

## Colonial Nesting Wading Birds and Allies Guild

**Black-crowned Night Heron** *Nycticorax nycticorax*  
**Glossy Ibis** *Plegadis falcinellus*  
**Great Blue Heron** *Ardea herodias*  
**Great Egret** *Casmerodius albus*  
**Green Heron** *Butorides virescens*  
**Little Blue Heron** *Egretta caerulea*  
**Reddish Egret** *Egretta rufescens*  
**Roseate Spoonbill** *Platalea ajaja*  
**Snowy Egret** *Egretta thula*  
**Tricolored Heron** *Egretta tricolor*  
**White Ibis** *Eudocimus albus*  
**Wood Stork** *Mycteria americana*  
**Yellow-crowned Night Heron** *Nyctanassa violacea*

### ALLIES

**Anhinga** *Anhinga anhinga*



Green Heron by C. Hand, SCDNR

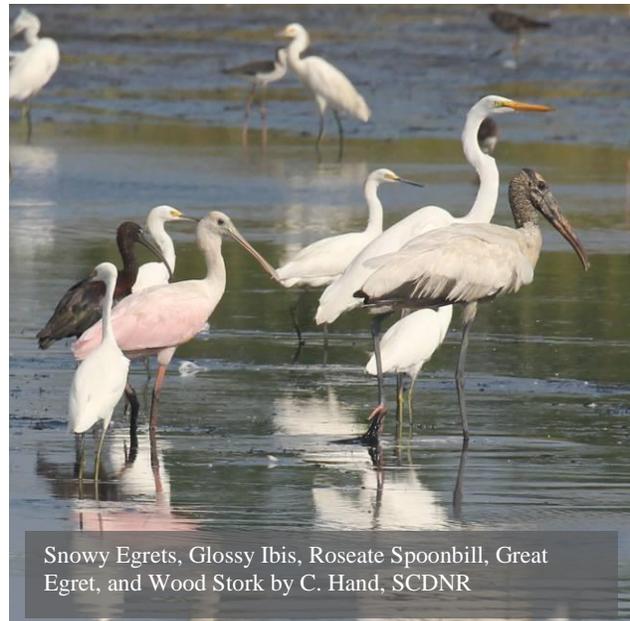
*NOTE: The Wood Stork is described in more detail in a separate species account.*

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### DESCRIPTION

#### Taxonomy and Basic Description

As the name suggests, colonial nesting wading birds nest in aggregations called colonies and feed by capturing prey while wading through or standing in shallow water. Colonial nesting wading birds are a taxonomically diverse group. Members of this guild belong to two orders: Pelecaniformes and Ciconiiformes. Pelecaniformes includes three families: Ardeidae (herons, bitterns and egrets), Threskiornithidae (ibises and spoonbills), and Pelecanidae (pelicans). Ciconiiformes includes one family: Ciconiidae (storks). Prior to the reclassification that occurred during 2010, all wading birds were classified as Ciconiiformes. Wading birds are medium to large birds that have long legs, necks and bills. Males and females look similar to each other. Immature birds often have different plumages than adults. These species typically nest and feed in wetland habitats. Cattle Egrets (*Bubulcus ibis*) are also in the Ardeidae family but are not included in this account



Snowy Egrets, Glossy Ibis, Roseate Spoonbill, Great Egret, and Wood Stork by C. Hand, SCDNR

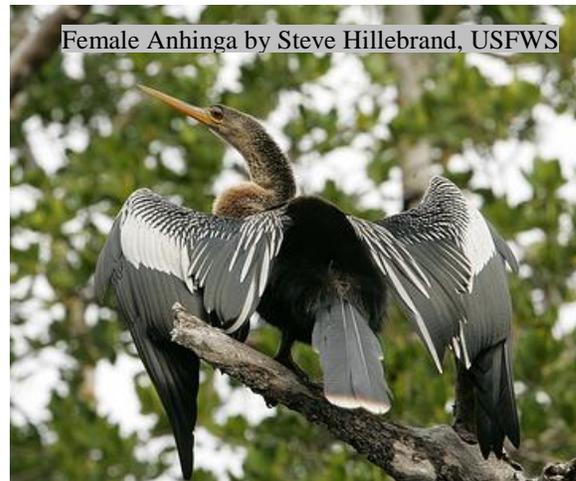
because they are not a true wetland species. Anhingas are in the family Anhingidae and utilize the same types of nesting habitat as wading birds in South Carolina.

