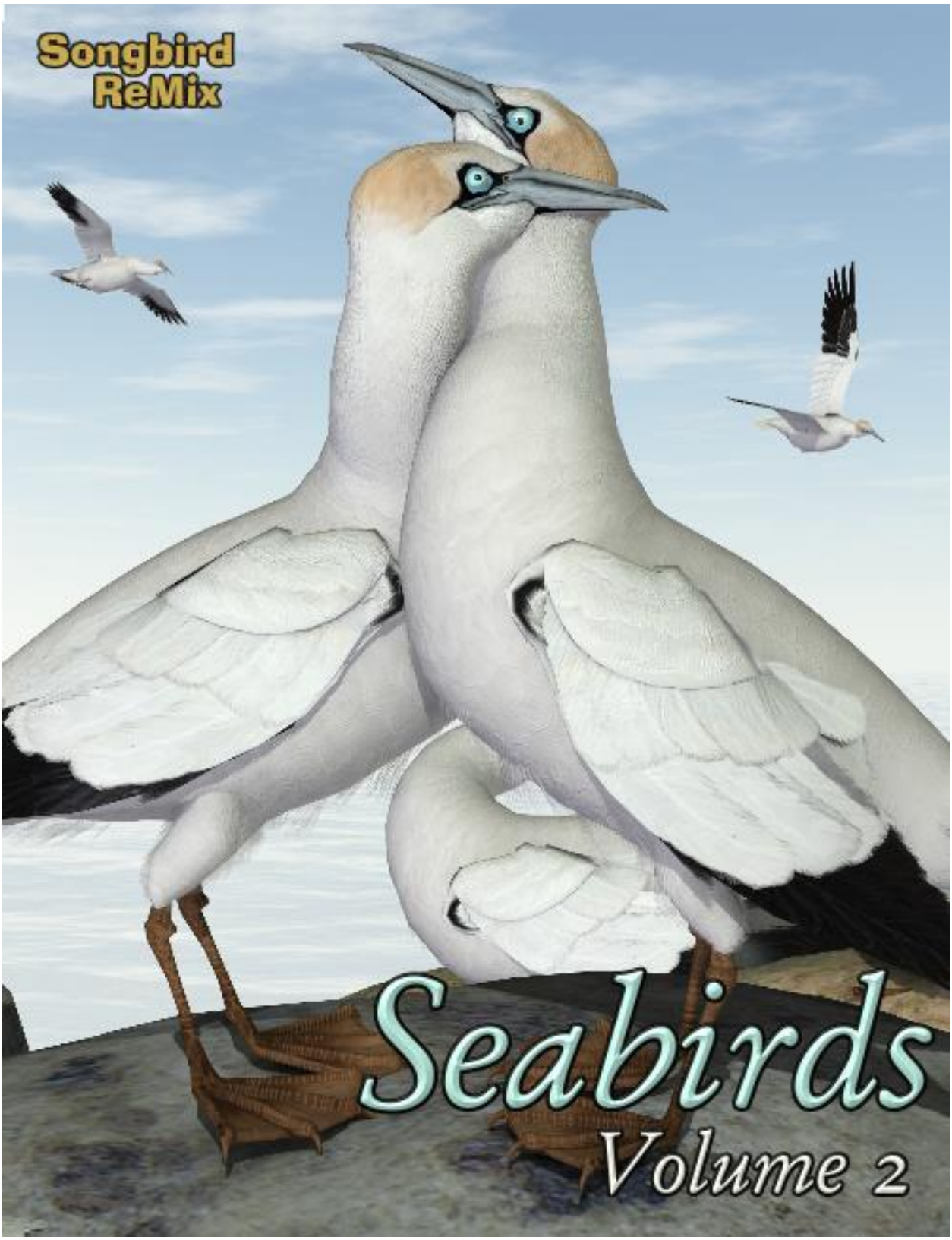

Avian Models for 3D Applications by Ken Gilliland

Songbird ReMix

Seabirds Volume II

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Introduction

"Seabirds Volume 2" expands the collection of Seabirds found in the first volume. This volume adds Albatrosses, Shearwaters, Petrels, Gannets, Boobies, Cormorants, Frigatebirds, Skuas, Gulls, Terns and Razorbills. This worldwide collection has both iconic and rare species included.

Of the more unique birds included, none is more spectacular than the male Magnificent Frigatebird which can expand an air sac in its throat to almost is complete size. Also included, in male and female form, is the very rare and endangered Abbott's Booby from Christmas Island. The three gulls included; the Caspian Gull, the Mediterranean Gull (in 3 variations) and the Western Gull will fit the "bill" whether you are rendering the coastline or a garage dump. And the impressive pirate bird of the seas, the Great Skua, is ready to rob human and fowl alike of their edible possessions.

Whether you choose to create art with a message or you are simply looking for realistic and attractive birds for your imagery, this package will easily fulfill those needs.

Overview and Use

Select **Figures** in the Runtime folder then go to the folder that contains the **Songbird ReMix**. 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 included in this volume:**
  - **Songbird ReMix3 WF1 and WF1B Palmate Base** - All bird species that are long or medium-necked Palmates (3 toed web feet) use this model (Albatrosses).
  - **Songbird ReMix3 WF2 and WF2B Totipalmate Base** - All bird species that are long or medium-necked Totipalmates (4 toed web feet) use this model (Boobies, Cormorants, Gannets and Frigatebirds).
  - **Songbird ReMix3 WF3 Gull Base** - All bird species that are short-necked Palmates (3 toed web feet) use this model (Shearwaters, Skuas, Petrels, Gulls and Terns).
  - **Songbird ReMix3 Puffin Base** - All bird species that are in the Auk family use this model (Razorbills)
- **Conforming Parts** (All Conforming Crests have alphabetical Icons that are identified in the lower right corners, for example: "C1", "C2" or "R". In the Pose folder you will find corresponding alphabetical Icons. All MAT/MOR files with the same icon use that particular Conforming Part. 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

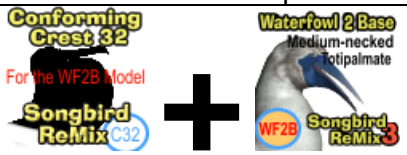
"OpenBeak" you must also set its counterpart in the head part of the Conforming Crest. So Now let's look at what's included in Conforming Parts:

- **<C32> Conforming Crest32**. For use with the Magnificent Frigatebird. There are morphs such as "Deflate" in the BODY Section. **Be sure to read this:** Because of the shape of the Frigatebird's airsac, **neck motions are severely reduced**. There is no way, apart of creating a separate model specifically for the frigatebird's male breeding plumage, to limit the neck and Body EZ-Pose controls so these controls should be used sparingly or with a trial and error process. The parts that will cause the most adverse effects are: RetractNeck(BODY), most Neck EZ-Pose Controls (BODY), and all Bend, Side and Twist controls in Neck Section 3, 4 and 5. Try using the "WF1-2 Roost" pose for the breeding male Frigatebird and tweak the pose from there.

Quick Reference Guide

When using Poser or when going the route of using DAZ Studio's "Create Your Own" Base Models, here's a chart to help you figure out what model goes with what character. Load the appropriate base model and apply the character settings.

Load Model(s)	To Create… (apply MAT/MOR files)
 Puffin Model	• Razorbill
 Long-necked Palmate	NONE
 Medium-necked Palmate	• Laysan Albatross • Shy Albatross
 Long-necked Totipalmate	• Common Shag • Japanese Cormorant • Northern Gannet

 Medium-necked Totipalmate	• Abbott's Booby (male/female)
 Medium-necked Totipalmate	• Magnificent Frigatebird
 Short-necked Palmate	• Hawaiian or Newell's Shearwater • Black-capped Petrel • Common Diving Petrel • Great Skua • Caspian Gull • Mediterranean Gull (breeding, summer & winter plumage) • Western Gull • Caspian Tern

Creating a Songbird ReMix Bird

Here's a step by step to create a bird:

1. Choose what you want to load. For this example, we'll create a "Razorbill".
2. Load Poser and select **FIGURES** and the Songbird ReMix folder. Because the "Razorbill" uses the "Puffin" base model we'll load that.
3. Go to the **POSES** folder and select the Seabirds2 Songbird Remix library. In this case, we'll select the "Razorbill" species 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 "Razorbill". 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.

Displacement in Poser 5+

In Poser, several settings will help to bring out the best in this bird set.

Under "Render Settings" (CTRL+Y) make sure you check "**Use Displacement Maps**" and (in some rare cases) the "**Remove Backfacing Polys**" boxes. In some poses, the wing morphs will expose backfacing polygons which tend to render black. Clicking the "Remove Backfacing Polys" fixes this.

Scaling and Square Shadows in Poser

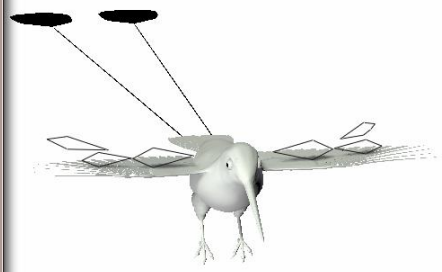
All the birds in this package have to scaled proportionally to DAZ 3D's Victoria and Michael models. The smallest of the included birds (such as the Robins) **MAY** render with a Square shadow or improper lighting. This is a bug in Poser. Poser can't figure out how to render a shadow for something really 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

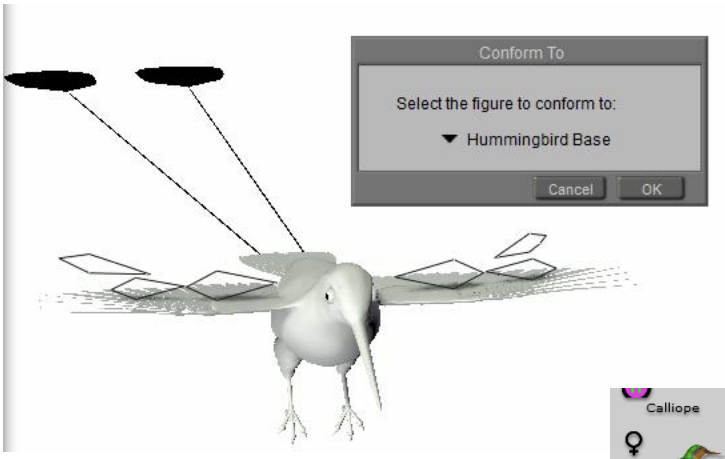
with prop off screen, lights/shadows will properly render

How to build a Songbird ReMix Character with a Conforming Part in Poser

1. In the Figures folder load a Bird base Model. Then load the appropriate conforming part for the bird you're trying to create.

