

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

Songbird ReMix Shorebirds

Volume One: Wading Birds

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Songbird ReMix Shorebirds

Volume One: Wading Birds

Introduction

“Wading Birds” is a term used to classify birds commonly found along shorelines and mudflats that wade in order to forage for food. This set focuses on large waders ranging from the majestic Great Egret and Whooping Crane to the lesser known Painted Stork and Jabiru (Stork). Also included is the Sacred Ibis that the Ancient Egyptians revered and the infamous White Stork of the baby delivery legend as well as the flamboyantly pink Roseate Spoonbill.

Overview and Use

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

- **Bird Library:** This folder holds the actual species and poses for the "premade" birds. Birds are placed into a "type" folder (such as "Birds of Prey (Order Falconiformes)" which for example would hold falcons, hawks and eagles). The birds for this set can be found in the following folder(s):
 - **Cranes, Rails and relatives (Order Gruiformes)**
 - **Herons, Ibises and Pelicans (Order Pelecaniformes)**
 - **Storks (Order Ciconiiformes)**
- **Manuals:** Contains a link to the online manual for the set.
- **Props:** Contains any props that might be included in the set
- **Resources:** Items in this folder are for creating and customizing your birds
 - **Bird Base Models:** This folder has the blank, untextured model(s) used in this set. These models are primarily for users who wish to experiment with poses or customize their own species of bird. With using physical renderers such as Iray and Superfly, SubD should be turned to at least “3”. For DAZ Studios 3Delight renders, the SubD must be turned from the “High Resolution” setting to the “Base” setting (otherwise some areas will render incorrectly transparent).

Poser Use

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

DAZ Studio Use

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



Physical-based Rendering

Iray and **Superfly** requires more CPU and memory horsepower than the legacy renderers because of ray-trace bounces and higher resolution meshes needed for displacement. Poser's **Superfly** renderer will require that the "Min Transparent Bounces" be set to **at least 16** and that the "Max Transparent Bounces" be set to **at least 32** in render settings. Superfly renders may show artifacts in the head area. This is a known Poser issue and may be addressed in the future. Increasing the SubD may minimize this issue.

Birds in Flight

Long-necked shorebirds will fly differently depending on their species; some fly with their necks out stretched while other fly with their necks bunched in a "U" shaped position. These birds often have the same neck pose when not in flight.

Here's a guide to help you choose the correct pose:

Out-stretched Neck 	Cranes, Ibises, Spoonbills and Storks
"U"-shaped Neck 	Egrets and Herons

In addition, when the thighs are pulled back, often they appear 'lumpy' in the model. Each Thigh section has to '**SmoothThigh4Flight**' morph to correct this. This morph is used in the flight poses that are provided.

Posing Tips

Not all poses will be perfect fits. Because the poses are generic and many species included have varying sizes of legs, necks and bills some adjustment may be needed on some poses (notably the “WaderFeed1” pose).

Egret Classic1 & 2 Poses

The neck of “great” birds (such as the “Great Egret” or “Great Blue Heron”) are significantly longer than other herons and egrets, thus there is a “EgretClassic2” pose to handle the “extra” length of the neck.



Special Morphs for the Jabiru Stork

The Jabiru Stork is named so for the unique ability to ‘swell-up’ its neck. In the **BODY Section** under “**Specific Behaviors**”, use the ‘**InflateNeck**’ or ‘**InflateNeck2**’ morph.

Special Morph for the Snowy Egret

The Snowy Egret is named so for its coloring and fluffy head and breast feathers. In the **BODY Section** under “**Fluff Controls**” in the “**Neck Fluff Controls**” subfolder, the “**Breast-Neck Fluff Droop Bend**” morph is specifically for the Snowy Egret. It allows the Snowy Egrets’ droopy breast feathers to bend to a more realistic angle.

Where to find your birds

Type Folder	Bird Species
Cranes, Rails and relatives (Order Gruiformes)	Sandhill Crane Whooping Crane
Hérons, Ibises and Pelicans (Order Pelecaniformes)	African Spoonbill Cattle Egret Great Egret Little Egret Reddish Egret Roseate Spoonbill Royal Spoonbill Sacred Ibis Snowy Egret
Storks (Order Ciconiiformes)	Jabiru (Stork) Painted Stork White Stork Wood Stork

Where to find your poses

Type Folder	For what species?
Cranes, Rails and relatives (Order Gruiformes)	All Cranes
Hérons, Ibises and Pelicans (Order Pelecaniformes)	All Ibises, Egrets and Spoonbills
Storks (Order Ciconiiformes)	All Storks

Songbird ReMix Shorebirds

Volume One: Wading Birds

Field Guide

Wading Birds

Egrets

Great Egret
Cattle Egret
Snowy Egret
Little Egret
Reddish Egret (Dark Morph)

Ibises

Sacred Ibis

Spoonbills

Roseate Spoonbill
Royal Spoonbill
African Spoonbill

Storks

Painted Stork
Jabiru
Wood Stork
White Stork

Gruiformes

Cranes

Sandhill Crane
Whooping Crane

Common Name: Great Egret

Scientific Name: *Ardea alba* (aka *Casmerodius albus*)

Size: 39 inches (99 cm)

Habitat: Worldwide; distributed across most of the tropical and warmer temperate regions of the world, in southern Europe and Asia it is localized. In North America it is more widely distributed uniformly across the Sun Belt states in the United States. The Great Egret is partially migratory, with northern hemisphere birds moving south from areas with cold winters. It is found in inland wetlands, ponds and coastal marshes.

