

Wood Stork

Mycteria americana

Contributors (2005): Thomas M. Murphy (SCDNR)

Reviewed and Edited (2012): Christine E. Hand (SCDNR)

DESCRIPTION

Taxonomy and Basic Description

The Wood Stork is the only stork species that breeds in the United States. Worldwide, there are 19 species of storks in the family Ciconiidae, 4 of which belong to the genus *Mycteria*. Wood Storks are morphologically indistinguishable across their range, and no subspecies have been proposed (Coulter et al. 1999). This species is also discussed in the Colonial Wading Birds and Allies Guild account.



Photo of an adult and an immature Wood Stork
by C. Hand, SCDNR

Wood Storks have a wingspan of 150 to 165 cm (59 to 65 in.) and a head-to-tail length of 85 to 115 cm (33 to 45 in.) (Coulter et al. 1999). They are the largest wading birds that breed in South Carolina. Unlike herons and egrets, storks fly with their neck and legs extended. Wood Storks are mostly white, but their primary and secondary wing feathers and their tail feathers are glossy black with a greenish tinge. Adults have dark, unfeathered necks and heads and long, dark bills. At the onset of the breeding season, adults have pinkish feathers under their wings, fluffy feathers under their tails, dark legs, and pink feet. Their legs and feet fade to gray during the nonbreeding season. Immature Wood Storks look similar to adults but have grayish feathers on their necks and heads as well as yellow bills. Storks gradually lose their neck feathers as they mature. They reach maturity at 3 to 4 years of age (Coulter et al. 1999).

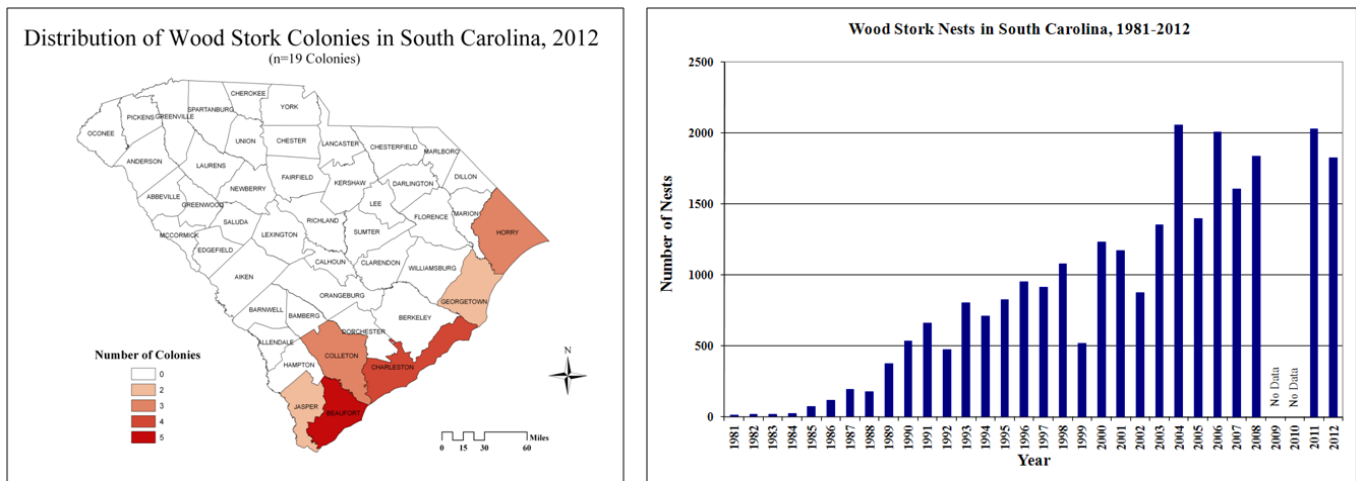
Status

Wood Storks were listed as Endangered on February 28, 1984, pursuant to the Endangered Species Act of 1973, as amended (USFWS 1984). They are also listed as endangered under the South Carolina Nongame and Endangered Species Conservation Act. The South Carolina Heritage Trust Program lists the Wood Stork as threatened in this state (S1/S2) and uncommon but not rare or apparently secure globally (G4) (NatureServe 2011). The North American Waterbird Conservation Plan (Waterbird Conservation for the Americas, Version 1) listed the Wood Stork as a species of high concern (Kushlan et al. 2002). The status of the Wood Stork was reviewed by the US Fish and Wildlife Service (USFWS) in 2007, and in 2010, a petition was filed to reclassify Wood Storks as Threatened rather than Endangered (USFWS 2010). A decision on the reclassification was announced in June 2014 and the bird was down-listed to Threatened. A reclassification to Threatened does not alter any of the protections Wood Storks receive under the Endangered Species Act, but it is a step toward delisting the species.