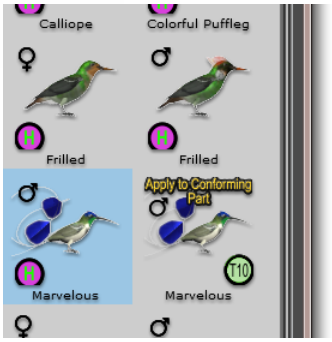


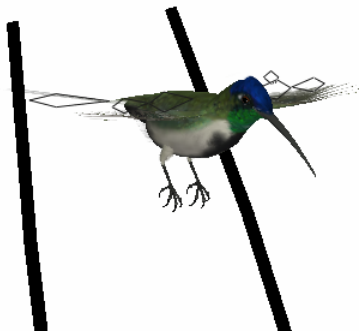
2. **Conform it** to the bird base model.



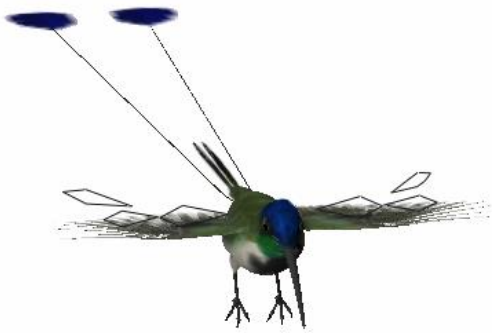
3. **Select the Base Model** and go to the **POSES folder.** Select and apply the appropriate Character/Material pose setting for the bird you're creating.

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.



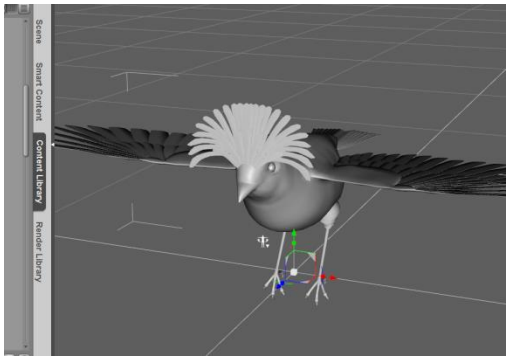
Updates and Freebies

The Songbird ReMix series is constantly growing and improving. New morphs and additions to upcoming and future products often end up benefiting existing sets with new geometry, morphs and textures.

Songbirdremix.com always has the latest updates and additions to existing Songbird ReMix products (often months before they are updated at DAZ), plus the latest digital and real bird news, tutorials, videos, all the Field Guides, free bird characters, props and much more…

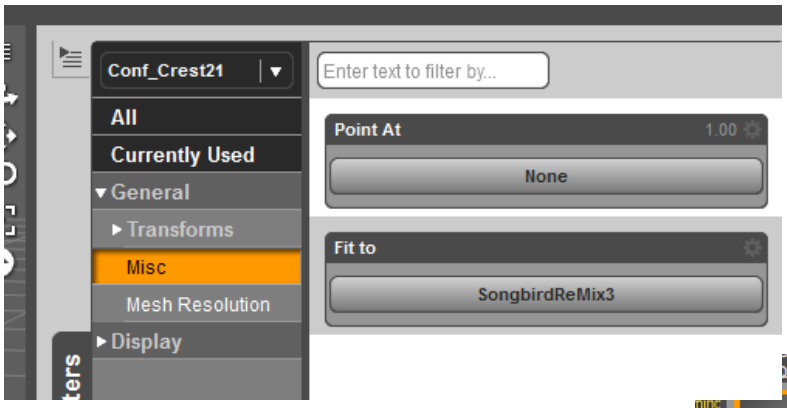
Songbird ReMix.com

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

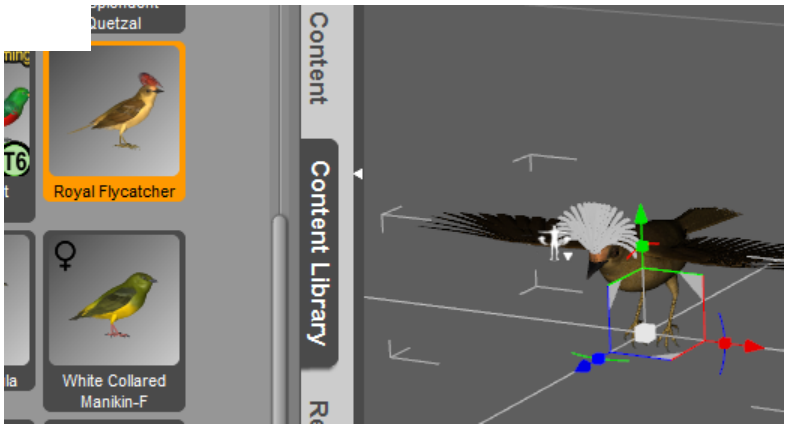


In the **Runtime** folder, select **Figures** and load the Songbird ReMix Model and the appropriate Conforming Crest in Studio. Select the Conforming Crest by selecting on the screen or in the **Scene** Tab.

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

Seabirds Volume 2

Field Guide

Laysan Albatross
Shy Albatross
Hawaiian or Newell's Shearwater
Black-capped Petrel
Common Diving Petrel
Northern Gannet
Abbott's Booby
Japanese Cormorant
Common Shag
Magnificent Frigatebird
Great Skua
Caspian Gull
Mediterranean Gull
Western Gull
Caspian Tern
Razorbill

Common Name: Laysan Albatross
Scientific Name: *Phoebastria immutabilis*

Size: 32 inches (81 cm); 195–203 cm wingspan

Habitat: Pacific Ocean; wide range across the North Pacific. Its main breeding colonies are in the Hawaiian Islands, particularly the islands of Midway and Laysan. It also nests in the Bonin Islands near Japan, the French Frigate Shoals, and has begun to colonize islands off Mexico, such as Guadalupe Island and others in the Revillagigedo Archipelago.

When away from the breeding areas they range widely from Japan to the Bering Sea and south to 15°N.

Status: Near Threatened.
Global Population: 1,180,000 mature individuals. Historically, populations were greatly reduced by feather and egg collecting in the late 1800s and early 1900s, and by high seas drift nets used for squid and salmon that were active between 1978 and 1992. Prior to its closure, the high seas driftnet fishery killed over 17,500 Laysan Albatrosses in 1990 alone. Current key threats are being caught as bycatch in pelagic and demersal longline fisheries in the North Pacific as well as in illegal high seas driftnet operations.

Analyses in 2001 estimated that pelagic longliners in the North Pacific may kill 5,000-18,000 Laysan Albatross per year, with 8,000 thought the most likely figure, while demersal longline operations in the Bering Sea and Gulf of Alaska groundfish fisheries were estimated to kill 715 birds per year. However, more recent estimates indicate a drastic reduction in

bycatch from previous years (with an estimated 83 birds taken in 2005). This is very likely attributable to the use of effective seabird avoidance measures. The bycatch rates in Japanese and Taiwanese pelagic longline fisheries in the North Pacific are still largely unknown.

Other threats include organochlorine contamination, invasive species, plastic ingestion, lead poisoning, human disturbance and conflicts with aircraft. Up to 10,000 chicks per year are potentially affected by lead poisoning from paint on buildings at Midway Atoll. Avian pox virus affects chicks on Midway and the Main Hawaiian Islands where introduced mosquitoes are present, but studies on O'ahu colonies show that fledging success was not reduced. Dogs kill adults and chicks on inhabited islands in Hawaii. Verbesina encelioides is an aggressive weed that degrades nesting habitat in the Northwestern Hawaiian Islands and introduced predators (notably the Polynesian Rat *Rattus exulans*) are an issue for colonies in Mexico and on the Main Hawaiian Islands.

Conservation measures underway… All of the major Hawaiian breeding localities are part of the US National Wildlife Refuge system or State of Hawaii Seabird Sanctuaries and, in 2006, the Papahânaumokuâkea Marine National Monument was established, encompassing all of the Northwestern Hawaiian Islands. Three breeding sites, supporting over 90% of the breeding population, are either counted directly or sampled at regular intervals. In 1991, a 50 Nautical Mile Protected Species Zone was established around the Northwestern Hawaiian Islands (primarily to protect monk seals). No longline fishing is allowed in this zone. Awareness programs and mitigation trials have been started in several major longline fleets operating within the foraging range of this species. The Hawaiian longline fishing fleet is required to use measures to reduce bycatch of seabirds. In 2006, the Western and Central Pacific Fisheries Commission adopted a measure to require large longline vessels to use at least two seabird bycatch mitigation measures when fishing north of 23 degrees North. Predator control programs are conducted at colonies in Mexico and the Main Hawaiian Islands.

Diet: Squid, but it also eats crustaceans, fish eggs and fish. It is a surface feeder. It scoops up its prey from just under the surface of the water. It does most of its feeding at night.

Breeding: Small two-tone, gull-like albatross. Upper wings, mantle, back, upper rump and tail blackish-grey. Head, lower rump and under parts white. Blackish smudge around eye. Bill pinkish with darker tip. Black-and-white under wing pattern varies between individuals having narrow black margins and variable amounts of black in the underwing coverts. Juveniles are very similar but have a greyer bill and wholly dark upper rump.