Status: Least Concern. **Global population:** 590,000 - 2,200,000. Although Egrets are generally a very successful species with a large and expanding range, the Great Egret is highly endangered in New Zealand, with only one breeding site at Okarito Lagoon. In North America, large numbers of Great Egrets were killed

around the end of the 19th century so that their plumes could be used to decorate hats. Numbers have since recovered as a result of conservation measures. Its range has expanded as far north as southern Canada. However, in some parts of the southern United States, its numbers have declined due to habitat loss. Nevertheless, it adapts well to human habitation and can be readily seen near wetlands and bodies of water in urban and suburban areas.

Great Egrets are protected under Australia's National Parks and Wildlife Act, also in the Agreement on the Conservation of African-Eurasian



Migratory Waterbirds (AEWA) and in the Americas under the Neotropical Migratory Bird Treaty Act.

Diet: Fish, frogs, small mammals, and occasionally small birds and reptiles. It hunts in shallow water, spearing them with its long, sharp bill. It will often wait motionless for prey, or slowly stalk its victim.

Nesting: During the breeding season, the Great Egret's bill may become darker and the lower legs lighter. In breeding plumage, delicate ornamental feathers are borne on the back. Males and females are identical in appearance; juveniles look like non-breeding adults.

It breeds in colonies in trees close to large lakes with reed beds or other extensive wetlands. It builds a bulky stick nest.

Cool Facts: The Great Egret in flight was chosen as the symbol of the National Audubon Society in 1953, which was formed in part to prevent the killing of birds for their feathers.

The Great Egret is also known as the Great White Egret, Common Egret or White Heron. It is called kōtuku in New Zealand.

It is sometimes confused with the Great White Heron in Florida, which is a white morph of the closely related Great Blue Heron.

There are four subspecies of Great Egret found in various parts of the world, which differ but very little. Differences are bare part coloration in the breeding season and size; the largest subspecies is *Ardea alba ssp. modesta*.

- *Ardea alba ssp. alba* from Europe
- *Ardea alba ssp. egretta* from Americas
- *Ardea alba ssp. melanorhynchos* from Africa
- *Ardea alba ssp. modesta* from Asia and Australasia

Common Name: Cattle Egret
Scientific Name: *Bubulcus ibis*

Size: 20 inches (50 cm)

Habitat: Worldwide; in the tropics, the subtropics and warm temperate zones (wherever there is livestock).

Status: Least Concern. **Global Population:** 3,800,000 - 7,600,000. This species has a large range, with an estimated global extent of occurrence of 10 million square km (3.8 square miles). Its global population estimated to be 3.8–6.7 million individuals. The expansion and establishment of the species over large ranges has led it to be classed as an invasive species (although little, if any impact has been noted yet).

Diet: Mostly insects found on domestic livestock; particularly flies (adults and maggots), ticks, grasshoppers, crickets and moths, as well as spiders, frogs, and earthworms. Cattle Egrets sometimes feed in shallow water but are typically found in fields and dry grassy habitats, reflecting its greater dietary reliance on terrestrial insects rather than aquatic prey.



Nesting: The sexes are similar, but the male is marginally larger and has slightly longer breeding plumes than the female; juvenile birds lack colored plumes and have a black bill.

They nests in colonies, which are usually found in woodlands near lakes or rivers, in swamps, or on small inland or coastal islands. These nesting areas are sometimes shared with other wetland birds such as herons, egrets, ibises and cormorants. The breeding season varies; within South Asia and northern India nesting begins with the onset of monsoons in May. The breeding season in

Australia is November to early January, with one brood laid per season. The North American breeding season lasts from April to October.

The male displays in a tree in the colony, using an range of ritualized behaviors such as shaking a twig and sky-pointing (raising bill vertically upwards), and the pair forms over three or four days. A new mate is chosen in each season and when re-nesting following nest failure. The nest is a small untidy platform of sticks in a tree or shrub constructed by both parents. Sticks are collected by the male and arranged by the female, and stick-stealing is rife. The clutch size can be anywhere from one to five eggs, although three or four is most common. The pale bluish-white eggs are oval-shaped. Incubation lasts around 23 days, with both sexes sharing incubation duties. The chicks are partly covered with down at hatching, but are not capable of fending for themselves; they become endothermic at 9–12 days and fully feathered in 13–21 days. They begin to leave the nest and climb around at 2 weeks, fledge at 30 days and become independent at around the 45th day.

Cool Facts: The Cattle Egret is a popular bird with cattle ranchers for its perceived role as a biocontrol of cattle parasites such as ticks and flies. A study in Australia found that Cattle Egrets reduced the number of flies that bothered cattle by pecking them directly off the skin.

The massive and rapid expansion of the Cattle Egret's range is due to its relationship with humans and their domesticated animals. Originally adapted to a symbiotic relationship with large browsing animals, it was easily able to switch to domesticated cattle and horses. As livestock keeping spread throughout the world it was able to occupy otherwise empty niches such as in various sub-Antarctic islands, including South Georgia, Marion Island, the South Sandwich Islands and the South Orkney Islands. A small flock of eight birds was also seen in Fiji in 2008.

In addition to the natural expansion of its range, Cattle Egrets have been introduced into a few areas. The species was introduced to Hawaii in 1959, and to the Chagos Archipelago in 1955. Successful releases were also made in the Seychelles and Rodrigues, but attempts to introduce the species to Mauritius failed. Numerous birds were also released by Whipsnade Zoo in England, but the species never established.

