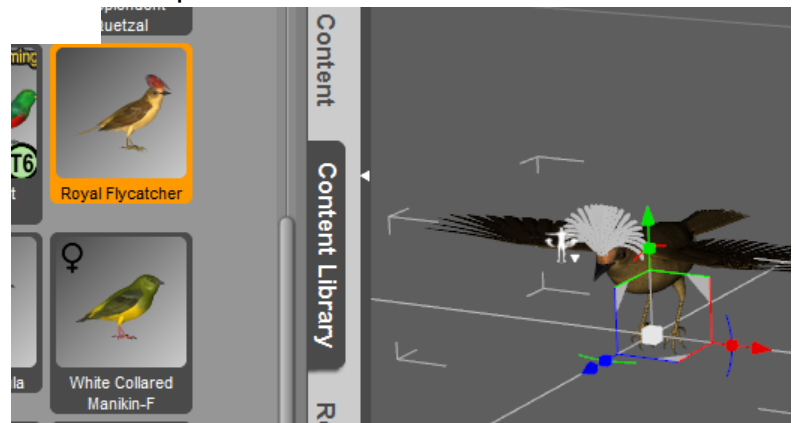
Now, using the “FIT TO” command in the Parameters Tab, Select the Songbird ReMix Model. Go back to the **Scene** Tab and select the Songbird ReMix Model.



Select the Studio **Content** Folder and go to the **Animals : SBRM : !CreateYour Own : Characters** folder and select the appropriate Songbird Remix library. Apply the Character setting to the bird base. It will probably reduce the size significantly and change the shape of the bird.

Now that the bird is sized, select the conforming part and apply the conforming part character settings.

Voila! Your bird is done. Just remember to select the bird base when posing and often there are additional morphs in the conforming part you can use.



# Songbird ReMix Penguins

## Field Guide

### Africa

African Penguin

### Antarctica

Emperor Penguin

Adélie Penguin

Chinstrap Penguin

Gentoo Penguin

### Galápagos

Galápagos Penguin

### New Zealand

Little Blue Penguin

Fiordland Penguin

### Sub-Antarctica

Southern Rockhopper Penguin

# General Information about Penguins

From Wikipedia, the free encyclopedia (edited by Ken Gilliland)

Penguins are a group of aquatic, flightless birds living almost exclusively in the Southern Hemisphere. The number of penguin species is debated. Depending on which authority is followed, penguin biodiversity varies between 17 and 20 living species, all in the subfamily Spheniscinae.

Most penguins feed on krill, fish, squid, and other forms of sea life caught while swimming underwater. They spend half of their life on land and half in the oceans.

Penguins seem to have no special fear of humans and have approached groups of explorers without hesitation. This is probably on account of there being no land predators in Antarctica or the nearby offshore islands that prey on or attack penguins. Instead, penguins are at risk at sea from predators such as the leopard seal. Typically, penguins do not approach closer than about 3 meters (10 ft) at which point they become nervous. This is also the distance that Antarctic tourists are told to keep from Penguins.

Penguins are superbly adapted to an aquatic life. Their vestigial wings have become flippers, useless for flight in the air. In the water, however, penguins are astonishingly agile. Within the smooth plumage a layer of air is preserved, ensuring buoyancy. The air layer also helps insulate the birds in cold waters. On land, penguins use their tails and wings to maintain balance for their upright stance.

All penguins are countershaded for camouflage – that is, they have a white underside and a dark (mostly black) upperside. A predator looking up from below (such as an orca or a leopard seal) has difficulty distinguishing between a white penguin belly and the reflective water surface. The dark plumage on their backs camouflages them from above.

Diving penguins reach 6 to 12 km/h, though there are reports of velocities of 27 km/h (which are more realistic in the case of startled flight). The small penguins do not usually dive deep; they catch their prey near the surface in dives that normally last only one or two minutes. Larger penguins can dive deep in case of need. Dives of the large Emperor Penguin have been recorded which reach a depth of 565 m and last up to 22 minutes.

Penguins either waddle on their feet or slide on their bellies across the snow, a movement called "tobogganing", which conserves energy while moving quickly. They also jump with both feet together if they want to move more quickly or cross steep or rocky terrain.

Penguins have an average sense of hearing for birds; this is used by parents and chicks to locate one another in crowded colonies. Their eyes are adapted for underwater vision, and are their primary means of locating prey and avoiding predators.