The Laysan Albatross is colonial, nesting on scattered small islands and atolls, often in huge numbers. It builds different styles of nests depending on the surroundings, these range from simple scoops in the sand to nests using vegetation. Laysan Albatrosses have a protracted breeding cycle, and breed annually, although some birds skip years.

Juvenile birds return to the colony three years after fledging, but do not mate for the first time until seven or eight years old. During these four or five years they form pair bonds with a mate that they will keep for life. Courtship entails especially elaborate 'dances' that have up to 25 ritualized movements. Occasionally the birds form homosexual pairs consisting of two females. This has been observed in the colony on the Hawaiian island Oahu, where the sex-ratio of male to female is 2 to 3. Unpaired females pair up among themselves and successfully breed. Eggs are often fathered by paired males, who "cheat" on their spouse.

The single egg is buff-white, and it may have spots. Both birds incubate the egg; the male does so first. Incubation takes about 65 days, and is followed by several weeks of brooding, after which both parents are out at sea to provide for the growing chick. The chick takes about 160 days to fledge. This time investment by the parents may explain the long courtship; both parents want to be sure the other is serious. The chicks are fed a stomach oil which is regurgitated by the parents.

Cool Facts: The Laysan Albatross is normally a silent bird, but on occasion they may be observed emitting long "moo"-ing sounds, descending whinnies, or rattles. Female Laysan albatrosses bond for life, so they can cooperatively raise their young.

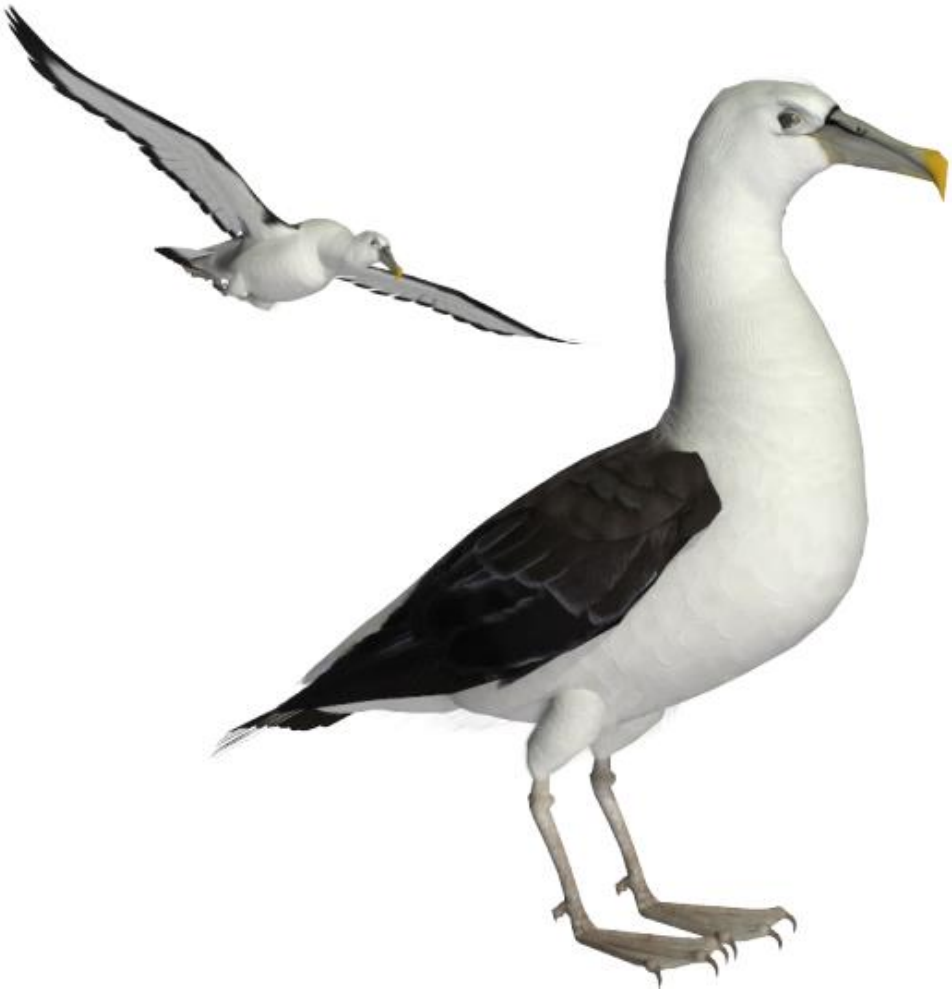
A female Laysan Albatross known as "Wisdom" is the oldest known wild bird in the United States or the Northern Hemisphere. "Wisdom" was banded by a U.S. Geological Survey researcher in 1956 and in March 2011 was seen rearing a new chick on Midway Atoll. As of 2011 "Wisdom" is estimated to be at least 60 years old.

USGS photo of Wisdom with a new chick in 2011

Common Name: Shy Albatross
Scientific Name: *Thalassarche cauta*

Size: 35-39 inches (90-100 cm); 210–260 cm wingspan

Habitat: Southern Hemisphere; endemic to Australia and it breeds on three island colonies; Albatross Island, Pedra Branca, and the Mewstone. During the breeding season, adults concentrate around southern Australia and Tasmania. Juvenile birds are known to fly as far as South Africa; otherwise, non-breeding birds can be found throughout the southern oceans, but specifics are difficult due to their similarity to the other species. It is sometimes found off the Pacific coast of the United States.



Status: Near Threatened. **Global Population:** 26,000 mature individuals. These Albatrosses comprised over 12% of seabirds caught by Japanese tuna longliners in Australian waters during 1989-1995 (up to 900 birds per year). The Japanese fishing effort ceased in 1997 and the current domestic effort is concentrated in northern waters where the likelihood of encountering albatrosses is much lower. Currently, there is limited overlap between the distribution of adult Shy Albatrosses and Australian longline fishing effort (although the impact of trawl fisheries is unknown). However, juvenile birds from the Mewstone population are known to traverse the Indian Ocean and forage in waters off South Africa, which brings them into contact with several fisheries that pose a greater bycatch threat. At the small Pedra Branca colony, interaction with the Australasian Gannet *Morus serrator* (which is increasing across its range) is thought to be the primary cause of the observed rapid

declines in the number of chicks produced each year at that colony, and extreme weather conditions may also reduce breeding success on the island. Avian pox virus has been recorded in chicks on Albatross Island (Tasmania) and has the potential to impact population trends through negative impacts to breeding success.

Diet: Fish, cephalapods, crustacea, and tunicates. It feeds by a combination of surface-seizing and some pursuit diving - it has been recorded diving as deep as 5 meters.

Breeding: It is a black, white and slate-grey bird with the characteristic black thumb mark at the base of the leading edge of the under wing. Adults have a white forehead and a crown, which is bordered on the bottom with a dark eyebrow and pale-grey face. Its mantle, tail, and upper wing are grey-black, and the rest is white. Its bill is grey-yellow with a prominent yellow culmen and yellow tip.

Shy Albatross breeds annually in colonies. Nests are a mound of soil, grass and roots, and are located on rock islands. Eggs are mostly laid in the second half of September. They hatch in December and chicks fledge mostly in April. Immature birds return to their breeding colony at least 3 years after fledging, mostly beginning breeding when at least 5 to 6 years old, nearly always in their natal colonies.

Cool Facts: This Albatross is also known as the Shy Mollymawk. It was once considered to be the same species as the Salvin's Albatross, (*Thalassarche salvini)* and the Chatham Albatross (*Thalassarche eremita*) but they were split around 2004. It was originally considered to be part of the Mollymawk (Diomedeidae) family which is similar to Shearwaters, Fulmars, Storm and Diving Petrels.

Common Name: Hawaiian or Newell's Shearwater
Scientific Name: *Puffinus newelli*

Size: 13 inches (33 cm); 76 cm wingspan

Habitat: Oceania; It breeds in at least 20 colonies on mountain slopes in the Hawaiian Islands. The main colonies are on Kauaʻi, on slopes around the Alakaʻi Plateau and probably in the Mokolea Mountains. Its distribution on the other islands is uncertain but it is known to breed on Molokaʻi and the island of Hawaiʻi and may breed on Oʻahu, Maui and Lānaʻi. From April to November it can be seen in the waters around the Hawaiian Islands, particularly around Kauaʻi. Outside the breeding season it disperses into the tropical Pacific Ocean. Its distribution at sea is little known but many move south and east into the waters of the Equatorial Counter Current. It has been recorded as far west as the Mariana Islands. In the south there are recorded sightings from Samoa in September 1977 and American Samoa in January 1993.