Common Name: Snowy Egret
Scientific Name: *Egretta thula*

Size: 20-27 inches (50-69 cm)

Habitat: North and South America; their breeding habitat is large inland and coastal wetlands from the lower Great Lakes and southwestern United States to South America. The breeding range in eastern North America extends along the Atlantic and Gulf Coasts from Maine to Texas, and inland along major rivers and lakes. In warmer locations, some Snowy Egrets are permanent residents;

northern populations migrate to Central America and the West Indies. They may wander north after the breeding season, very rarely venturing to Western Europe—the first bird sighted in Britain wintered in Scotland from 2001–2002.



Status: Least Concern.

Global Population: 390,000 - 1,400,000. At one time, the beautiful plumes of the Snowy Egret were in great demand by market hunters as decorations for women's hats. This reduced the population of the species to dangerously low levels. Now it is protected by law, under the Migratory Bird Treaty Act, this bird's population has rebounded.

Diet: Fish, crustaceans, and insects. They stalk prey in shallow water, often running or shuffling their feet, flushing prey into view, as well "dip-fishing" by flying with their feet just over the water. Snowy Egrets may also stand still and wait to ambush prey, or

hunt for insects stirred up by domestic animals in open fields.

Nesting: The area of the upper bill, in front of the eyes, is yellow but turns red during the breeding season, when the adults also gain recurved plumes on the back, making for a "shaggy" effect. The juvenile looks similar to the adult, but the base of the bill is paler, and a green or yellow line runs down the back of the legs. They nest in colonies, often with other waders, usually on platforms of sticks in trees or shrubs. Their flat, shallow nests are made of sticks and lined with fine twigs and rushes. There is evidence that members of a pair of Snowy Egrets, like other large waders, cannot recognize one another except at the nest. Even there, a bird arriving to relieve its mate must perform an elaborate greeting ceremony in order to avoid being attacked as an intruder. During this display the plumes on the head are raised and the incoming bird bows to the one that is sitting. Appeased by this display, the sitting bird leaves and the other takes over. Three to four greenish-blue, oval eggs are incubated by both adults. The young leave the nest in 20 to 25 days and hop about on branches near the nest before finally departing.

Cool Facts: It is the American counterpart to the very similar Old World Little Egret, which has established a foothold in the Bahamas. While Little Egrets and Snowy Egret may look similar in size and shape, the Snowy Egret is easily recognized by its spectacular crest and plume-like back feathers which are most pronounced during mating season.



Common Name: Little Egret
Scientific Name: *Egretta garzetta*

Size: 22-26 inches (55-56 cm)

Habitat: Europe, Asia, Africa and Australia. In warmer locations, most birds are permanent residents; northern populations, including many European birds, migrate to Africa and southern Asia. They may also wander north after the breeding season, which presumably has led to this egret's range expansion. Little Egrets were found on Barbados in April 1954. It began breeding on the island in 1994. Birds are seen with increasing regularity and have occurred from Surinam and Brazil in the south to Newfoundland and Quebec in the north. Birds on the east coast of North America are thought to have moved north with Snowy Egrets from the Caribbean. Little Egrets are mostly found in large inland wetlands and coastal wetlands in warm temperate areas.

Status: Least Concern.

Global Population: 659,000

- 3,140,000 At one time, the plumes of the Little Egret and other egrets were in demand for decorating hats. They had been used for this purpose since at least the 17th century but in the 19th century it became a major craze and the number of egret skins passing through dealers reached into the millions. Egret farms were set up where the birds could be plucked without being killed but most of the supply was obtained by hunting which reduced the population of the species to dangerously low levels (stimulating the establishment of Britain's Royal Society for the



Protection of Birds in 1889). Now conservation laws protect this species, and the population has rebounded strongly.

While Little Egret is not listed as a threatened species on the Australian Environment Protection and Biodiversity Conservation Act of 1999, the Little Egret subspecies (*Egretta garzetta ssp. nigripes*) is listed as threatened on the Victorian Flora and Fauna Guarantee Act (1988) and endangered on the 2007 advisory list of threatened vertebrate fauna in Victoria.

Diet: Fish, insects, amphibians, crustaceans, and reptiles. It stalks its prey in shallow water, often running with raised wings or shuffling its feet.

Nesting: Little Egrets nest in colonies, often with other wading birds, usually on platforms of sticks in trees or shrubs or in a reed-bed or bamboo grove. In some areas they will nest on cliffs.

Pairs defend a small breeding territory, usually extending around 3–4 m from the nest. The three to five eggs are incubated by both adults for 21–25 days to hatching. They are oval in shape and have a pale, non-glossy, blue-green color. The young birds are covered in white down feathers, are cared for by both parents and fledge after 40 to 45 days.

Cool Facts: They are mostly silent but make various croaking and bubbling calls at their breeding colonies and produce a harsh alarm call when disturbed.

There are at least two subspecies of Little Egret. The nominate subspecies *Egretta garzetta ssp. garzetta* occurs in Europe, Africa and Asia. *Egretta garzetta ssp. nigripes* breeds in Indonesia and Australasia. Those in Australia are sometimes thought to represent a third subspecies *Egretta garzetta ssp. immaculata*.

The main difference between *Egretta garzetta* and *Egretta garzetta ssp. nigripes* is that the greenish-gray patch between the eye and the bill is yellow on the subspecies and it has completely black feet.

Common Name: Reddish Egret (Dark Morph)
Scientific Name: *Egretta rufescens*

Size: 27-32 inches (68-82 cm)

Habitat: North and Central America; a resident breeder in Central America, The Bahamas, the Caribbean, the Gulf Coast of the United States, and Mexico. The species frequents shallow coastal waters, salt-pans, open marine flats and shorelines; it is rarely recorded away from the coast. It breeds on islands and in mangroves.