Penguins have a thick layer of insulating feathers which serve to keep them warm in water (heat loss in water is much greater than in air). The Emperor penguin (the largest penguin) has the largest body mass of all penguins, which further reduces relative surface area and heat loss. They also are able to control blood flow to their extremities, reducing the amount of blood which gets cold, but still keeping the extremities from freezing. In the extreme cold of the Antarctic winter, the females are at sea fishing for food leaving the males to brave the weather by themselves. They often huddle together to keep warm and rotate positions to make sure that each penguin gets a turn in the center of the heat pack.

They can drink salt water because their supraorbital gland filters excess salt from the bloodstream. The salt is excreted in a concentrated fluid from the nasal passages.

Penguins form monogamous pairs for a breeding season, though the rate the same pair recouples varies drastically. Most penguins lay two eggs in a clutch with the two largest species, the Emperor and the King Penguins, laying only one. With the exception of the Emperor Penguin in all penguins share the incubation duties. These incubation shifts can last days and even weeks as one member of the pair feeds at sea.

Penguin eggs are smaller than any other bird species when compared proportionally to the weight of the parent birds. When mothers lose a chick, they sometimes attempt to "steal" another mother's chick, usually unsuccessfully as other females in the vicinity assist the defending mother in keeping her chick. In some species, such as Emperor Penguins, young penguins assemble in large groups called crèches.

## **Threats to Penguins**

Penguins have natural predators like leopard seals, sharks, orcas, sea lions, but sadly humans are the ones responsible for many deaths of these funny looking animals

Penguins' worst problem is oil spill since the oil gets on their feathers. Penguins can't fly and therefore must surface often to breathe and are really unable to avoid being coated by oil that is on surface of the water. Penguins are often killed by empty tankers too since they must fill their tanks with water and later the oily water gets discharged into ocean which many penguins pay with their lives.

Global warming is not fully affecting penguins, at least not yet since temperature isn't still worrying for them, but further temperature increases could be another harmful factor affecting penguin population.

12 penguin species are considered "at risk" or endangered, and mostly because of human activities. The most famous ones, such as the Emperor and Chinstrap Penguins live in Antarctica and are not endangered due to their isolation. If global warming continues, isolation won't mean lot to them.

Of all penguin species African penguins are mostly at risk since their population has continuous decline because of many different reasons such as egg collection, increase of commercial fishing and of course earlier mentioned oil spills .

## **Penguins in popular culture**

Penguins are popular around the world, primarily for their unusually upright, waddling gait and (compared to other birds) lack of fear of humans. Their striking black-and-white plumage is often likened to a tuxedo suit. Mistakenly, some artists and writers have penguins based at the North Pole. This is incorrect, as there are almost no wild penguins in the northern hemisphere, except the small group on the northernmost of the Galápagos.

Penguins have been the subject of many books and films such as **Happy Feet** and **Surf's Up**, both CGI films; **March of the Penguins**, a documentary based on the migration process of Emperor Penguins; and a parody entitled **Farce of the Penguins**. Penguins have also found their way into a number of cartoons and television dramas; perhaps the most notable of these is Pingu, created by Silvio Mazzola in 1986 and covering more than 100 short episodes.

The tendency of penguins to form large groups feeds the stereotype that they all look exactly alike, a popular notion exploited by cartoonists such as Gary Larson.

**Common Name:** African Penguin  
**Scientific Name:** *Spheniscus demersus*

**Size:** 26  $\frac{3}{4}$  - 27  $\frac{1}{2}$  inches (68-70 cm)

**Habitat:** Africa. Found around the coast of South Africa. Colonies are formed on the rocky shores when they are breeding.

**Status:** Endangered. **Global Population:** 52,000 mature individuals. Major reasons include depletion of their food from overfishing and pollution from incidences such as oil spills. Most nest on islands, where they should be safe from predators, but cats, mongoose and other introduced predators are now present on many of these islands.

**Diet:** Small fishes, such as herring, anchovies and sardines, but they also eat squid and crustaceans. When foraging they can travel distances up to 110 kms on a single trip.



**Nesting:** They tend to molt in November and December and during this time they remain on land. After they have gained their new plumage they head out to sea to feed, returning in January to mate and begin nesting.

African Penguins pair up for life and breeding occurs throughout the year, although the main breeding begins in February.