Status: Endangered.
Global Population: 33,000 - 38,600 mature individuals and rapidly decreasing. On Kaua`i, hurricanes Iwa and Iniki devastated the forests in 1982 and 1992, and, since the latter, the species's population has been declining. Given that a large proportion of the population breeds on Kaua`i, catastrophic events, like hurricanes, are a serious threat. Subsequent and ongoing habitat modification by alien invasive plant species, such as strawberry guava *Psidium cattleianum*, and feral pigs and goats, pose a significant threat. This is likely to be a contributing factor at one known colony abandonment. The recent establishment of the two-spotted leafhopper *Sophonia rufifascia*, which feeds on *D. linearis*, could be a further problem. Predation (e.g. by cats, rats, dogs, Barn Owls *Tyto alba* and pigs) is an additional threat. Predation of adults and juveniles by cats has been documented on Kaua`i, and rats are assumed to take eggs and chicks. Another potential predator, the

small Asian mongoose *Herpestes javanicus*, has recently been discovered on Kaua`i. An estimated 70 adults and 280 subadults each summer, and at least 340 fledglings each autumn, die as a result of collisions with power-lines and communications towers, or indirectly because of light attraction. Birds attracted by artificial lighting become exhausted and fall to the ground. Once on the ground, fledglings are unable to fly and many are killed by cars or cats and dogs, and some die from starvation or dehydration. Between 1978 and 1981, more than 5,000 individuals were grounded on Kaua`i, and over 30,000 have been recovered since 1979. On Kaua`i, approximately 1,500 fledglings are recovered annually after becoming grounded. Nine communications towers have recently been constructed on the Hawaiian islands without proper consultation, and these are now the subject of an ongoing lawsuit. A field of wind generators is planned for Lana`i, where the species potentially breeds, although this is thought to be unlikely. On Hawai`i, cinder mining has resulted in habitat loss at several colonies. The species may suffer indirect impacts from the over-fishing of tuna *Thunnus* species, which drive prey species to the ocean surface. This could have implications for the energetic costs of foraging, with potential impacts on chick growth and fledging success. Fledglings have been found with pox lesions, suggesting that disease may be affecting breeding populations.
Diet: Squid and small fish. It feeds far from land, in areas of deep water (at least 2000 meters). It dives into the water to catch its prey, swimming down to a depth of up to 10 meters using its wings to move forward. It is attracted to schools of tuna and gathers in flocks with other seabird species to catch prey driven to the surface by the tuna.

Breeding: The upper parts are black with a brown tinge while the under parts are white. The dark coloration on the face extends below the eye and is sharply separated from the white throat. There is a white patch on the flanks, extending onto the sides of the rump. The under wings are mainly white with a dark border. The under tail-coverts have a black and white pattern and appear white in the field. The bill is dark grey or brown and the legs and feet are mainly pale pink.

The nest site is a burrow dug into a steep slope, usually sheltered by uluhe (*Dicranopteris linearis* ferns). A single white egg is laid during the first two weeks of June. Both parents incubate the egg and an incubation period of 62 days has been recorded. The young birds leave the nest in October, 88-100 days after hatching. They fly out to sea and are no longer dependent on their parents.

Cool Facts: It is named after Brother Matthias Newell, a missionary who worked in Hawaii from 1886 to 1924. By 1908, it was thought to be extinct but was rediscovered in 1947 and found breeding on Kaua‘i in 1967. It is known in Hawaiian as the ‘a‘o.

The bird flies low over the water on stiff wings with a mixture of short glides and periods of rapid flapping.

Common Name: Black-capped Petrel
Scientific Name: *Pterodroma hasitata*

Size: 15.7 inches (40 cm); 96.5 cm wingspan

Habitat: North America; found in the Caribbean, it lives at sea (except for breeding). It breeds in Haiti and the Dominican Republic. There are an estimated 1,000 breeding pairs mostly in the Massifs de la Selle and de la Hotte, southern Haiti. Small numbers have recently been recorded on Dominica and in adjacent offshore waters, suggesting that it may still nest there. It now seems likely that small numbers breed in Cuba based on observation in the Sierra Maestra region (a congregation of 40+ individuals sighted in the vicinity of shoreline, vocalizations heard overhead by land-based observers and evidence of birds moving inland). It is believed extinct on Guadeloupe (to France) (where it was common in the 19th century). Black-capped petrel may have bred on Martinique (to France). Even during the breeding season it is highly pelagic, with sightings of breeding condition birds recorded off the North Carolina coast, USA. Birds disperse over the Caribbean and Atlantic from the north-east USA to north-east Brazil, with four records in European waters, but the at-sea range has contracted in the north and west.

Status: Endangered. **Global Population:** 5,000 mature individuals and decreasing. Habitat destruction and hunting for food have caused this species' decline, and remain key threats in Haiti. Birds are also predated by introduced mammals. Urbanization and concomitant increases in artificial lights may dazzle or disorientate birds into colliding with trees, wires and buildings. A telecommunications mast with stay wires erected in 1995 on Loma de Toro in Sierra de Bahoruco (the only known nesting locality in the Dominican Republic) poses a collision hazard. The proposed development of gas/oil fields off the coast of South Carolina, USA, could devastate this important feeding area. This bird has failed to make the US Federal Endangered Species list due to pressure from the energy industry and conservative elements within the US Government to keep it off the list.

Diet: Fish, invertebrate swarms, fauna associated with *Sargassum* seaweed reefs, and squid. Foraging seems concentrated at dawn, dusk, and night. Most food is captured in flight by seizing items with the bill. This petrel has also been observed touching the ocean surface with its feet (pattering). More rarely, it sits on the water with wings held high and sometimes dips its head below the surface. Nesting birds commute large distances from breeding to foraging sites.

Breeding: Medium-sized, long-winged gadfly petrel. Brownish-black cap extending to eye, nape and towards upper breast where it forms a partial collar. White hindneck. Brownish-grey mantle and upper wing. White rump and upper tail coverts. Dark brown tail. Entirely white under parts. White underwing with narrow black trailing edge, black tip, broad black edge between primaries and carpal joint. Band extends weakly towards center of wing from joint. Black bill. Pink legs, and feet pink proximally, black distally.

In early November, Black-capped Petrels assemble off the shores of their nesting islands. The petrels approach their colony at night with bizarre calls, described as cries or screams. They excavate burrows in the soil or use natural fissures in rock outcroppings as nesting sites. In a burrow about 3 feet long, one male was observed sitting on an empty nest, constructed of sticks and pine needles. This burrow appeared to have been used in previous years. Young Black-capped Petrels probably fledge between late May and early June.

Cool Facts: Black-capped Petrels are also known as Diablotín, or "little devil" because of its night-time habits and odd-sounding mating calls, which reminded villagers of the sounds of evil spirits. The extinct Jamaica Petrel (*P. caribbaea*) was a related dark form, often considered a subspecies of this bird.

One possible reason why the Black-capped Petrel is nocturnal is so that it can avoid predation by gulls, hawks or crows at the breeding sites.

Petrels don't walk well—they tend to shuffle.

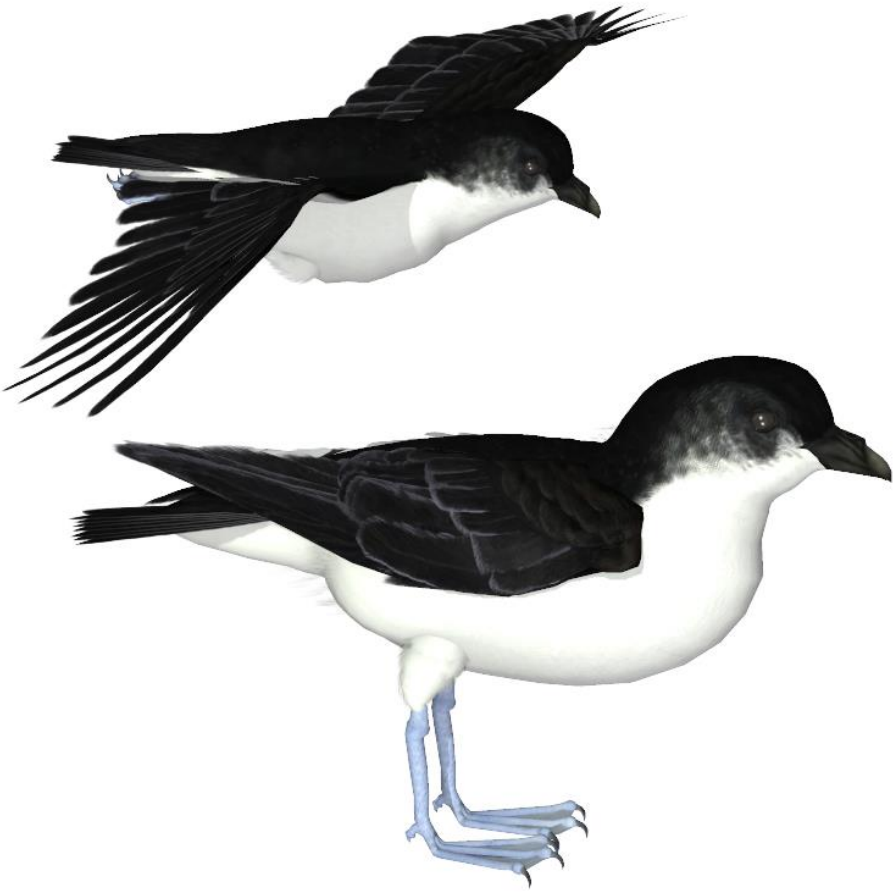
A group of petrels are collectively known as a "gallon" and a "tank" of petrels.

Common Name: Common Diving Petrel
Scientific Name: *Pelecanoides urinatrix*

Size: 7.9–9.8 inches (20-25 cm); 33-38 cm wingspan

Habitat: Southern Hemisphere; Common Diving-petrels have discrete ranges surrounding oceanic islands. These consist of South Georgia (Georgias del Sur), the Falkland Islands (Islas Malvinas), Tristan da Cunha and Gough Island (St Helena to UK) in the south Atlantic; in the south Indian Ocean, south and east of New Zealand (e.g. Antipodes Islands), and also on New Zealand's north island and Tasmania (Australia). Very little is known of their range when not breeding, but they are thought to be fairy sedentary, remaining in coastal waters adjacent to their colonies.

Status: Least Concern.
Global Population: 16,000,000 mature individuals. The population is suspected to be in decline owing to predation by invasive species.



Diet: Mostly crustaceans; they catch prey by wing-propelled diving, and are capable of diving to 60 m (200 ft). They are known to forage at night on vertically migrating plankton. Feeding is mostly done in the ocean near the shore, but sometimes in the deeper pelagic zone during non-breeding season, which is only 2 months of the year.

Breeding: The mating habits are not well documented, although pairs form monogamous relationships. Breeding colonies are large and there is about one nest per 1 square meter (11 sq. ft.). The nest is a burrow around 50 cm long with a chamber at the bottom which may or may not be lined with dried grass. Females lay a single white egg, which measures 38 x 29 mm, and is incubated for 53–55 days. The young are brooded for 10–

15 days and fledgling occurs at 45–59 days. Both parents take care of the young, which are grey-grown when hatched. The life expectancy is 6.5 years.