POPULATION SIZE AND DISTRIBUTION

The breeding range of the Wood Stork extends from the southeastern part of the United States through Mexico, Central America and the Caribbean, to central South America. In the United States, storks breed in Florida, Georgia, South Carolina, and North Carolina. The breeding population of Wood Storks in the United States was initially listed as Endangered after nesting pairs declined from between 15,000 and 20,000 in the 1930s to 2,500 pairs by 1978. The low number in 1978 was a combination of a decrease in the regional population and poor conditions for nesting that particular year (USFWS 1996).

Historically, Wood Storks have used South Carolina as a post-nesting foraging area during the summer and fall (Murphy 1995). In 1981, the first successful Wood Stork nests were documented in South Carolina (11 nests). By 2004, the population had grown to 2,057 nests at 14 sites. Since 2005, approximately 1,500-2,000 stork nests have been built each year in 12-23 colonies. Complete Wood Stork surveys were not conducted during 2009 and 2010 because the former SCDNR biologist, Tom Murphy, retired in 2008 and a new biologist was not hired until 2011.



HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Wood Storks typically nest in the upper branches of black gum (*Nyssa biflora*) or cypress (*Taxodium distichum*) trees that are in standing water. Standing water deters mammalian predators and is an essential element of colony sites. Storks require open access to nest trees and are frequently found in trees adjacent to open water areas. Range-wide, there has been a trend towards the use of manmade wetlands as colony sites in recent years as these sites are not totally dependent on rainfall for water (Rodgers 1996). In South Carolina, colony sites are typically surrounded by extensive wetlands, in particular palustrine forested wetlands (Mitchell 2002).



Wood Stork chicks are altricial, which means that they are completely dependent on their parents for temperature regulation and food when they hatch. At least one parent is usually at the nest caring for the chicks during the first three weeks after they hatch. Wood Stork chicks require parental care for a long period of time (over two months) before they can depart from their nests and feed themselves. In order for Wood Storks to nest successfully, prey must be abundant and available throughout their nesting season. A small colony of Wood Storks (100 pairs) requires over 15,000 kg (33,070 lbs.) of food during the nesting season (Coulter et al. 1999). Storks time their nesting activity so that chick rearing coincides with receding water levels in wetlands, which allow them to capture prey more efficiently. In South Carolina, storks typically nest from March through August. When adequate food is not available throughout the entire nesting season, adult storks abandon the colony and the remaining eggs and chicks do not survive.



Photo by C. Hand, SCDNR

Unlike herons and egrets, which hunt visually, Wood Storks use tactolocation, which means that they hunt by feeling for fish, crustaceans, and other prey. Storks wade through the water with their bills open, and when their sensitive lower mandible comes into contact with prey, their bill snaps shut. A snapping reflex is used to close their bills in as little as 1/40th of a second (Coulter et al. 1999). Storks sweep their bills back and forth through the water and pump their feet up and down to startle prey. This feeding strategy requires high concentrations of prey in water that is shallow enough (less than 50 cm or 20 in.) (Coulter et al. 1999) for storks to wade through it. Storks can feed in the dark and in water that is murky since they do not rely on visual cues to locate prey. Tactolocation also allows storks to feed in large aggregations that stir up sediment into the water. Forested riverine floodplains, diked marsh impoundments, ponds, ditches, and tidal creeks are important feeding habitats. Use of these habitats is enhanced by receding water.



Photo by C. Hand, SCDNR

CHALLENGES

Wood Storks are particularly vulnerable to habitat degradation and to unpredictable weather conditions because of their specialized feeding behavior and because their chicks require care for a long period of time before becoming independent. Loss of feeding habitat from alteration of natural hydroperiods in the Everglades has resulted in abandonment of nesting colonies or

widespread nesting failures in south Florida. Development, lowered water tables, and disturbance also degrade nesting sites. As habitat in their historic breeding range has become degraded, South Carolina has become an important breeding area as well as an important feeding area during the nonbreeding season.