Wading birds are among the most striking birds in North America. The White Ibis, Great Egret, Snowy Egret and Wood Stork are predominantly white birds. These 4 species are easily distinguished from each other by size and by the color of their wing feathers, bills and legs. The White Ibis has a scarlet bill and legs and black wing tips. The Snowy Egret has dark legs with yellow feet. The Great Egret is tall with a yellow bill and black legs, and the Wood Stork is very large with a black neck, head, legs, tail, and flight feathers.

Great Blue, Little Blue, Green and Tricolored Herons as well as the Night Herons are colored as their names suggest. The Great Blue is predominantly bluish-gray and has white on the crown, cheeks and a stripe down the neck. The Little Blue Heron is a darker blue and considerably smaller than the Great Blue Heron. Little Blue Heron chicks are white when they hatch, and immature birds are white. The Tricolored Heron is slate-blue above and on the neck, with a white abdomen and white stripe on the front of the neck. The Green Heron is small and compact with a relatively short neck and legs. They have a greenish black cap, dark grayish back and wings, reddish neck, and gray under-parts. The Yellow-crowned Night Heron is an overall gray with a yellow crown and white on its head and cheeks. The black-crowned night heron is also a grayish bird but has a black crown and back. Juvenile Night Herons of both species are mottled brown.

The Glossy Ibis appears to be an all dark bird from a distance. Upon closer inspection, the Glossy Ibis is actually a glossy chestnut color. Reddish Egrets have two color morphs: white and dark. A small number of dark morph Reddish Egrets are known to breed in South Carolina. Their appearance is similar to Little Blue Herons, but their necks are more reddish, their bills have a pink base, and they are typically found at the coast. The Roseate Spoonbill has pink plumage and a spoon-shaped bill. As of 2012, Spoonbills have not been found nesting in South Carolina, but they are regularly observed in the State.

The Anhinga is a predominantly black diving bird that resembles a Cormorant but often nests colonially with wading birds. Unlike a Cormorant, the Anhinga has a long, straight bill that can be used to spear fish. Anhingas have long tails with feathers that resemble those of a wild turkey and long, snakelike necks. Males have black necks while females and juveniles have brown necks. Both male and female Anhingas have strikingly patterned black and white scapular and wing covert feathers.



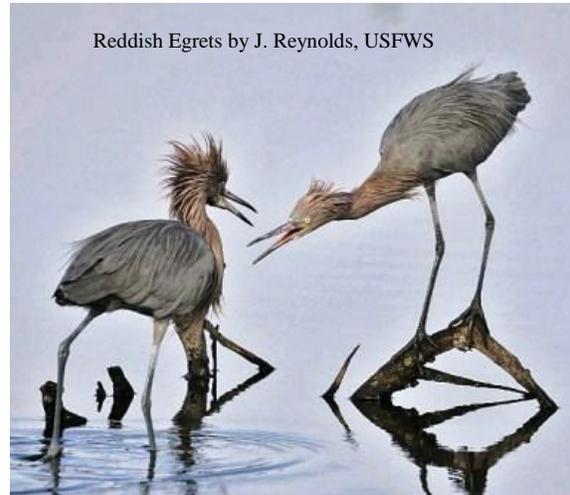
Female Anhinga by Steve Hillebrand, USFWS

The terminology used to describe wading birds can be confusing. In North America, the term “wading bird” is used to refer to storks, herons, and egrets. In other areas of the world, shorebirds, such as Oystercatchers and sandpipers, are often referred to as wading birds. The sites where groups of wading birds nest are referred to as colonies or rookeries. Sites where

groups of wading birds rest during the day or overnight are called roosts, and groups of feeding wading birds are referred to as flocks or feeding aggregations.