Cool Facts: There are six subspecies, which vary in body measurements, particularly bill size:

- *P. u. urinatrix* (J. F. Gmelin, 1789) Australia, North Island (New Zealand)
- *P. u. chathamensis* (Murphy & Harper, 1916) Stewart Island, Snares Islands, Chatham Islands (New Zealand)
- *P. u. exsul* (Salvin, 1896) South Georgia, subantarctic islands of the Indian Ocean, Auckland Islands, Antipodes Island, Campbell Island
- *P. u. dacunhae* (Nicoll, 1906) Tristan da Cunha and Gough Island
- *P. u. berard* (Gaimard, 1823) Falkland Islands
- *P. u. coppingeri* (Mathews, 1912) uncertain, probably southern Chile

Common Name: Northern Gannet
Scientific Name: *Morus bassanus*

Size: 31.9-43.3 inches (81-110 cm); 175-179 cm wingspan

Habitat: North Atlantic; Northern Gannet breeds in only six well established colonies: three in the Gulf of St. Lawrence, Quebec, and three in the North Atlantic off the coast of Newfoundland. In the eastern North Atlantic, it is distributed in 32 colonies from the coast of Brittany in France northward to Norway. Gannets winter and forage at sea.

Status: Least Concern. **Global Population:** 950,000 - 1,200,000 mature individuals. The population trend is increasing.

Diet: Fish and squid. While most seabirds' plunge-dives are relatively shallow, the Northern Gannet can dive as deep as 22 meters (72 feet). It thrusts its wings straight

out over back, touching in the middle, just before breaking the water surface. It uses its

wings and feet to swim deeper in pursuit of fish. If a fish is taken after diving, gannets swallow the fish underwater before surfacing.

Breeding: Sexes are alike. Young birds are dark brown in their first year, and gradually acquire more white in subsequent seasons until they reach maturity after five years.

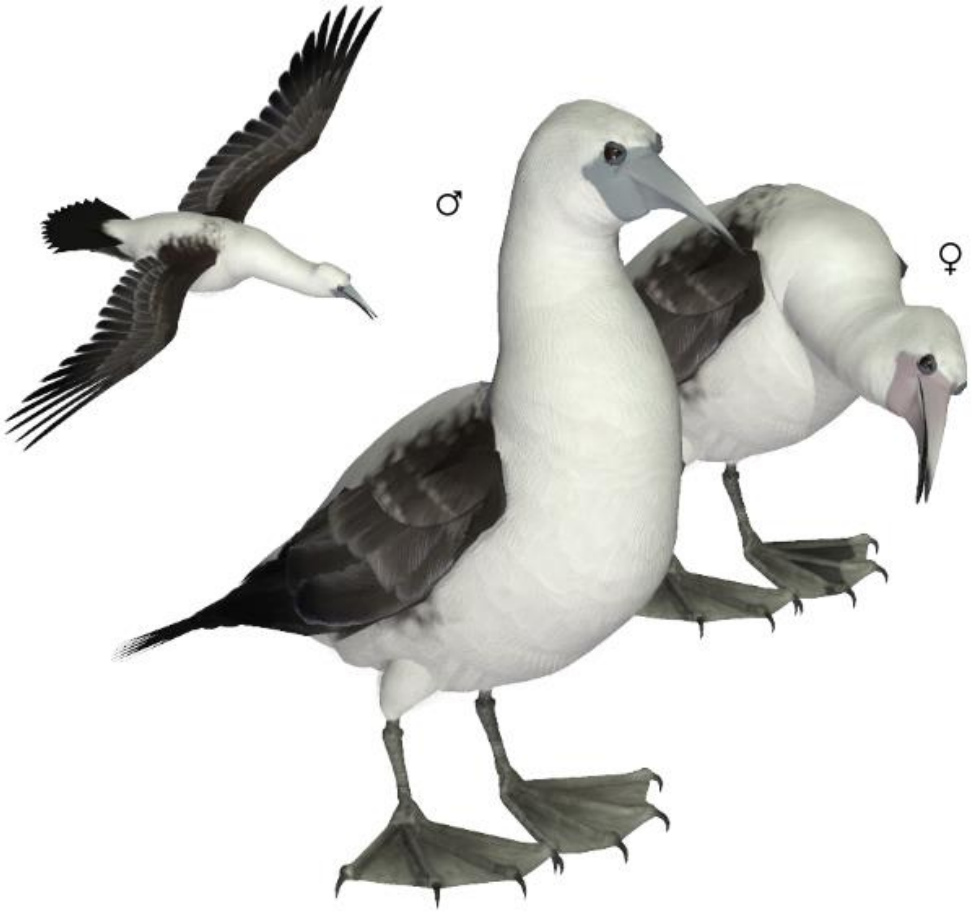
They normally nest in large colonies, on cliffs overlooking the ocean or on small rocky islands. The largest colony of this bird, with over 60,000 couples, is found on Bonaventure Island, Quebec. Gannet pairs may remain together over several seasons. They perform elaborate greeting rituals at the nest, stretching their bills and necks skywards and gently tapping bills together. Predators of eggs and nestlings include Great Black-backed and Herring Gulls, Common Ravens, ermine, and red fox. The only known natural predator of adults is the Bald Eagle, though large sharks and seals may rarely snatch a gannet out at sea.

Cool Facts: Old names for the Northern Gannet include Solan, Solan Goose, and Solant Bird. Although they are strong and agile fliers, they are clumsy in takeoffs and landings.

Common Name: Abbott's Booby
Scientific Name: *Papasula abbotti*

Size: 39 inches (79 cm); 190 cm wingspan

Habitat: Oceania; Christmas Island (an Australian territory in the eastern Indian Ocean). The Abbott's Booby now breeds only on Christmas Island, Indian Ocean, although formerly it bred on other Indian Ocean islands. At sea, it is mainly seen in the waters around Christmas Island.



Status: Endangered.
Global Population: 6,000 mature individuals and decreasing.

During 1965-1987, phosphate extraction resulted in the destruction of approximately one third of nesting habitat. Some trees in nesting areas have degenerated, but the extent of this is unquantified. In addition, exotic plants that have colonized and been introduced to old mine sites may invade existing forest and threaten habitat rehabilitation. Future habitat loss is possible through clearance for mining. In 2007, significant patches of mature secondary forest were cleared for mining. Also in 2007, a new application to mine a 250 ha area of rainforest was turned down, but has subsequently gone to appeal. Plans for a satellite launch pad on the island are not proceeding at present. The effect of satellite launches on this species is unknown. Breeding boobies are vulnerable to extreme weather events. In 1988, a cyclone destroyed a third of monitored fledglings and nest-sites. In wind-affected areas, increased turbulence causes higher adult mortality and reduces fledging success.

Artificial forest clearings, e.g. for roads and buildings, also cause wind turbulence. Possibly the most serious threat is the introduced yellow crazy ant (*Anoplolepis gracilipes*) which formed super-colonies during the 1990s and spread rapidly to cover 28% of the forest on the island. However, control efforts have been successful, and at the beginning of 2005 there were an estimated 300 ha with *A. gracilipes* present on Christmas Island, with densities considerably lower than prior to control. Despite the successes, in 2006 the ants were regarded as widespread and patchily common. Allowed to spread uncontrolled ant super-colonies may prey directly on nestlings or cause nest abandonment. However, there have been no observations of ants preying on the species, and comparison of ant distribution and densities with *P. abbotti* distribution showed no sign of nest abandonment in ant-infested areas. Super-colonies alter island ecology by killing the dominant life-form, the red crab (*Gecaroidea natalis*), and by farming scale insects which damage trees. *A. gracilipes* occurs from below ground-level to the canopy where *P. abbotti* nests. There are signs of forest die-back in a small area of breeding habitat, which may be indirectly caused or exacerbated by *A. gracilipes*, but its impact is unlikely to be severe. Less specific threats include over-fishing and marine pollution. In addition, climate change may threaten the species through changes to sea surface temperatures, rainfall patterns and El Niño Southern Oscillation, although it is unlikely to be affected by sea level rise as it nests above 100 m. At sea, birds may suffer from direct hunting and by-catch, but this has not been documented. If some birds feed close to Java this could bring them into contact with Taiwanese and Indonesian fisheries.

Diet: Fish and squid.

Breeding: Dark eye and dark-tipped bill, pale grey in male, pink in female. White head, neck and most of under parts. Black upper wing with white flecking on coverts and narrow white leading edge. Black thigh patch and tail. Black patch on mantle and back continuous with wings, remainder white. Grey legs and feet. Juvenile similar to adult male.

Parent birds may only be able to breed from about eight years old, with successful breeding no more frequently than once every two years, and a potential lifespan of 40 years.

The species nests in emergent trees in rainforest, with pairs laying a single egg, mainly in June or July. Growth of the chick is slow, with most making their first flight in December or January, and remaining dependent on the parent birds for food for about the next 230 days.

Cool Facts: It is the sole living member of the monotypic genus Papasula. This species is named for William Louis Abbott who discovered it on Assumption Island in 1892.

Common Name: Japanese Cormorant
Scientific Name: *Phalacrocorax capillatus*

Size: 23-26 inches (81-92 cm); 152 cm wingspan

Habitat: Asia; occurs on the Pacific coast of Asia, breeding on the extreme south-east coast of Russia down to North Korea and South Korea, including the central and northern coasts of Japan and the South Kuril Islands. During winter it can be found in small numbers off the eastern coast of China as far south as Taiwan.

This marine species occupies rocky coastlines and islands, rarely being found inland.

Status: Least Concern. **Global Population:** 25,000 - 100,000 mature individuals.