Status: Near Threatened.

Global Population: 10,000-19,999. Despite its large range it occupies a restricted habitat and is patchily distributed. For this reason it is assumed to have a moderately small and declining global population. Populations were heavily exploited for food in the late 19th and early 20th centuries. Today, fluctuations occur at some colonies, apparently relating to predators which can cause rapid declines; recoveries have been observed following predator control. Threats to the species are not well understood, but it is likely to have declined in parts of its range owing to commercial development of the coastline.

Diet: Fish, frogs, crustaceans, and insects.

Nesting: The sexes are similar. Reddish Egrets' breeding habitat is tropical swamps. They nest in colonies, often with other herons, usually on platforms of sticks in trees or

shrubs. These colonies are usually located on coastal islands. These birds have raucous courtship displays. They general involve shaking of the head during the greeting ceremony, followed by chases and circle flights. They also involve

raising of the neck, back and crest feathers, accompanied by bill clacking. During mating, male plumage stands out in a ruff on its head, neck and back.

Cool Facts: There are two color morphs. The adult dark morph has a slate blue body and reddish head and neck with shaggy plumes. The adult white morph has completely white body plumage. Young birds have a brown body, head, and neck.

The Reddish Egret is considered one of the most active herons, and is often seen on the move. It stalks its prey in shallow water far more actively than other herons and egrets. It frequently runs energetically and uses the shadow of its wings to cut down on glare of the water once it is in position to spear a fish; the result is a fascinating, graceful dance.

Common Name: Sacred Ibis

Scientific Name: *Threskiornis aethiopicus*

Size: 26 ¾ inches (68 cm)

Habitat: Africa; breeds in sub-Saharan Africa, southeastern Iraq, and formerly in Egypt. It has also been introduced into France, Italy, Spain, and the United States in South Florida. It is found in marshy wetlands and mud flats, both inland and on the coast. It will also visit cultivation and rubbish dumps.



Status: Least Concern. **Global population:** unknown. This ibis is now extinct in Egypt. Habitat destruction, poaching, and insecticide use (such as DDT) led it to become extinct from that region and have caused the decline of several other ibis species. The population on Aldabra Island has declined due to hunting and disturbance by temporary workers. The species is also susceptible to avian botulism, so may be threatened by future outbreaks of the disease.

On the other hand, the introduced and rapidly growing populations of ibises in southern Europe are actually seen as a potential problem, since these large predators can devastate breeding colonies of species such as terns. They also compete successfully for nest sites with Cattle and Little Egrets. The adaptable Ibis supplement their diet by feeding at rubbish tips, which helps them to survive the winter in these temperate regions.

The Sacred Ibis is protected by the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)

Diet: Fish, frogs, small mammals, reptiles, smaller birds and insects.

Nesting: Sexes are similar, but juveniles have dirty white plumage, a smaller bill and some feathering on the neck. The bird nests in tree colonies, often with other large wading birds such as herons. It builds a stick nest often in a baobab and lays 2-3 eggs. Both the male and female take turns in guarding the nest site until the chicks are large enough to defend themselves. In addition, both parents help feed the chicks.

Cool Facts: Venerated and often mummified by Ancient Egyptians as a symbol of the god Thoth, the Ibis was believed to have protected homes against incursions of serpents. It was also said that the flies that brought pestilence died immediately upon propitiatory sacrifices of this bird.



This is a gregarious bird, living, traveling, and breeding in flocks. In flight, ibises form diagonal lines or v-formations. This formation decreases wind resistance for trailing birds. When the leader of the pack tires, it falls to the back of the formation and another ibis takes its place at the front.



This bird is usually silent, but occasionally makes some croaking noises.

Common Name: Roseate Spoonbill

Scientific Name: *Platalea ajaja*

Size: 31 inches (80 cm)

Habitat: North and South America. Only the northern edge of the Roseate Spoonbill's range lies within the United States. This neotropical bird can be found in many areas around the Gulf of Mexico, and breeds in Texas, Louisiana, and

Florida. Florida populations occur in the southern half of the state.

Roseate Spoonbills are also found in Mexico, Central America, and South America, as well as across the West Indies and Greater Antilles. Found in marshes and wetlands.



Status: Near Threatened. **Global Population:** 175,000. In the United States, Roseate Spoonbill numbers have rebounded over recent decades, though the current population is still less than what it was before the plume-hunting era. Although the species is increasing in numbers, it remains a Species of Special Concern in both Florida and Louisiana.

Roseate Spoonbill numbers were reduced to near extinction by the late 19th century. The bird was hunted ruthlessly, its plumes used in ladies' hats, and its wings sold as fans. By 1939, about 30 birds were all that remained of the thousands that formerly inhabited Florida.

The greatest current threat to the Roseate Spoonbill is habitat loss. As coastal marshes are drained,

developed, or polluted by industry, less suitable breeding habitat is available for the birds--a particular concern in coastal Louisiana. While many Roseate Spoonbill nesting colonies are within protected areas, their foraging sites are often unprotected and prone to human disturbance. The species also faces persecution in parts of Central and South America.

Diet: Crustaceans, very small fish (that larger waders ignore) and other invertebrates. Spoonbills feed by swinging their bills from side to side as they steadily walks through the water, often in groups

Nesting: Sexes are similar, but immature birds have white, feathered heads and the pink of the plumage is paler. Their bills are yellowish or pinkish. Spoonbills nest in trees, often mangroves, laying 2 to 5 eggs.