### Status

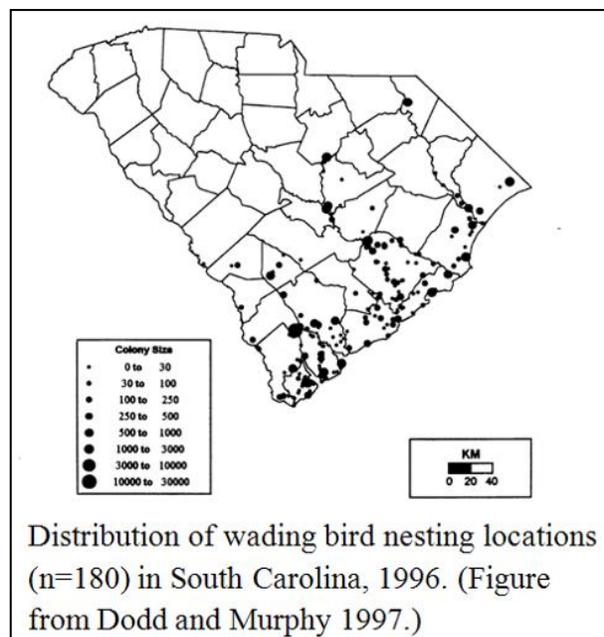
Members of this guild are of conservation concern because their reproductive strategy leaves them especially vulnerable to habitat degradation. Many wading bird species nest in large colonies; dozens of birds can nest in a single tree. Although this strategy affords benefits in terms of predator avoidance, it makes them especially vulnerable to habitat loss because the degradation of a small area (colony) can affect hundreds of breeding pairs of several different species. Food availability may be the limiting factor for many colonies in South Carolina. The loss of feeding habitat near a colony site can make the colony unsuitable even if the colony site itself is unaltered.



In addition to this vulnerability to habitat alterations, several members of this guild are of special concern due to declining population trends (Sauer *et al.* 2011). With the exception of the Great Blue Heron and the Wood Stork, all of the colonial wading bird species have been in decline in recent years in South Carolina. The Wood Stork is a Federally Threatened Species. The Roseate Spoonbill is listed as a Bird of Conservation Concern in the Southeastern Coastal Plain, while the Little Blue Heron, Black-crowned Night Heron, Snowy Egret, and Reddish Egret are listed for other regions of the United States (USFWS 2008). The North American Waterbird Conservation Plan (Waterbird Conservation for the Americas) listed the Little Blue Heron, Snowy Egret, Tricolored Heron, and Wood Stork as species of high concern; and the Black-crowned Night Heron, Reddish Egret, Roseate Spoonbill, White Ibis, and Yellow-crowned Night Heron are listed as species of moderate concern (Kushlan *et al.* 2002). The Glossy Ibis and Green Heron were listed as species of low concern, and the Cattle Egret and Great Egret were listed as not currently at risk (Kushlan *et al.* 2002).

### POPULATION SIZE AND DISTRIBUTION

All of the colonial nesting wading birds can be found in the Coastal Zone of South Carolina. The Glossy Ibis, Tricolored Heron, Reddish



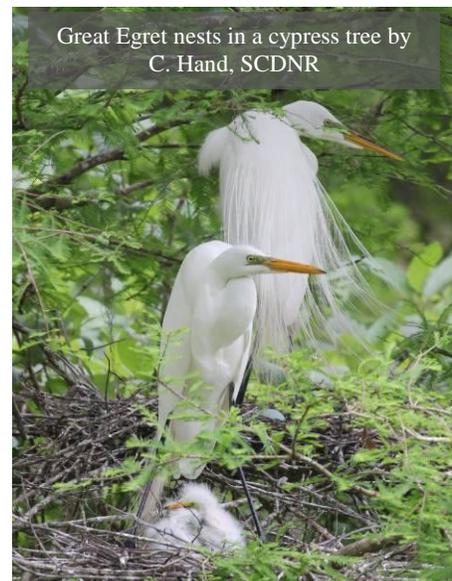
Egret and Snowy Egret are restricted to the Coastal Zone, while the Great Egret, Little Blue Heron and White Ibis can range into the Coastal Plain. The Yellow-crowned Night Heron is an uncommon breeder in the Piedmont (Post and Gauthreaux 1989). The Black-crowned Night Heron is a coastal breeder, is uncommon in the Coastal Plain away from the coast and is not found in the Sandhills, Piedmont, or Mountains. The Great Blue Heron can be found throughout the State.