Diet: Fish, which it catches by pursuit-diving.

Breeding: Adults can be confused with the similar Great Cormorant. The upper wing-coverts and mantle have deep green sheen with black margins (bronze sheen on Great Cormorant), and flight-feathers also have dark green sheen. The facial skin and gular pouch are yellow, but less extensive than on the Great Cormorant. The yellow skin forms a vertical border just behind the eye then extends to a sharp point at the gape, and forms a small rounded patch on the chin and below the bill. Juveniles are duller

than adults and commonly have white and/or mottled brown on the under parts and yellow lower mandibles.

Egg laying occurs between May and July in Japan in colonies on cliffs or rocks.

Cool Facts: It is one of the species of cormorant that has been domesticated by fishermen in a tradition known in Japan as “ukai” 鵜飼. It is called “umiu” ウミウ (sea cormorant) in Japanese. The Nagara River's well-known fishing masters work with this particular species to catch ayu.

It is also known as Temminck's Cormorant.

Common Name: Common or European Shag
Scientific Name: *Phalacrocorax aristotelis*

Size: 39 inches (68-78 cm); 95-110 cm wingspan

Habitat: Eurasia and Africa; It breeds around the rocky coasts of western and southern Europe, southwest Asia and north Africa, mainly wintering in its breeding range except for northernmost birds. The European Shag can readily be seen at the following breeding locations between late April to mid-July: Farne Islands, England; Fowlsheugh, Scotland; Runde, Norway; Iceland, Faroe Islands and Galicia. The largest colony of European Shags is in the Cies Islands, with 2,500 pairs (25% of the world's population).

It occupies marine habitats but does not usually occur far from land. It shows a strong preference for rocky coasts and islands with adjacent deep, clear water, and forages over sandy and rocky sea beds. It also prefers sheltered fishing grounds such as bays and channels, although it generally avoids estuaries, shallow or muddy inlets and fresh or brackish waters.

Status: Least Concern. **Global Population:** 230,000 - 240,000 mature individuals. The overall population trend is decreasing, although some populations may be stable.
This species is persecuted (e.g. shot, intentionally drowned or poisoned) at commercial fisheries and fish farms as it is perceived to be a threat to fish stocks. It also suffers predation at nesting colonies by introduced American mink, it is vulnerable to coastal oil pollution, locally suffers from accidental entanglement and

subsequent drowning in gill-nets (fishing nets), and is susceptible to the Newcastle disease so may be threatened by future outbreaks of the virus.

Diet: A wide range of benthic, demersal and schooling, pelagic fish. Sandeels (Ammodytidae) are the dominant prey of birds in British and some Spanish populations. These are usually caught at, or near, the sea bed. Foraging rarely occurs inland.

Breeding: It has a longish tail and yellow throat-patch. Adults have a small crest in the breeding season. It is distinguished from the Great Cormorant by its smaller size, lighter build, thinner bill, and, in breeding adults, by the crest and metallic green-tinged sheen on the feathers. The shag also has a lighter, narrower beak; and the juvenile shag has darker under parts.. The European Shag's tail has 12 feathers, the Great Cormorant's 14 feathers.

It breeds on coasts, nesting on rocky ledges or in crevices or small caves. The nests are untidy heaps of rotting seaweed or twigs cemented together by the bird's own guano. The nesting season is long, beginning in late February but some nests not starting until May or even later. Three eggs are laid. Their chicks hatch without down and so they rely totally on their parents for warmth, often for a period of two months before they can fly. Fledging may occur at any time from early June to late August, exceptionally to mid-October.

Cool Facts: The green sheen on the feathers results in the alternative name "Green Cormorant". In Britain, this seabird is usually referred to as simply “the Shag”.

The European Shag is one of the deepest divers among the cormorant family. Using depth gauges, European Shags have been shown to dive to at least 45 m. In UK coastal waters, dive times are typically around 20–45 seconds, with a recovery time of around 15 seconds between dives; this is consistent with aerobic diving, i.e. the bird depends on the oxygen in its lungs and dissolved in its bloodstream during the dive. When they dive, they jump out of the water first to give extra impetus to the dive.

There are three subspecies:

- *Phalacrocorax aristotelis aristotelis* - northwestern Europe (Atlantic Ocean coasts)
- *Phalacrocorax aristotelis desmarestii* - southern Europe, southwest Asia (Mediterranean Sea and Black Sea coasts)
- *Phalacrocorax aristotelis riggenbachi* - northwest African coast

The subspecies differ slightly in bill size and the breast and leg color of young birds. Recent evidence suggests that birds on the Atlantic coast of southwest Europe are distinct from all three, and may be an as-yet undescribed subspecies.

Common Name: Magnificent Frigatebird
Scientific Name: *Fregata magnificens*

Size: 39 inches (100 cm); 215 cm wingspan

Habitat: Worldwide; widespread in the tropical Atlantic, breeding colonially in trees in Florida, the Caribbean and Cape Verde Islands. It also breeds along the Pacific coast of the Americas from Mexico to Ecuador including the Galapagos Islands.

Status: Least Concern. **Global Population:** 200,000 mature individuals. The population trend is increasing in North America.

A recent study found that the Magnificent Frigatebird on the Galapagos Islands is genetically and morphologically distinct. Based on this study, the Galapagos population has not been exchanging any genes with their mainland counterparts for several hundred thousand years. Given these findings, the Galapagos population of this tropical seabird may be its own genetically distinct species warranting a new conservation status. This small population of genetically unique Magnificent Frigatebirds is a vulnerable population. Any catastrophic event or threats by humans could wipe out the approximate 2,000 Magnificent Frigatebirds that nest on the Galapagos Islands.

Diet: Fish, squid, turtles, crabs, jellyfish, and offal. Frigatebirds snatch food from the surface of water while flying past, and they chase other birds to force them to disgorge food, which is caught in flight before it hits the water.

Breeding: This species of frigatebird is similar to other frigatebirds with this exception; it lacks a white axillary spur. Males are all black with a scarlet throat pouch which is inflated like a balloon in the breeding season. Although the feathers are black, the scapular feathers produce a purple iridescence when they reflect sunlight. Females are black, but have a white breast and lower neck sides, a brown band on the wings and a blue eye ring. Immature birds have a white head and under parts and juveniles show a distinctive diamond-shaped belly patch.

In a spectacular courtship display, male Magnificent Frigatebirds sit in varying size groups, throat sacs inflated, clattering their bills, waving their heads back and forth, quivering their wings, and calling to females flying overhead. The breeding period of the Magnificent Frigatebird is exceptionally long and young fledglings are often still being fed by the female at one year of age.

Frigatebirds nest in colonies. Nests are a flat or slightly hollowed platform of sticks and twigs, with some finer material such as grass or vines as lining. The nest is placed on flat tops of low bushes or trees.

Cool Facts: Frigatebirds are the only seabirds where the male and female look strikingly different. Frigatebirds are sometimes called “Man O' Wars”; which reflects its rakish lines, speed, and aerial piracy of other birds.

Even though the Magnificent Frigatebird spends most of its life flying over the ocean, it will rarely (if ever) land on the water. It spends days and nights on the wing, with an average ground speed of 10 km/hour, covering over 200 km before landing. They alternately climb in thermals, to altitudes occasionally as high as 2500 m, and descend to near the sea surface. The only other bird known to spend days and nights on the wing is the Common Swift.

Common Name: Great Skua
Scientific Name: *Stercorarius skua*

Size: 20-23 inches (50-58 cm); 125-140 cm wingspan

Habitat: Northern Hemisphere; breeds in Iceland, Norway, the Faroe Islands and the Scottish islands, with a few on mainland Scotland. It is a migrant, wintering at sea in the Atlantic Ocean and regularly reaching North American waters and a vagrant to Mediterranean countries.

Status: Least Concern. **Global Population:** 48,000 mature individuals. The population levels appear stable.

Diet: Fish, which it often obtains by robbing gulls, terns and even Northern Gannets of their catches. It will also directly attack and kill other seabirds, up to the size of Great Black-backed Gulls. A common technique is to fly up to a gannet in mid-air and grab it by the wing, so that it stalls and falls into the sea, where the Great Skua then physically

attacks it until it surrenders its catch.

Breeding: Sexes are alike. The adult is streaked dark greyish brown, with a blackish cap, while the juvenile is a warmer brown and unstreaked below. Its tail is short and blunt.

Breeding begins in May, and it is loosely colonial but highly territorial. It breeds on coastal moorland and rocky islands that have flat ground with some vegetation cover. They usually avoid human contact. Two spotted olive-brown eggs are laid in grass-lined nests. Most birds breed within 1 km of their birth place.

Cool Facts: Genetic studies have found surprising similarities between the Great Skua and the Pomarine Skua, despite their dissimilar appearance. Many ornithologists now believe either that the Great Skua originated as a hybrid between the Pomarine Skua and one of the southern-hemisphere species presumably as a result of vagrancy or migration across the equator by the southern species, or that the Pomarine Skua evolved from hybridization of the Great Skua and one of the small Arctic species.

Like other skuas, it will fly at the head of a human or other intruder approaching its nest. Although it cannot inflict serious damage, such an experience with a bird of this size is frightening.

In Britain, it is sometimes known by the name Bonxie, a Shetland name of unknown origin. A group of skuas are collectively known as a "shishkab" of skuas.

Common Name: Caspian Gull
Scientific Name: *Larus cachinnans*

Size: 23-26 inches (59-67 cm); 120-155 cm wingspan

Habitat: Eurasia; breeds around the Black and Caspian Seas, extending eastwards across Central Asia to north-west China. In Europe it has been spreading north and west and now breeds in Poland and eastern Germany. Some birds migrate south as far as the Red Sea and Persian Gulf while others disperse into Western Europe, in countries such as Sweden, Norway and Denmark. Small numbers are now seen regularly in Britain, especially in South-east England, East Anglia and the Midlands.