Cool Facts: This spoonbill is often misidentified by amateur birders as a flamingo at a distance. Unlike herons, spoonbills fly with their necks outstretched. Roseate Spoonbills can be found feeding nearby Snowy Egrets, Great Egrets, Tricolor Egrets and American White Pelicans.

Their specific feeding habits bring them into the shallow muck of ponds, marshes and rivers and not after the free swimming fish other wading birds are after, thereby making them non-competitors in fishing.



Common Name: Royal Spoonbill
Scientific Name: *Platalea regia*

Size: 30 ¼ inches (77 cm)

Habitat: Australia & South-east Asia; found throughout eastern and northern mainland Australia from the Kimberley region of Western Australia across the Top End and through Queensland, New South Wales and Victoria, to south-

eastern South Australia.

It is only a rare visitor to Tasmania and it is not found south-west of Broome, Western

Australia through to the Spencer Gulf, South Australia or in central Australia. It is also

found in New Zealand, Indonesia, Papua New Guinea and on some south-western Pacific

islands. Found in shallow freshwater and saltwater wetlands, intertidal mud flats and wet grasslands. Both

permanent and temporary inland waters are used when available in the arid zone. They will also use artificial wetlands such as sewage lagoons, salt fields, dams and reservoirs.

Status: Least Concern.

Global population:

25,000 - 100,000.

Royal Spoonbills are not tolerant of disturbances, especially



when breeding, and destruction of habitat by land-clearing, drainage, increased salinity or flooding and weed invasion are all detrimental to both feeding and breeding. However, it has benefited from artificial wetlands in some areas. In the

Australian Northern Territory, the introduced Water Buffalo threaten freshwater wetland habitats by breaking down levees and allowing salt water to flow in.

Diet: Fish, shrimp, crabs and amphibians. It catches its prey by making a side-to-side movement with its bill.

Nesting: They form monogamous pairs for the duration of the breeding season and nest in colonies alongside many other water birds, including Yellow-billed Spoonbills, ibises, herons and cormorants. When they are breeding, long white plumes grow from the back of their heads and colored patches appear on the face. The nest is an open platform of sticks in a tree in which the female lays two or three eggs. The chicks hatch after 21 days. The birds are highly sensitive to disturbance in the breeding season. In Australia, whole colonies have been known to desert their eggs after a minor upset.

Cool Facts: They are also known as the Black-billed Spoonbill; in New Zealand they are called “kotuku ngutu papa” by the Maori.

Common Name: African Spoonbill
Scientific Name: *Platalea alba*

Size: 29 ½ - 35 ½ inches (75-90cm)

Habitat: Africa; widespread resident across Africa and Madagascar. The species inhabits large, shallow inland waters such as lakes and rivers, seasonal and permanent pans, marshes, flood plains, sewage works, reservoirs and artificial ponds, less often occurring at coastal lagoons, salt-pans, creeks and estuaries.

Status: Least Concern. **Global population:** 11,000 - 110,000. Population is hard to gauge due to the nomadic nature of this species. In Madagascar the species is seriously threatened by the destruction of breeding colonies at Lake Kinkony, Lake Bemamba, Lake Ihotry and Lake Alaotra. It is also threatened by the drainage of wetlands for human uses in parts of Africa.

Protected by the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)

Diet: Fish, mollusks, crayfish, amphibians and water beetles. They feed by wading through shallow water and sweeping their partly-opened bill from side to side. The moment any small aquatic creature such as a frog, small fish, or mollusk etc touches the inside of the bill - which has a sensitive inner surface - it is snapped shut and the prey trapped inside. The prey item is then usually tossed into the back of the throat with a distinctive flick of the neck and head.



Nesting: Immature birds lack the red face and have a yellow bill. It nests in colonies in favored nesting sites such as secluded lakes, river oxbows and islands of vegetation. It does not usually share colonies with storks or herons. The nest is a flat oval platform of sticks and reeds situated over water on partly submerged trees, in bushes or reeds, on the ground on rocky islets or on rocky ledges. Three to five spotted red, brown or blue eggs are laid and incubated by both parents for 21-29 days. The young fledge after 20-30 days.

Spoonbills aren't born with the distinctive bill of the adult. At birth the beak is short and looks like any other species. It gradually lengthens during development achieving the spoon shape shortly before fledging. Until this point the young birds more closely resemble the ibises to which the species is closely related.

Cool Facts: The migratory patterns of this species are in response to local rainfall rather than seasonal movements. The breeding season varies throughout the range, and is also variable from year to year, being suspended in sites when the rains do not occur. The species breeds during the dry season from West Africa to eastern Sudan, in the rains (or sometimes in the dry season) in East and central Africa, and in winter or early spring in southern Africa.

This spoonbill is usually a shy and alert bird. It is usually found singly, but can also be encountered in pairs or in groups. It is usually silent, except for an occasional grunt when alarmed.



Common Name: Painted Stork
Scientific Name: *Mycteria leucocephala*

Size: 37-40 inches (93-102 cm)

Habitat: Asia; Breeds in Asia from India and Sri Lanka to Southeast Asia. It frequents freshwater marshes, lakes and reservoirs, flooded fields, rice paddies, freshwater swamp forest, river banks, intertidal mudflats and saltpans.



Status: Near Threatened.

Global Population: 25,000.

Although one of the most abundant of the Asian storks this species is classified as Near Threatened because of the increasing impact of habitat loss, disturbance, pollution, drainage and hunting of adults and collection of eggs and nestlings from colonies.

Diet: Mostly fish, but also frogs, small reptiles, and invertebrates. It locates prey by touch, stalking shallow water with an open bill, using feet and wing flaps to disturb prey. Often, it will sweep its head from side to side with its bill half open in water as it hunts for fish.