Complete ground censuses of nests in wading bird colonies in the Coastal Plain and Coastal Zone were conducted in 1988, 1989, 1994 and 1996. Counts of the total number of wading bird nests fluctuated among years, but high counts of 59,483 and 52,587 in 1989 and 1996 were representative of the population (Dodd and Murphy 1997). The fluctuations were primarily a result of one species: White Ibis. Nesting populations of members of this guild appeared to be stable between 1988 and 1996.

Since that time, aerial estimates indicate the number of wading birds nesting in South Carolina has declined precipitously. This was particularly apparent during years of extended drought from 1999 through 2003.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

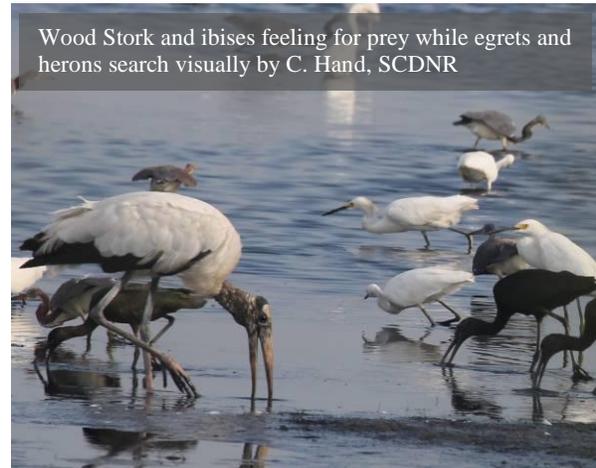
Nesting sites are found in a variety of habitats. Colony sites for most guild members are found on islands in fresh and brackish water ponds. Water surrounding a nesting site deters mammalian predators while alligators frequently provide an additional deterrent. When suitable island sites are lacking, guild members may use vegetation around the edge of a pond for nesting. These sites are generally unsuccessful as a result of predation except for ponds in residential areas that are not affected by predators. Colonies are also sustained on estuarine islands that are free of mammalian predators. Larger species such as Wood Storks and Great Egrets prefer mature trees with large lateral limb structures. Smaller species such as Night Herons, Little Blue Herons, Tricolored Herons, and Snowy Egrets nest lower and prefer shrubby habitat.



Great Blue Herons nest in mature pines on hammock islands, along the marsh-upland ecotone, or in riparian swamps. Further away from the coast, they nest on islands or along the riparian zone of rivers and man-made water bodies such as reservoirs.

Wading birds feed primarily on fish, crabs, crayfish, insects, and amphibians and can be found feeding in a wide variety of aquatic habitats. Some species also feed opportunistically on small birds and mammals. Gradually receding water levels concentrate prey and facilitate feeding.

Each species has its own feeding style. Ibises, Storks and Spoonbills have specialized sensitive bills and are tactile feeders, which means that they use touch to locate prey. They require high prey densities in shallow water to feed efficiently. These species can feed even when visibility is low, such as in murky water and at night. They can feed efficiently in large groups even when the water is stirred up, which allows them to take advantage of ephemeral food sources. The Glossy and White Ibises use their long bills to probe for invertebrates in moist soil and shallow water. Wood Storks and Roseate Spoonbills wade through shallow water, while sweeping their bills back and forth through the water, to locate and capture prey. When their lower bill comes into contact with a fish, the Stork reflexively snaps its bill shut to capture the prey. Storks also pump their feet while feeding to startle prey.