African penguins lay their eggs on rocky and sandy coastal islands and breed in huge, noisy colonies. They lay two eggs in burrows, bowl-shaped depressions dug in the sand, which protect the eggs from the sun.

Like all penguins, they form tight pair bonds, and both parents incubate the eggs and feed the chicks for 2-4 months. The chicks are old enough to breed in 2-4 years.

**Cool Facts:** African penguins are closely related to the Humboldt, Galapagos and Magellanic penguins. These penguins give out a loud, braying call that is similar to that of a donkey thus they're given the nickname, "jackass penguins".

The pink glands above each eye will become pinker when the penguin is hot. This is due to more blood flowing through them so that it can be cooled by the surrounding air.

African penguins have an average swimming speed of 7 km/hr but they can reach speeds of 20 km/hr when they are hunting. They dive to an average depth of 30 m but they can dive deeper and they can stay submerged for up to 2.5 minutes.

Predators of African Penguins include sharks, cape fur seals and killer whales. On land their eggs and chicks fall prey to mongoose, genet, cats, dogs and kelp gulls.

**Common Name:** Emperor Penguin  
**Scientific Name:** *Aptenodytes forsteri*

**Size:** 42 inches (110 cm)

**Habitat:** Antarctica. Emperor Penguins are found circumpolar around Antarctica. They are social birds and they feed, travel and nest in groups. They are active during the day or night and from January to March they disperse into the ocean.

**Status:** Least Concern. **Global Population:** 270,000 - 350,000 mature individuals. Global warming is considered a threat.



**Diet:** Small fish, squid and crustaceans. They mainly dive to around 50 m (164 ft) to forage for food and one of their feeding strategies is to blow bubbles into cracks in the ice to flush out any fish that may be hiding.

**Breeding:** Emperor Penguins breed in winter and will travel approximately 90 km inland to their breeding site. In May or June the female will lay 1 egg that weighs approximately 450g then she leaves it with the male while she goes out to sea to feed and build up her nutritional reserves.

Male Emperor Penguins have an abdominal fold between their legs and lower abdomen that is known as their "brood pouch". This protects their egg and chick during the breeding season.

The male carries the egg on his feet and protects it with a pouch of feathery skin. He incubates it for approximately 65 days and during this time he will not feed, surviving on the fat reserves he has built up. To protect themselves against the cold, severe weather Emperor Penguins huddle together in what is known as the "turtle formation". The huddles can consist of 10 or hundreds of birds and each bird leans forward on a neighbor. Those on the outside shuffle slowly around the edge producing a churning action that gives each bird a turn in the middle. All the males huddle together to keep warm while they wait for their egg to hatch and the female to return.

In spring the female returns and the chick emerges from its egg. If the chick hatches before the female has returned with food, the male will produce a milky substance from a gland in his digestive system to feed the chick. After the female has returned the males then leave to go out to sea to feed, later returning to help rear the chick.

When the chicks are approximately 2 months old they will join other young penguins in a creche, but they are still fed by their parents. After approximately 5 months the young birds and their parents will return to the sea to feed for the rest of the summer.

Emperor Penguins become sexually mature at around 5 years of age. Those that are not of breeding age remain at the edge of the sea during the winter months, while the breeding adults make the trek inland.

**Cool Facts:** Emperor Penguins are the largest species of Penguin. Emperor Penguins are the 5th heaviest bird currently in existence. Emperor Penguins swim at speeds of 6 - 9 Km/hr (4 - 6 mph) but they can reach speeds of 19 km/hr (12 mph) in short bursts.

The call of each Emperor Penguin is distinct and males and females can be identified by their differing calls. On land they alternate between walking and "tobogganing" along on their stomachs, propelling themselves with their feet and wings.

The main predators of Emperor Penguins are leopard seals, killer whales, sharks, skua and Antarctic giant petrels.

**Common Name:** Adélie Penguin  
**Scientific Name:** *Pygoscelis adeliae*

**Size:** 18-24 inches (46-61 cm)

**Habitat:** Antarctica. Found in the Antarctic and the surrounding islands. They come ashore to breed in large colonies but they spend the winter months at sea.

**Status:** Least Concern. **Global Population:** 4,000,000 - 5,220,000 mature individuals. Global warming is considered a threat.

**Diet:** Krill, but they will also eat fish. They mainly make shallow foraging dives of 20 m but they can dive to depths in the region of 175 m.