Nesting: The Painted Stork nests colonially and famous nesting colonies include the ones in the New Delhi Zoological Garden and Kokrebellur in southern India which have up to 100 nests together. The peak breeding season is from September to November.

A large stick nest is built in a forest tree in lowland wetlands, and 2-5 eggs are in a typical clutch. Incubation time is 28–32 days and 60 more days to fledge.

Juvenile birds are a duller version of the adult, generally browner and lacking the bright colors of the adult.

Cool Facts: Painted Storks are gregarious. They fly with neck extended and slightly lowered. They are generally quiet, but sometimes perform a "wing-woofing" and bill-clattering during courtship displays.



Common Name: Jabiru
Scientific Name: *Jabiru mycteria*

Size: 48 - 55 inches (122-140 cm)

Habitat: Central & South America; Mexico, Argentina, Peru, Brazil, and Paraguay. Found near rivers and ponds.



Status: Least Concern. **Global population:** 10,000 - 25,000

Diet: Fish, mollusks, and amphibians, occasionally eat reptiles and small mammals. It will even eat fresh carrion and dead fish, such as those that die during dry spells, and thus help maintain the quality of isolated bodies of water.

Nesting: The sexes are similar, although the female is usually smaller than the male. The nest of twigs is built by both parents around August–September on tall trees, and enlarged at each succeeding season growing to several meters in diameter. Half a dozen nests may be built in close proximity, sometimes among nests of herons and other birds. The parents take turns incubating the clutch of 2 to 5 white eggs.

Cool Facts: The name comes from the Tupi-Guaraní language and means "swollen neck". The name "Jabiru" has also been used for two other

birds of a distinct genus: the Asian Black-necked Stork (*Ephippiorhynchus asiaticus*) is commonly called "Jabiru" in Australia as is the Saddle-billed Stork (*Ephippiorhynchus senegalensis*) of sub-Saharan Africa

Common Name: Wood Stork
Scientific Name: *Mycteria americana*

Size: 33 ½ - 45 ½ inches (85-115cm)

Habitat: North & South America. Breeding areas throughout South America, Central America and the Caribbean. In the United States, the wood stork favors cypress trees in marshes, swamps, or (less often) among mangroves and nearby habitat.

Status: Near Threatened. **Global Population:** 38,000 - 130,000. In the United States there is a small and endangered breeding population in Florida, Georgia, and South Carolina, along with a recently discovered rookery in southeastern North Carolina. On the other hand, in Santa Catarina state (Brazil) its decline seems to have been reversed: after an absence between the late 1960s and the mid-1990s, the species is now again regularly encountered there, in particular in the Tubarão River region. It is likely that the Paraná River region's wetlands served as a stronghold of the species, from where it is now re-colonizing some of its former haunts. Globally, it is considered a Species of Least Concern by the IUCN due to its large range.

Diet: Fish, frogs and large insects, and sometimes lizards and rodents. They catch fish by holding their bill open in the water until a fish is detected.

Nesting: Immature similar to adult, but neck and most of head feathered whitish. The large stick nest is built in a lowland wetlands tree. Up to



twenty-five nests have been seen in one tree. Storks breed once a year, and 3-5 eggs are laid in the typical clutch. The eggs are incubated 27–32 days by both sexes. Their reproductive cycle is triggered when waterholes dry up sufficiently to concentrate fish in sufficient numbers for efficient feeding of the chicks.

Competition for food is fierce, and if food is scarce, only the older chicks will survive. Week-old chicks are fed about 15 times per day, and they grow rapidly. By 14 days, each will weigh 10 times their hatching weight. At 28 days, each is 25 times heavier. During the breeding season, Wood Storks need over 400 pounds (180 kg) of fish to feed themselves and their offspring. When it is very warm, parents also collect water and bring it to the nest to drool on and into the mouths of the chicks. By 4 weeks of age, both parents leave the nest to search for food, and this continues until the chicks “fledge” or leave the nest. Young may continue to return to the colony for another 10 to 15 days to roost or to try and get food from their parents. A colony is considered successful if its parents average at least 1.5 fledged young per nest.

Cool Facts: The Wood Stork is the only stork breeding in the United States. Its late winter breeding season is timed to the Florida dry season when its fish prey become concentrated in shrinking pools.

Each adult will defend their nest against various predators. Crows, ravens, vultures, grackles and striped skunks will attempt to pick off eggs. Raccoons are the leading predator of nests, and can cause almost complete colony nesting failure when water dries under nests in drought years

Common Name: White Stork
Scientific Name: *Ciconia ciconia*

Size: 40-50 inches (100-125 cm)

Habitat: Europe, Asia & Africa; breeding in the warmer parts of Europe (north to Estonia), northwest Africa, and southwest Asia (east to southern Kazakhstan). It is a strong migrant, wintering mainly in tropical Africa, down to the south of South Africa, and also in the Indian subcontinent.



Status: Least Concern.

Global Population: 500,000 - 520,000. The overall population of White Storks has declined steadily over the last half century. The decline in Western Europe has been the most pronounced. Pollution, pesticides and wetlands drainage have severely reduced suitable foraging habitat across the breeding range. Storks no longer breed in southern Sweden, Switzerland, western France, Belgium or southern Greece. In The Netherlands the number of breeding pairs has declined from 500 in 1910 to 5 in 1985. Denmark was home to 4000 pairs in 1890, but only 12 in 1989. Captive propagation and

reintroduction efforts have been hampered by their tendency to produce overly tame birds, which over-winter in Europe without migrating normally.