Status: Least Concern. **Global Population:** unknown number of mature individuals.

Diet: Small fish and animals by hunting or scavenging.

Breeding: Male and female look alike. The legs, wings and neck are longer than those of the Herring Gull and Yellow-legged Gull. The eye is small and often dark; the legs vary from pale pink to a pale yellowish color. The back and wings are a slightly darker shade of grey than the Herring Gull but slightly paler than the Yellow-legged Gull.

First-winter birds have a pale head with dark streaking on the back of the neck. The under parts are pale and the back is greyish. The greater and median wing-coverts have whitish tips forming two pale lines across the wing.

It typically nests on flat, low-lying ground by water unlike the Yellow-legged Gull which mainly nests on cliffs in areas where the two overlap. The breeding season starts from early April. Two or three eggs are laid and incubated for 27 to 31 days.

Cool Facts: This gull has a troubled taxonomic history. Currently, it is treated as a full species by some authorities and as a subspecies of the Herring Gull by the British Ornithologists' Union Records Committee (saying DNA samples don't offer conclusive evidence). Some authorities include the Yellow-legged Gull (*Larus michahellis*) within Larus cachinnans but it is now commonly considered to be a separate species.

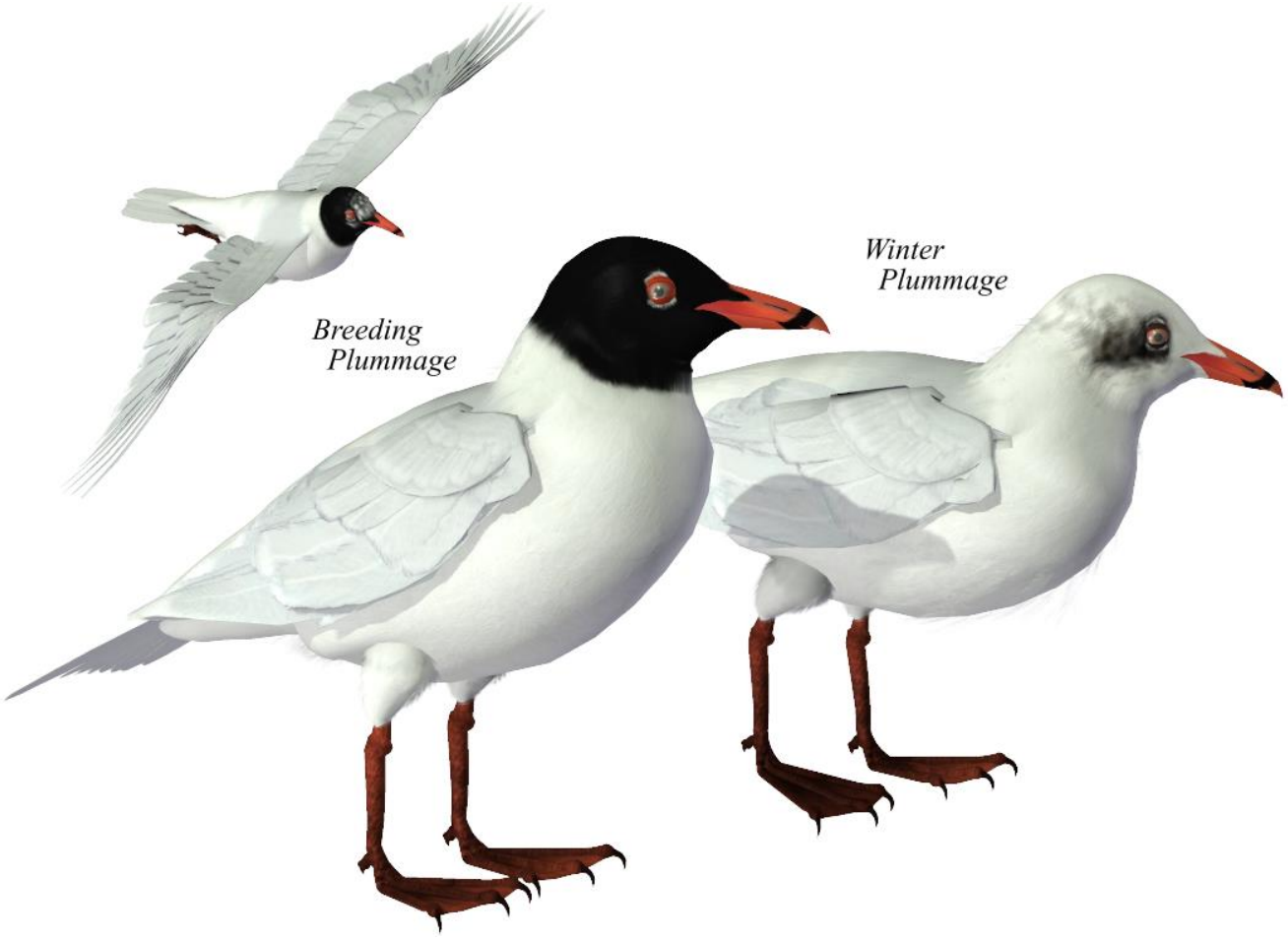
The Mongolian Gull (*Larus vegae/cachinnans mongolicus*) may be classed as a subspecies of the Caspian Gull, a subspecies of the East Siberian Gull or as a species in its own right. It breeds in Mongolia and surrounding areas and migrates south-east in winter.

Common Name: Mediterranean Gull
Scientific Name: *Larus melanocephalus*

Size: 14-15 inches (36-38 cm); 98-105 cm wingspan

Habitat: Europe; breeds almost entirely in Europe, mainly on the Black Sea coast of Ukraine, with a recent spread to the northern Caucasian Plains and Azerbaijan. It also breeds at scattered localities throughout Europe, including the Netherlands, southern France, Italy, Greece, Turkey, southern England, Belgium, Germany and Spain. It winters in the Mediterranean, the Black Sea, north-west Europe and north-west Africa.

This gull breeds in colonies in large reed beds or marshes, or on islands in lakes; where its population is small, it nests in Black-headed Gull colonies. It is highly gregarious in winter, both when feeding or in evening roosts. It is not a pelagic species, and is rarely seen at sea far from coasts.



Status: Least Concern. **Global Population:** 360,000 - 960,000 mature individuals. Populations appear stable but this species has sustained heavy losses as a result of

tourist disturbance at breeding colonies. The species may also be threatened by habitat loss resulting from tourism development, and by marine pollution (e.g. oil spills and chemical discharges).

Diet: Fish, worms, food scraps, insects, offal and carrion.

Breeding: Sexes are alike. First-winter birds resemble young Common Gulls but the black forewings and black lines through the secondaries are even more pronounced. This bird takes two years to reach maturity. At rest, non-breeding Mediterranean Gulls of all ages have a distinct dark smudge behind the eye, often with some black extending over the crown. Compared with Black-headed Gulls, they are chunkier-bodied, with a heavier, more angular head and a thicker bill.

The species breeds in colonies, usually of less than 1,000 pairs and occasionally in single pairs amidst colonies of other species. The nest is a shallow depression, situated on the ground in sparsely vegetated sites, thickets or reed beds near water. Nests are about 60 cm apart from neighboring pairs.

Cool Facts: Birders often abbreviate its name to "Med Gull". It closely resembles the Black-headed Gull but is slightly larger and does not have the black-band on the edge of the primary feathers or tail feathers.

Common Name: Western Gull
Scientific Name: *Larus occidentalis*

Size: 23.6 inches (60 cm); 147 cm wingspan

Habitat: North America; The Western Gull ranges from British Columbia, Canada to Baja California, and Mexico. It is rarely encountered inland or away from the ocean and is almost an exclusively marine gull.

Status: Vulnerable. **Global Population:** 120,000 mature individuals. Despite being a well-known bird species on the West Coast of the US, it is of some slight conservation concern given its restricted range for a gull. Western Gulls are very aggressive when defending their territories and consequently were persecuted by some as a menace. The automating of the lighthouses, and the closing of Alcatraz Prison, allowed the species to reclaim parts of its range. They are currently vulnerable to climatic events like El Niño events and oil spills.

Diet: At sea they take fish and invertebrates like krill, squid and jellyfish. They cannot dive, and feed exclusively on the surface. On land they feed on seal and sea lion carcasses, as well as cockles, limpets and snails in the intertidal zone. It also drops shellfish on to rocks to break them. They also feed on human food refuse, in human-altered habitats, including waste landfills, and taking food from people at marinas and beaches.

Breeding: Male and female look alike. Western gulls take approximately four years to reach their full plumage. In the colonies, long term pairs aggressively defend territories whose borders may shift slightly from year to year, but are maintained for the life of the male.

It nests from late April or early May, and later in the north, nesting on barren substrates in colonies on rocky islets with some herbaceous cover and gravelly beaches.

Cool Facts: It was previously considered conspecific, the same species, with the Yellow-footed Gull (*Larus livens*) of the Gulf of California. In Washington state, the Western Gull hybridizes frequently with the Glaucous-winged Gull, and may closely resemble a Thayer's Gull. The hybrids have a flatter and larger head and a thicker bill with a pronounced angle on the lower part of the bill, which distinguishes it from the smaller Thayer's Gull.

The Western Gull typically lives about 15 years, but can live to at least 25 years.

Common Name: Caspian Tern
Scientific Name: *Hydroprogne caspia*

Size: 23.6 inches (48-56 cm); 127-140 cm wingspan

Habitat: Worldwide; breeding habitat is large lakes and ocean coasts in North America (including the Great Lakes), and locally in Europe (mainly around the Baltic Sea and Black Sea), Asia, Africa, and Australasia (Australia and New Zealand). North American birds migrate to southern coasts, the West Indies and northernmost South America. European and Asian birds spend the non-breeding season in the Old World tropics. African and Australasian birds are resident or disperse over short distances.