**Nesting:** Adélie Penguins come ashore during September and October to breed. They nest in colonies containing thousands of birds and there is fierce competition for nesting sites. A breeding pair will construct a nest by scraping the



ground and lining it with pebbles, often stealing pebbles from a neighbors' nest.

The female will lay two greenish/white eggs in early November and both parents will share incubation duties. After approximately 35 days the chicks hatch and even though the eggs hatch close together, one chick is usually stronger than the other. Both parents closely care for and feed the chicks for two to three weeks but if food is scarce the smaller chick will rarely survive.

The chicks grow rapidly and after 3 - 4 weeks they join crèches with other chicks to enable both parents to go to sea to feed and catch food for them. By March the chicks can swim and are ready to go to sea. Baby Adélie penguins grow the fastest of all penguins.

**Cool Facts:** Adélie Penguins were named after the wife of the French explorer Admiral Durmont d'Urville. They live 10-15 years.

Apart from the storm petrel, Adélie Penguins are the most southerly distributed of all sea birds. They are the smallest of the Antarctic penguins. They build nests of stones, and will fight over the best rocks.

They are strong swimmers and can jump straight out of the water onto the land. They love to sled down icy hills on their bellies. They are very playful. The main predators of Adélie Penguins are leopard seals. Eggs and chicks fall prey to skuas.

**Common Name:** Chinstrap Penguin  
**Scientific Name:** *Pygoscelis antarctica*

**Size:** 15 ¾ inches (40 cm)

**Habitat:** Antarctica; Circumpolar around Antarctica. They live in large colonies all around Antarctica, but mainly on the South Sandwich Islands. One colony is believed to contain 10 million individuals. They leave their colonies and move north of the pack ice for the winter months.

**Status:** Least Concern. **Global Population:** 4,000,000 - 5,220,000 mature individuals. Global warming is considered a threat.



**Diet:** Krill and small shoaling fish. They feed by diving for prey close to their colonies, each dive being less than 1 minute long and no more than 61 m in depth. They are considered to be near shore feeders, although they can occasionally be seen in the open sea.

**Nesting:** Chinstrap Penguins build their nests from stones and when complete they are approximately 40 cms in diameter and 15 cms in height. They lay two eggs which are incubated by both parents; they alternate every 5 - 10 days.

After 5 - 6 weeks the eggs hatch but the chicks remain in the nest for a further 20 - 30 days before they join other young penguins in a crèche. The young penguins are colored grey on their back and white on their front.

After 7 - 9 weeks, and after molting and gaining their adult plumage, the young penguins venture out to sea.

**Cool Facts:** Chinstrap Penguins are one of the most easily identifiable penguins due to the thin black line that runs from ear to ear under their chin. It looks like a chinstrap, which is where their name originates.