The White Stork is one of the species protected by the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA).

Diet: Insects, frogs, toads, tadpoles, fish, rodents, snakes, lizards, earthworms, mollusks, crustaceans, and, rarely, the chicks or eggs of ground-nesting birds. Foraging storks search for prey visually while walking deliberately with bill pointed toward the ground. When prey is spotted, they cock their necks back, then jab the bill forward to grasp their victim. Wintering birds in Africa will congregate around the edges of grass-fires to capture small prey fleeing the flames.

Nesting: White Storks form loose informal colonies while breeding. Several pairs may nest closely together within sight and sound of one another while appearing completely oblivious to their neighbors. Though storks form monogamous pairs for the duration of the breeding season, they do not migrate or over-winter together. If the same pair reforms in successive years it is largely due to their strong attachment to their nest site.

Males usually arrive at the nest-site first. A male will greet a newly arriving female with the Head-Shaking Crouch display, as he lowers himself on the nest into the incubating posture, erects his neck ruff and shakes his head from side to side. If the male accepts the new arrival as his mate they will cement their pair bond with an Up-Down display. In this display the birds hold their wings away from their sides and pump their heads up and down. This is often accompanied by bill-clattering. Shorter courtships may indicate that the male and female were paired in previous years.

Nests are huge, bulky affairs constructed of branches and sticks and lined with twigs, grasses, sod, rags, and paper. Though they may be reused year after year, breeding birds will add to the structure each season. Particularly old nests have grown to over 2 m in diameter and nearly 3 m in depth. Some nests have been in continuous use for hundreds of years. Both sexes participate in nest construction with the male bringing most of the material. Completion of the structure is often signaled by the addition of one leafy branch to the edge of the nest.

European Storks have been building their nests on man-made structures since the Middle Ages. They can be found on rooftops, towers, chimneys, telephone-poles, walls, haystacks, and specially constructed nest towers. Many homeowners will add embellishments such as wooden wagon wheels to old chimneys to encourage storks to nest on their houses. Nests can also be found in trees, on cliff-ledges, or occasionally on the ground.

The female usually lays 3-5 eggs, more rarely up to seven. Parents share incubation duties for 33-34 days. Young chicks are covered with white down and have black bills. Both parents feed the young on the nest until they fledge at 8-9 weeks of age. Fledglings may continue to return to the nest site each evening to beg for food from their parents. Young birds reach sexual maturity in their fourth

year. Banding records indicate that wild birds can live and reproduce successfully past 30 years of age.

Cool Facts: The legend that the European White Stork brings babies is believed to have originated in northern Germany, perhaps because they arrived back in Europe on fairly predictable dates and almost exactly 9 months after the previous mid-summer. Northern Europeans of Teutonic ancestry encouraged storks to nest on their homes hoping they would bring fertility and prosperity. This tradition of welcome and protection did not exist in the portions of France where the White Stork disappeared first.

It walks slowly and steadily on the ground. Like all storks (with the exception of the *Leptoptilos* genus), it flies with its neck outstretched.

In the 1980's, the population of this "iconic emblem of Alsace", the bird revered for bringing fertility and luck to any home upon which it nested, had fallen to fewer than nine pairs in the entire upper Rhine River Valley, an area closely identified with the White Stork for centuries. Conservation efforts there, particularly by the Association for the Protection and Reintroduction of Storks in Alsace and Lorraine, have successfully increased the population of birds to 270 pairs.

Storks are large birds that rely heavily on energy efficient soaring flight during migration. Soaring requires the presence of thermal air currents that are not found over water. White Storks are therefore reluctant to fly across large bodies of water such as the Mediterranean Sea to reach their wintering grounds in tropical Africa. They solve this problem by having the bulk of the European population split into two distinct migratory routes. Western birds cross the Mediterranean at the Straits of Gibraltar, while most of the eastern birds cross the Bosphorus and circle around the Mediterranean through the Middle East. Migration is highly synchronized and flocks contain as many as 11,000 individuals. Birds migrating from Denmark to South Africa and back again may cover a total distance of 20,000 km. Small numbers of birds cross the Mediterranean directly by flying south from the southern tips of Italy and Greece. Some western European White Storks join the Asiatic subspecies *C. ciconia asiatica* to winter in India.

Common Name: Sandhill Crane
Scientific Name: *Grus canadensis*

Size: 46 inches (117 cm)

Habitat: North America and Asia; distributed throughout North America, extending into Cuba and far northeastern Siberia. The three migratory subspecies (Lesser, Greater and Canadian) are distributed across a broad breeding range in the northern U.S. and Canada as well as eastern Siberia, with wintering grounds in the southern United States and northern Mexico. The three



non-migratory subspecies (Mississippi, Cuban, and Florida) have restricted ranges in the southern United States and Cuba. Found in open fresh water wetlands, but the different subspecies utilize habitats that range from bogs, sedge meadows, and fens to open grasslands, pine savannas, and cultivated lands. Sandhill Cranes occur at their highest breeding density in habitats that contain open sedge meadows in wetlands that are adjacent to short vegetation in uplands.

Status: Least Concern. **Global Population:** 520, 000 - 530,000. Some subspecies are endangered. Loss and degradation of riverine and wetland ecosystems are the most important threats to Sandhill Crane populations. For the migratory populations, this is of greatest concern in staging and wintering areas. Spring staging areas along the Platte River in Nebraska are of special concern because of their importance to the migratory subspecies and the development pressures facing this region. Approximately 80% of all Sandhill Cranes utilize a 75-mile stretch of the Platte River in spring migration. Elsewhere, small

breeding populations can face disproportionate mortality on fall staging areas due to over-hunting. Residential and commercial development pressures facing lands occupied by birds belonging to non-migratory subspecies in Mississippi, Florida, and Cuba also pose significant threats.