Wood Stork and ibises feeling for prey while egrets and herons search visually by C. Hand, SCDNR

Most egrets and herons are visual hunters, which means that they locate prey visually before striking. They can capture a variety of types of prey in various situations but cannot forage efficiently when visibility is poor. These species perch at the edge of the water or wade out into shallow water to search for prey. The Great Blue Heron and Great Egret are able to tolerate deeper water owing to their long legs. Snowy Egrets and Reddish Egrets are very active feeders and pursue their prey, while Great Egrets and Great Blue Herons are “lie-in-wait” predators. Anhingas dive and swim underwater, allowing them to feed in deeper water than wading birds. Their plumage is wettable, which allows them to achieve neutral buoyancy in the water while they are capturing fish and other prey. Anhingas are often seen at the surface of the water with only their head and neck protruding.



Wading birds feeding in an impounded wetland by C. Hand, SCDNR

## CHALLENGES

Loss of feeding, roosting, and breeding habitat is the biggest threat to colonial wading birds (Dodd and Murphy 1998). Over 50% of the wetlands in the contiguous United States were drained or converted to other uses between the 1780s and 1980s (Dahl 1990). Since the 1970s, the rate of wetland loss in the United States has been greatest in the Southeast. While South Carolina has been relatively successful in protecting its wetlands, significant losses have occurred in freshwater non-tidal wetlands. Some types of wetlands created to mitigate the loss of natural wetlands may be of lower ecological value to wading bird compared to diverse natural wetlands. The amount and quality of foraging habitat will ultimately determine the status of colonial wading bird populations.

Suitable nesting and roosting habitat is reduced by removal of vegetation during timber harvest and residential and commercial development. Shrub-type nesting and roosting habitat is lost

through the removal of vegetation, mainly for aesthetic reasons, along the edge of ponds and impoundments. Competition with Cattle Egrets (*Bubulcus ibis*) and Double-crested Cormorants (*Phalacrocorax auritus*) for food resources and nesting sites can reduce nesting success for guild members (USFWS 2003).

Human disturbance is a problem for nesting colonial wading birds. Short-term disturbances such as airplanes, boats, vehicles, and human presence may cause the birds to fly from their nests, and can result in nest abandonment. Unattended eggs and chicks are vulnerable to depredation and to overheating. Disturbance at feeding areas can reduce the amount of prey that wading birds are able to consume and to feed to their young. Docks result in disturbance to feeding birds because of the increased boat traffic. The docks themselves are frequently used by the birds for foraging because fish concentrate in the shade of the docks.

Several types of environmental contaminants are problems for colonial wading birds. Petroleum from oil spills damages bird feathers and causes mortality. Chemicals such as DDT and PCBs are not currently widespread; however they do cause reduced reproductive success. Metals such as mercury and lead can concentrate and lead to reduced survivorship and reproductive success. Environmental contaminants also reduce availability of prey items. Nonpoint sources of pollution can reduce productivity of coastal marshes. Diseases such as cholera and botulism are particularly problematic for colonial wading birds. In the event of an outbreak of these diseases, they spread easily because the birds nest in such high densities.

Other human-related causes of mortality include collisions with power lines and entanglement in fishing lines, gill nets, drift nets, and various forms of plastics (Dodd and Murphy 1998). Bird-flight diverters that make power lines more visible can be effective at reducing collisions by wading birds (Savereno *et al.* 1996).

## CONSERVATION ACCOMPLISHMENTS

The Lacey Act of 1900 was the first major step toward protecting wading birds. The Lacey Act was passed, in part, in response to the millinery trade to regulate interstate and international trade of bird parts. Hundreds of thousands of herons and egrets, among other birds, were killed for their nuptial plumes, used in ladies hats and fashionable clothing (Ogden 1978).

The Migratory Bird Treaty Act of 1918 made it illegal for a person to possess any migratory bird or part, with the exception of game birds during the proper season, as well as the possession of nests and eggs. Prior to these Acts, market hunting was responsible for population declines in many bird species.

The South Carolina Department of Natural Resources (SCDNR) collected baseline data during statewide ground census counts in 1988, 1989, 1994 and 1996. Aerial surveys have been conducted annually since 1988, with the exception of 2009 and 2010, when SCDNR did not employ a biologist to fill this role. SCDNR staff and volunteers have been monitoring the nesting success of Wood Storks at several index colonies since 2011.