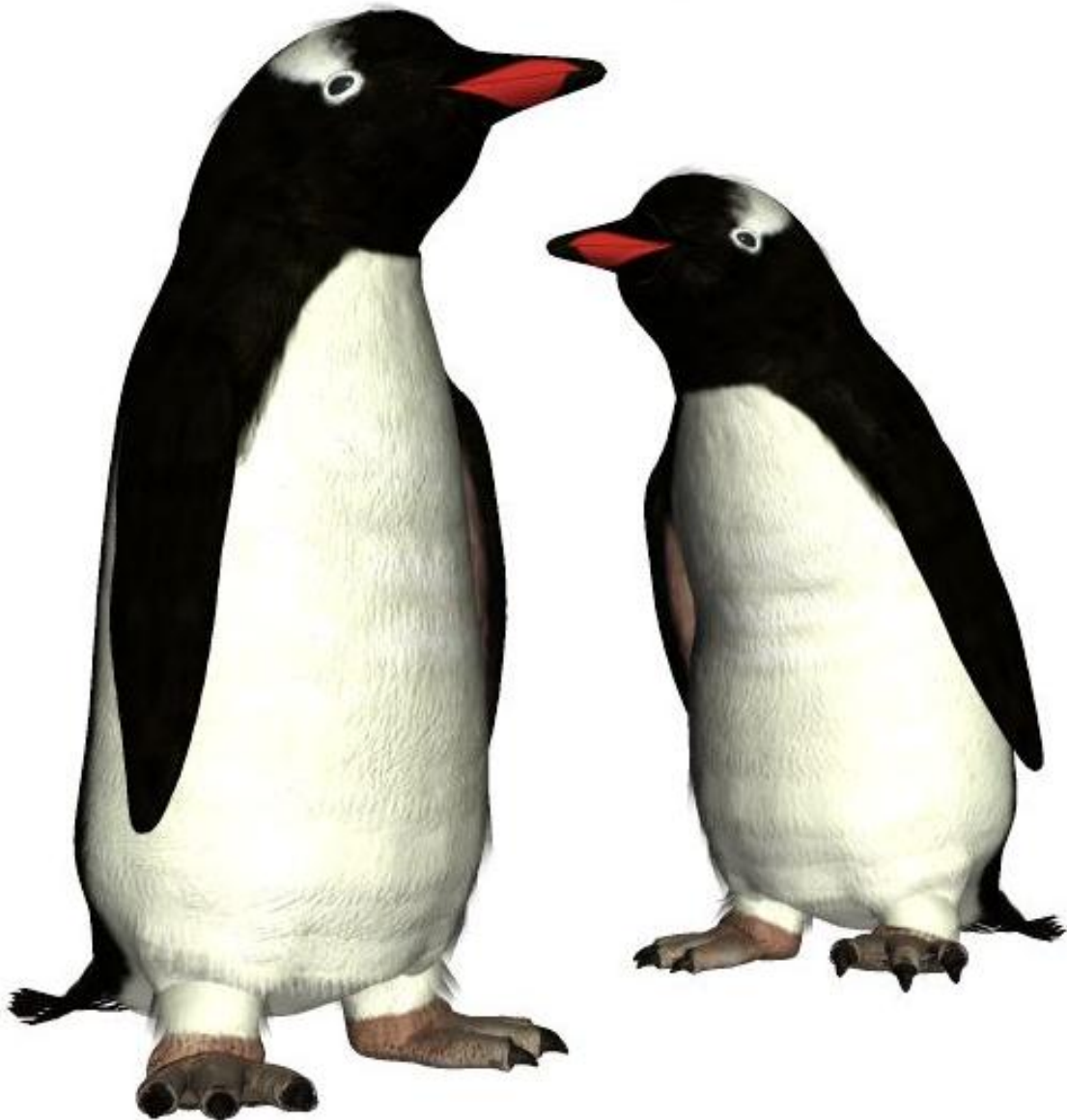
The main predators of Chin Strap Penguins are leopard seals. Eggs and chicks can fall prey to birds, such as sheathbills and the brown skua.

**Common Name:** Gentoo Penguin  
**Scientific Name:** *Pygoscelis papua*

**Size:** 30-36 inches (75-90 cm)

**Habitat:** Antarctica; circumpolar distribution and are found on islands in the Antarctic region. The main colonies are found on the Falkland Islands, South Georgia and Kerguelen Islands and smaller colonies are found on Macquarie Island, Heard Islands, South Shetland Islands and the Antarctic Peninsula.

**Status:** Near Threatened. **Global Population:** 520,000 mature individuals. This species is suspected to be undergoing an overall moderately rapid population decline, owing to rapid declines in some populations. Threats include disturbance



by humans, local pollution, and potential interactions with fisheries and global warming.

**Diet:** Mainly feed upon krill; fish only make up approximately 15% of their diet.

**Nesting:** Nest in early June. Their nests consist of a pile of stones that are roughly 20 cms high and 25 cms in diameter. The female will lay 2 eggs and the incubation is shared by both parents, alternating daily.

After 34 - 36 days the eggs will hatch and the chicks will remain in the nest for 30 days before they form crèches. Chicks are colored grey on their back with white coloration on their front. After 80 - 100 days the chicks will molt into sub-adult plumage and venture out into the sea.

It is unusual for both chicks to survive, the one that hatches first is usually stronger. However, if food is in abundance sometimes they will both survive. If Gentoo Penguins lose their first clutch of eggs they are able to lay a second clutch in the same season.

**Cool Facts:** Gentoo Penguins are the third largest species of penguin, after the emperor penguin and the king penguin.

Gentoo Penguins are the fastest underwater swimming bird and they can reach speeds up to 36 Km/hr (22.4 mph).

Predators of Gentoo Penguins include sea lions, leopard seals and killer whales. On land birds are known to prey upon chicks and steal eggs.

**Common Name:** Galápagos Penguin  
**Scientific Name:** *Spheniscus mendiculus*

**Size:** 19.6 inches (50 cm)

**Habitat:** Galápagos Islands. Mainly found on Fernandina Island and on the west coast of Isabella Island, but small populations are also found scattered on other islands in the Galapagos archipelago.