Diet: Plant tubers, grains, small vertebrates (rodents and snakes) and invertebrates (insects or worms).

Nesting: Immature birds have reddish brown upperparts and gray under parts. The sexes look alike; but within a breeding pair, males tend to be larger than females. Mated pairs of cranes engage in "unison calling." The cranes stand close together, calling in a synchronized and complex duet. The female makes two calls for every single call of the male. Sandhill Cranes have been found to devour chicks they consider "weaklings".

Cool Facts: The Sandhill Crane has one of the longest fossil histories of any extant bird. While a 10-million-year-old crane fossil from Nebraska is often cited as being of this species, it is more likely from a prehistoric relative or the direct ancestor. The oldest unequivocal Sandhill Crane fossil is "just" 2.5 million years old which is more than 1 ½ times older than the earliest remains of any other living species of birds. Sandhill Cranes are the most abundant of the world's cranes.

There are six subspecies of Sandhill Crane. The different sub-species of Sandhill Crane vary greatly in size and weight. Lesser Sandhills, who breed at more northern latitudes such as the arctic, are the smallest, weighing on average about 6-7 pounds and standing 3-3.5 feet tall. At the other end of the extreme, temperate-nesting Greater Sandhills are the largest sub-species and average 4.5-5 feet tall and 10-14 pounds. Body plumage is characterized by varying shades of gray. In many areas, wild Sandhills preen iron-rich mud into their feathers creating a deep rusty brown hue which lasts during spring and summer. As fall advances, these rusty feathers molt and the birds return to their grayish appearance. In some regions, however, iron-rich mud is absent and the birds appear grey all year. The forehead and crown are covered with reddish skin. Face, chin, upper throat, and nape are white to pale gray. Adults have a white cheek patch. Legs and toes are black.

- Lesser Sandhill Crane, *Grus canadensis canadensis*
- Cuban Sandhill Crane, *Grus canadensis nesiotes* – ESA: Endangered
- Florida Sandhill Crane, *Grus canadensis pratensis*– ESA: Endangered
- Mississippi Sandhill Crane, *Grus canadensis pulla* – ESA: Endangered
- Canadian Sandhill Crane, *Grus canadensis rowani*
- Greater Sandhill Crane, *Grus canadensis tabida*

Common Name: Whooping Crane
Scientific Name: *Grus americana*

Size: 52 inches (132cm)

Habitat: North America; throughout North America before 1700. There are only three wild populations (as of December 2007), including two reintroduced populations in the eastern U.S. that are not yet self-sustaining. The only natural wild population breeds in Wood Buffalo National Park, on the border of Northwest Territories and Alberta, Canada, and winters at and near Aransas National Wildlife Refuge in Texas (US). Found in prairie wetlands, preferring small, shallow lakes and ponds, willow communities, marshes, mudflats and meadows. It winters in coastal brackish wetlands.

Status: **Endangered.** **Global Population:** 50-249. This crane declined from historic estimates of 10,000+ prior to European settlement of North America to 1,300-1,400 birds by 1870 to 15 adults in 1938. This crane has listed endangered since 1967 because it has an extremely small population. Over-hunting, habitat conversion and human disturbance were the main causes of the decline. The 2007 population is estimated at 266 individuals.

Early numerous attempts to re-establish breeding populations met with poor to mixed results; more recent attempts have fared much better. The conservation status of the species is improving, with not only increases in the natural wild population but also establishment of two reintroduced flocks that may become self-sustaining. If the number of mature individuals continues to increase, this species may merit downlisting to Vulnerable.

Currently, the most significant known cause of death or injury to fledglings is collision with power lines. Powerline markers can reduce collisions by 50-80%,



but most power lines remain unmarked and collision is a major and growing problem.

Diet: Crustaceans, mollusks, fish (such as eel), berries, small reptiles and aquatic plants. Cranes feed by wading in shallow water or in fields and probing the area with their bills.

Nesting: They nest on the ground, usually on a raised area in a marsh. The female lays 1 or 2 eggs, usually in late-April to mid-May. The blotchy, olive-colored eggs average 2½ inches in breadth and 4 inches in length. The incubation period is 29–35 days. Both parents brood the young, although the female is more likely to directly tend to the young. Usually no more than one young bird survives in a season. The parents often feed the young for 6–8 months after birth and the terminus of the offspring-parent relationship occurs after about 1 year. Pre-fledged eggs and chicks are subject to predation (raven, bald eagle, wolf, black bear, lynx). Juveniles have a brownish tint to their heads and topside parts of their necks and torsos.

Cool Facts: The Whooping Crane is the tallest bird in North America and one of two crane species found in the US (the other being the Sandhill Crane). It gets its name from the 'whooping' sound it makes.



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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:

- “The Sibley Guide to Birds” by David Allen Sibley
- All About Birds/Cornell (<http://www.birds.cornell.edu/AllAboutBirds/>)
- Wikipedia (<http://www.wikipedia.com>)
- BirdForum.net (<http://www.birdforum.net>)
- Birdlife International (<http://www.birdlife.org>)
- International Crane Foundation (<http://www.savingcranes.org/>)
- Smithsonian National Zoological Park (<http://nationalzoo.si.edu>)

Other Resources:

- Songbird ReMix.com
- [Songbird ReMix on Facebook](#)

Songbird ReMix Merchandise



www.empken.com/store