SCDNR has partnered with the USFWS Coastal Program, SCE&G, private landowners and other partners to improve habitat for wading birds. Collaborative projects include managing aquatic vegetation at rookeries using herbicide applications and the installation of bird-flight diverters on the power line adjacent to a rookery at Donnelley Wildlife Management Area to reduce the likelihood of collisions. During 2011-2013, 7 outreach presentations were given to a total of approximately 265 attendees covering various topics such as the importance of wetlands, habitat protection, invasive species management, and private land management. These presentations benefited the following wading bird species of priority in the SWAP: Wood Stork, Black-crowned Night Heron, Glossy Ibis, Little Blue Heron, Snowy Egret, Tricolored Heron, White Ibis, and Yellow-crowned Night Heron.

## CONSERVATION RECOMMENDATIONS

- Conduct Research and Inform Permitting Agencies
  - Annually survey colonies containing federally endangered birds.
  - Complete a statewide ground census of nesting wading birds for two consecutive years at least every 10 years, OR develop an alternative plan for monitoring population trends that incorporates aerial and ground surveys of a subset of the colonies in the State.
  - Coordinate with biologists in the Southeastern Coastal Plain to develop plans to monitor wading birds on a regional scale.
  - Monitor individual nests at a subset of colonies to determine productivity.
  - Identify important foraging areas near nesting colonies, and determine how far from the colonies different species travel to forage.
  - Determine the effects of human activity on wading bird foraging efficiencies as well as the importance of roost sites and their relationship to available foraging habitat.
- Partner with Industry, Developers, Permitting Agencies and Private Property Owners/Managers to Protect Nesting and Feeding Habitat
  - Provide technical assistance and/or financial incentives to property owners for projects that will significantly benefit wading bird conservation. Control aquatic vegetation in large rookeries to ensure that alligators can move through the nesting area and deter mammalian predators from depredating eggs and chicks.
  - Determine Best Management Practices for multi-species management of impounded marsh habitat. Integrate management for colonial wading birds into traditional waterfowl management of currently impounded wetlands by timing draw-downs during key feeding periods (post-fledging).
  - Partner with industry and permitting agencies to prevent the destruction of important wading bird breeding, feeding, and roosting sites.
  - Work with permitting agencies to encouraged the creation of wetlands that are appropriate for wading birds when wetland mitigation is required. To create wetland habitat for waterbirds, water depth, water level fluctuation, vegetation, salinity, topography, food type, food accessibility should be considered (Ma *et al.* 2009). Short hydroperiod wetlands are important for tactile foragers. Deeper wetlands with islands and/or trees surrounded by water provide nesting habitat. Nesting and feeding habitat should be created in close proximity.

- Determine and encourage the use of Best Management Practices for residential and commercial development activities near nesting and feeding sites.
  - Maintain vegetated visual buffers around nesting colonies and feeding areas to protect birds from human disturbance.
  - Include islands with suitable nesting habitat when constructing new ponds.
  - Leave shrubs around the edges of ponds to provide nesting and foraging habitat and for bank stabilization.
  - Minimize fertilizer, herbicide, and pesticide runoff into wetlands.
- Document water quality issues at colony sites, and partner with appropriate permitting agencies to reduce the input of chemical contaminants and untreated wastewater into wetlands.
- Place landfills, power lines, and towers away from colonies and wetland areas. Install bird-flight diverters and space power lines widely at sites used by wading birds where it is not feasible to bury lines.
- Acquire, or assist conservation organizations to acquire, and manage important nesting and feeding sites to benefit wading birds.
- Support Outreach and Public Education
  - Provide information about wading birds in South Carolina to the public via the SCDNR website and news releases.
  - Provide increased opportunities for the public to view and appreciate wading birds while preventing disturbance to nesting and foraging birds (i.e. the overlook at Pinckney Island National Wildlife Refuge).
  - Install educational kiosks and signs at sites where the public can view wading birds.

## MEASURES OF SUCCESS

Protecting important habitat as outlined above should provide stable resources and enable populations to rebound. Wading bird nesting colonies should be distributed widely across Coastal Plain counties. The ultimate measure of success would be to document stable to increasing population trends of colonial wading birds.

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