**Status:** Endangered. **Global Population:** 1,800 mature individuals. One of the world's rarest penguins. In recent decades, this species has been influenced primarily by the effects of El Niño-Southern Oscillation (ENSO) on the availability of shoaling fish. This had been most evident in 1982-83 and 1997-98, when the penguin population underwent dramatic declines of 77 % and 65 %, respectively. After this, the population entered a slow recovery phase and annual penguin censuses indicate a relatively stable, and even slightly increasing, population trend over the last nine years, however the current population size is still 48 % below the pre-El Niño population levels. Recovery from the 1982-1983 ENSO may have been slowed by the lower frequency of La Niña cold water events and above average surface water temperatures. Also, ENSO may have a disproportionate impact on females, which could result in a biased sex ratio, making population recovery slower.

Climate change may lead to an increase in the frequency of ENSO events in the future, which will also reduce the species' resilience to other



threats such as disease outbreaks, oil spills, or predation by introduced predators.

Local fishing boats operating in inshore waters in the western part of the archipelago are documented as incidentally drowning Galápagos Penguins due to floating nets and illegally-used bait fisheries in gill nets. Recent plans to establish longline fisheries in the Galápagos raises additional concern. Aside from the impact of by-catch caused by this technique, in the case of Galápagos Penguins, it is likely that an increasing demand for bait fish will dramatically increase inshore bait fisheries with all its associated problems.

Predation by introduced cats (*Felis catus*) on the Galápagos Penguin population at its main breeding site resulted in adult mortality of 49 % year<sup>-1</sup>. Also, mosquitoes (*Culex quinquefasciatus*) arrived on the Galápagos in the 1980s as a result of human actions. Since they are vectors for avian malaria, and penguins in the genus *Spheniscus* are highly susceptible to this disease these insects represent a potential new threat for the penguins. Many of the above threats are exacerbated by an expanding human population and pressure from tourists visiting the islands.

**Diet:** Small fish including mullet and sardines.

**Nesting:** Galapagos Penguins pair up for life and they will breed 2 - 3 times per year if food is plentiful. They lay 1 - 2 eggs in a cave or rock crevice to protect them from the sunlight. The eggs are incubated by both parents for 38 - 40 days but if both eggs hatch, only one chick is ever raised.

One parent always remains with the eggs or chick while the other one leaves to feed. For 30 days after hatching both parents tend to the chick and by the end of the 30 days the chick is able to be left while both adults go to sea.

When the chick is 60 - 65 days old they have molted and are ready to fledge. Females reach sexual maturity at 3 - 4 years of age and males at 4 - 6 years of age.

**Cool Facts:** Galapagos Penguins are the only penguin to live on the equator. They live 15-20 years

Predators of Galapagos Penguins and their young include crabs, snakes, birds of prey, cats, dogs, rats, sharks, seals and sea lions.

**Common Name:** Little Blue Penguin

**Scientific Name:** *Eudyptula minor*

**Size:** 16 inches (41 cm)

**Habitat:** Oceania; found in large colonies on the southern coast of Australia, Tasmania and New Zealand. They spend their days out at sea hunting for food but at night they return to their burrow or rock crevice.

**Status:** Least Concern. **Global Population:** Unknown. Global warming is considered a threat.

**Diet:** Fish, squid and crustaceans. They mainly make shallow dives up to 30 ft in depth to catch prey but sometimes they will dive down to the ocean floor.



**Nesting:** Little Penguins usually mate for life and their breeding season is variable although it usually begins in August or September. They construct nests in a sheltered rock crevice or they dig a burrow in which to lay their eggs.

Females lay 2 eggs, but depending on the availability of food supplies they may lay up to 3 clutches of eggs in one breeding season. Both parents incubate the eggs and after approximately 5 weeks the chicks hatch.

Up until the chicks are 3 weeks old they are closely cared for by both parents, but for the following 5 weeks both adults go to sea to hunt, only returning to the chicks to feed them. When the youngsters reach 8 weeks old they are ready to leave the nest and fend for themselves.

**Cool Facts:** The Little Blue is the smallest species of penguin.

The main predators of Little Penguins include southern fur seals, leopard seals, sea lions, killer whales, foxes, dogs, cats, sea eagles and large gulls. Eggs and chicks fall prey to rats, weasels, stoats, snakes and lizards.