Status: Least Concern. **Global Population:** 240,000 - 420,000 mature individuals. The overall population trend is increasing, although some populations are decreasing, stable, or have unknown trends. The largest breeding colony in North America is off the coast of Oregon. Increasing numbers of terns at this site have caused problems with

young salmon releases, some of them endangered species. Efforts are being made to move the colony to other areas, away from the fish stocking programs. Caspian Terns are protected under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) and the Migratory Bird of 1918 in the United States.

Diet: Fish; occasionally eat large insects, the young and eggs of other birds and rodents. They may fly up to 60 km from the breeding colony to catch fish at freshwater lakes or at sea by hovering high over the water and then falling into plunging dives.

Breeding: Male and female look alike. Adult birds have black legs, and a long thick red-orange bill with a small black tip. They have a white head with a black cap and white neck, belly and tail. The upper wings and back are pale grey while the under wings are

pale with dark primary feathers. In flight, the tail is less forked than other terns and wing tips black on the underside. In winter, the black cap is still present (unlike many other terns), but with some white streaking on the forehead.

Breeding is in spring and summer, with one to three pale blue green eggs, with heavy brown spotting, being laid. They nest either together in colonies, or singly in mixed colonies of other tern and gull species. The nest is on the ground among gravel and sand, or sometimes on vegetation; incubation lasts for 26–28 days. The chicks are variable in plumage pattern, from pale creamy to darker grey-brown; this variation assists adults in recognizing their own chicks when returning to the colony from feeding trips. Fledging occurs after 35–45 days. Young Caspian Terns appear to have a difficult time learning to catch fish efficiently. They stay with their parents for long periods of time, and are fed by them even on the wintering grounds. Many young terns do not return to the nesting grounds for several years, remaining instead on the wintering areas.

Cool Facts: It is the world's largest tern and was recently reclassified from the *Sterna* family to *Hydroprogne* family. This tern is sometimes confused with the Common Tern. The Caspian Tern is much larger, has blackish feet and a less defined black tip stripe as well as a less forked tail.

Terns aggressively defend their breeding colonies. They will pursue, attack, and chase potential predatory birds, and can cause bloody wounds on the heads of people who invade the colony. The entire colony will take flight, however, when a Bald Eagle flies overhead, exposing the chicks to predation from gulls.

The oldest known wild Caspian Tern lived to be more than 26 years old. Average life span of Great Lakes Caspian Terns is estimated to be 12 years.

In New Zealand, it is also known by the Maori name *Taranui*.

Common Name: Razorbill
Scientific Name: *Alca torda*

Size: 16.9 inches (43 cm); 63–68 cm wingspan

Habitat: Northern Hemisphere; distributed across sub-arctic and boreal waters of the Atlantic. Their breeding habitat is islands, rocky shores and cliffs on northern Atlantic coasts, in eastern North America as far south as Maine, and in Western Europe from northwestern Russia to northern France. North American birds migrate offshore and south, ranging from the Grand Banks of Newfoundland to New England. Eurasian birds also winter at sea, with some moving south as far as the western Mediterranean. Approximately 60 to 70 percent of the entire razorbill population breeds in Iceland.

Status: Least concern.
Global Population: 500,000-700,000 mature individuals. In 1917, Razorbills were put under the protection of the “Migratory Bird Treaty Act”. Since then populations are thought to be stable or increasing throughout major parts of its global range. The current threat for the razorbill population is the destruction of breeding sites and the conservative elements of the US Government wanting to dismantle the “Migratory Bird Treaty Act”, claiming it is “bad for business”.

Diet: Fish; especially sandeels, sprats and herrings. Razorbills dive underwater to capture their prey, using their wings to swim.

Breeding: Male and female look alike, though females are slightly smaller. Throughout the pre-laying period razorbills will socialize in large numbers. There are two types of socializing that occur. Large groups will dive and swim together in circles repeatedly

and all rise up to the surface, heads first and bills open. Secondly, large groups will swim in a line weaving across each other in the same direction.

Razorbills will choose only one partner for life and females will lay one egg per year. The pair will mate up to 80 times in a 30 day period to ensure fertilization.

Razorbills will nest along coastal cliffs in enclosed or slightly exposed crevices and will only come to land in order to breed. Both parents will spend equal amount of time incubating. Once the chick has hatched, the parents will take turns foraging for their young and will sometimes fly long distances before finding prey.

Cool Facts: It is the largest living member of the Auk family. Razorbill's average lifespan is roughly 13 years, although a bird ringed in the UK in 1967 has survived for at least 41 years—a record for the species.

There are two subspecies of Razorbill recognized by the American Ornithologists' Union. *Alca torda torda*, named by Linnaeus in 1758, occurs in eastern North America, Greenland, Bear Island (Norway) and the Baltic and White Seas. *Alca torda islandica* was named by C. L. Brehm in 1831 and occurs throughout the British Isles and Northwestern France. The two subspecies differ slightly in bill measurements. A third suspecies, *Alca torda pica*, is no longer recognized because the distinguishing characteristic, an additional furrow in the upper mandible, is now known to be age-related.

Special Thanks to…

….my beta team (FlintHawk, Linda, Jan, 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.

Sources for this Volume and Field Guide

Books, Magazines and Papers

- "**The Sibley Guide to Birds**" by David Allen Sibley. Allred A. Knopf, New York 2001
- **"Birds of Europe"** by Killian Mullarney, Lars Svensson, Dan Zetterstrom and Peter J. Grant, Princeton University Press, New Jersey 1999.
- **"Seabirds: An Identification Guide"** by Peter Harrison. Houghton Mifflin Company 1982.

Websites

- Wikipedia (http://www.wikipedia.com)
- All About Birds (http://www.allaboutbirds.org/)
- Birdlife International (http://wwwbirdlife.org)

Rendering Tips

Working with Songbird Remix morphs

Because birds in the Songbird ReMix series use generic bird bases and morphs, adding morphs upon morphs more often than not will create undesirable results. Case in point is the Parrot base which defaults with the “Parrot” morph loaded (which is found in the HEAD section (*Creations morphs : Specific Bird morphs*)). Adding the other creation morphs on top of that will be a hit and miss experience. Press **CTRL + E** to clear all the morphs in that section.

The reason why I have chosen to leave non-parrot morphs on for instance the parrot base is for experimentation and creating unique and imaginary species. In some cases, such as with a parakeet, it’s better to shape the parakeet head from the standard Songbird ReMix head than the default parrot morphs.

Another example is the BK-Close morph use. When BK-Height or BK-Length morphs are used often the BK-Close will require only a 0.7 or 0.8 setting to close the beak which normally takes a 1.0 setting. When applying a pose to a bird with a thicker or thinner than normal beak, you may need to adjust the BK-Close setting. The same is true with legs with shorten shins or thighs. One size does not fit all with a generic bird model.

In VUE…

Vue often creates dark squares on Songbird ReMix wings. I'm not really sure why this happens and there's no easy solution. One thing that will minimize the issue is to use "Poly Mesh Options" and split the model shoulders (wings) by materials. Select the "wingfeathers" material in each shoulder to change the smoothing to 60% or less. The easiest way to do this is in combination with the sub-divide method. I also often find it better to also cut down the “Highlight Global Intensity” to 40% and “Highlight Global Size” to 50% on Plumage, Wings and Beak materials in the “Highlights” section.

The best solution is to save your bird as an .obj, then go into a 3D modeller and sub-divide the "wingfeathers" material once and save the .obj. If you do this you may have to re-enter the transparent material maps. Another way, or in combination with the sub-divide method, is to try turning the "wingfeathers" material smoothing down to 60% or less (either on the Poser CR2 or in the VUE mesh editor. This corrects 95% of the issues.

Sub-dividing the "Fluff" materials helps to cut down on the rings and graying that occur in Vue on Fluff areas.

In Carrara…

Carrara can have multiple issues with Songbird Remix models. The most common are scaling issues; Carrara does not accept internal Propagating Scale (a scale variable tied to the parent that tells all attached children to do the same) so will not import Poser files correctly. Songbird ReMix uses Propagating Scale in the wings, feet and head regions. Most issues seem to be tied to the Foot Scaling. Determine the amount of scaling in the foot and scale the 8 talon parts to match each foot.

The second most common problem is weird shapes or depressions in the rump area. This is because Carrara does not understand how to interrupt the scaling of the thighs. The best and easiest solution is to set each Thigh parts YScale to 100%.

I have seen some issues (primarily with the wings exploding) when importing a Poser scene file (.pz3) into Carrara. This doesn't appear to happen all of the time. I've corrected it by going into the BODY and each WING part and turning off/on the Wing Fold morph and making sure the BODY section's Wing Shapes are all in the default setting.

There is a Carrara Fix package available in the SongbirdReMix.com downloads that provides foot scaling poses.

In DAZ|Studio…

DAZ Studio can have multiple issues with Songbird Remix models when using the Poser Version**. Download and Use the DAZ|Studio version.** I used to provide each bird as a saved scene (.daz) in Studio but unfortunately with each newer version of Studio, the .daz format from previous versions is less stable; something not loading, sometimes mismapping textures. The current approach (described in the "Creating a Bird in DAZ Studio), while less convenient, does load and display the birds correctly with all versions of DAZ Studio.

The primary issue with using the Poser version with DAZ|Studio is Scaling; DAZ|Studio does not accept internal Propagating Scale (a scale variable tied to the parent that tells all attached children to do the same) so it will not import Poser files correctly. Songbird ReMix uses Propagating Scale in the wings, feet and head regions. Most issues seem to be tied to the Foot Scaling. Determine the amount of scaling in the foot and scale the 8 talon parts to match each foot.

The second issue is that material setting will be off. The DAZ|Studio version has Material files tuned to DAZ|Studio included. This version also has Character files so it is possible to load the Poser .cr2, then apply the DAZ|Studio character setting which will fix the scaling and material issues. This method can be helped if updated Songbird Remix CR2s are available.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