**Common Name:** Fiordland Penguin  
**Scientific Name:** *Eudyptes pachyrynchus*

**Size:** 23 ½ inches (60 cm)

**Habitat:** New Zealand; breed along the Fiordland coast, its outlying islands and Stewart Island.

**Status:** Vulnerable. **Global Population:** 5,000 - 6,000 mature individuals. Threats include disturbance by humans, local pollution, and potential interactions with fisheries and global warming.

**Diet:** Fish, krill, and squid. They make shallow dives to go and forage and feed.



**Nesting:** Male Fiordland Penguins return to the breeding site in June, closely followed by the females. They usually return to the nesting site they used the

previous year and they construct nests in dense temperate forests, usually under bushes or in rock crevices. They nest in small colonies close to but out of sight of other breeding pairs.

In July females will lay 2 eggs and these are incubated by both parents for 30 - 36 days. They each take 5 - 12 day shifts incubating the eggs while the other one goes out to feed at sea. When the chicks hatch usually one is stronger and in most cases the weak one will not survive.

The chick is looked after by the male and fed by the female for the first few weeks, then the parents take it in turns to hunt. Sometimes the chicks join a crèche with other youngsters, but they always return to their nest to be fed. By the time the chicks reach 10 weeks old they have their adult plumage and they are ready to go to sea.

Fiordland Penguins begin to breed when they reach 5 years of age and they return to their home colony to raise their young.

**Cool Facts:** On their cheeks they have white streaks of feathers that they puff out when defending their nest.

They communicate by emitting barking calls when out at sea and by visual and vocal displays while on land.

Fiordland Penguins are very timid, usually active on land during the night, and are hardly ever seen during the day.

**Common Name:** Southern Rockhopper Penguin

**Scientific Name:** *Eudyptes chrysocome*

**Size:** 21 inches (55 cm)

**Habitat:** Sub-Antarctica; range from islands near New Zealand to islands near South Africa and around South America (Falklands). Found in large colonies on sub-Antarctic islands during the breeding season and they spend their winters at sea.

**Status:** Vulnerable. **Global Population:** 500,000-999,999 mature individuals. Increasing disturbance and pollution results from ecotourism and fishing. Food supplies may be affected by squid fisheries, climate change and shifts in marine



food webs. In Patagonian coastal waters (an important wintering ground for the Falklands population) hydrocarbon exploitation is a threat. Rock-lobster fisheries have previously used birds for bait. On Auckland, Macquarie and Kerguelen, introduced predators may affect breeding success.

**Diet:** Fish, krill, and squid.

**Nesting:** Rockhopper Penguins breed during the spring and summer and the female will lay 2 eggs in a rocky burrow. Usually the first laid, smaller egg is lost during incubation, or if it is retained it usually does not hatch.

The egg is incubated by both parents and after approximately 5 weeks it hatches. The chick is cared for by both parents and it joins a crèche with other chicks when it is approximately 3 weeks old.

When the chick reaches 10 weeks old it will have gained its full adult plumage and is ready to go to sea.

**Cool Facts:** They earned the name “rock hopper” because they breed on rocky surfaces and need to jump from rock to rock to get wherever they’re going.

Rockhoppers have the largest range and temperature range tolerance for a penguin. They are loud, aggressive birds and they use a call known as "ecstatic vocalization" to attract mates. As well as vocalizing they also communicate by head shaking, bowing, preening, and head and flipper waving.

Predators include blue sharks, fur seals and leopard seals. Eggs and chicks fall prey to skuas, petrels, kelp gulls and other sea birds.

Special Thanks to...

....my beta testers (Bea, Gary, Jan, Kelvin, Nancy, Rhonda and Sandra)

## Species Accuracy and Reference Materials

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

The author-artist has tried to make these species as accurate to their real life counterparts as possible. With the use of one generic model to create dozens of unique bird



species, some give and take is bound to occur. The texture maps were created in Painter with as much accuracy as possible. Photographic references from photographs from various Internet searches and several field guides were used.

## Field Guide Sources:

**Wikipedia** (<http://www.wikipedia.com>)

**BirdGuides.com** (<http://www.birdguides.com>)

**The Animal files** (<http://www.theanimalfiles.com>)

**International Union for the Conservation of Nature** (<http://www.iucn.org/> )

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