CONSERVATION ACCOMPLISHMENTS

A regional Wood Stork working group has been organized to facilitate information exchange and to set research and management priorities. Standardized surveys of nesting efforts have been completed for the Southeastern United States. Regional management guidelines for Wood Stork nesting, feeding, and roosting habitats have been developed. A Wood Stork Recovery Plan has been completed by the USFWS. In 2001, a brochure to inform landowners of conservation and management needs of storks was completed as a joint production of the USFWS and the University of Georgia Savannah River Ecology Laboratory. This brochure can be found at: <http://www.fws.gov/northflorida/WoodStorks/Documents/WOST-brochure.pdf> (Accessible as of November 7, 2011).

At a few sites, intensive efforts have been made to create habitat for Wood Storks. Techniques for management of fresh water ponds to enhance stork use have been developed and implemented at the National Audubon Society's Silver Bluff Plantation Sanctuary in Jackson, South Carolina. At Harris Neck National Wildlife Refuge (NWR), artificial nesting platforms have been developed to enhance stork nesting at colony sites with limited vegetation for nest construction. In recent years, the storks at Harris Neck NWR have moved from the artificial platforms to trees that were grown to provide nesting habitat.

CONSERVATION RECOMMENDATIONS

- Conduct aerial surveys annually to locate new Wood Stork nesting colonies and to determine which colonies should be visited from the ground.
- Conduct complete ground counts of Wood Stork nests at colony sites in South Carolina each year.
- Provide permitting agencies with current information on Wood Stork colonies by updating distribution maps every year.
- Monitor a sample of nests each year to quantify nesting success.
- Determine survivorship of fledgling, immature, and adult Wood Storks using mark and recapture (band resighting) and satellite telemetry.
- Document important habitat for Wood Storks during the nonbreeding season.
- Determine if the amount of foraging habitat limits species recovery. Study foraging ecology and habitat use in South Carolina.
- Participate in and contribute to the regional Wood Stork working group.
- Integrate management for Wood Storks into traditional waterfowl management of currently impounded wetlands by timing draw downs during key feeding periods (post fledging).
- Provide technical guidance and assistance to owners and managers of land where storks nest, feed, and roost.

- Develop a fund that can be used by SCDNR to manage habitat for storks on private lands (with the consent and cooperation of the private landowners). SCDNR manages aquatic vegetation in colonies on public land, but funding is not currently available for SCDNR to purchase herbicide and apply it on private land.
- Acquire, or assist conservation organizations to acquire, and manage important nesting and feeding sites to benefit Wood Storks.
- Develop a SCDNR web page on Wood Storks and other wading birds for public outreach and information exchange with existing and potential management partners.

MEASURES OF SUCCESS

During the past several decades, Wood Stork nesting has shifted north and is significantly changing management of the species. Efforts to restore wetlands in south Florida may significantly affect wintering and nesting Wood Storks in the future. The USFWS recovery goal for the Wood Stork is a minimum of 10,000 breeding pairs with annual regional productivity greater than 1.5 chicks per nest/year (USFWS 1996).

LITERATURE CITED

- Coulter, M.C., J. A. Rodgers, J.C. Ogden and F.C. Depkin. 1999. Wood Stork (*Mycteria americana*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: Accessed on October 14, 2011 at <http://bna.birds.cornell.edu/bna/species/409>.
- Kushlan, J.A., M.J. Steinkamp, K.C. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R.M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J.E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. *Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan*, Version 1. Waterbird Conservation for the Americas, Washington, DC, U.S.A., 78 pp.
- Murphy, T.M. 1995. The status of Wood Storks in South Carolina. Pp. 30-33. *In*: Proceedings of the Wood Stork Symposium. The Georgia Conservancy. Savannah, Georgia.
- Mitchell, M.E. 2002. Using Geographic Information Software to Analyze the carrying capacity of Wood Stork Nesting Sites in Relation to Wetland Availability. Internship Report. University of Charleston. Charleston, South Carolina. 90 pp.
- NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [online web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed on October 6, 2011 at <http://www.natureserve.org/explorer>.
- Rodgers, J.A., Jr. 1996. Nesting habitat of Wood Storks in north and central Florida, USA. *Colonial Waterbirds*. 19:1-21.

Stangel, P.W., J.A. Rodgers, Jr. and A.L. Bryan. 1990. Genetic variation and population structure of the Florida Wood Stork. *Auk*. 107:614-619.

U.S. Fish and Wildlife Service. 1984. Endangered and threatened wildlife and plants; U.S. breeding population of the Wood Stork determined to be endangered. *Federal Register* 49:7332-7335.

U.S. Fish and Wildlife Service. 1996. Revised recovery plan for the U.S. breeding population of the Wood Stork. U.S. Fish and Wildlife Service. Atlanta, Georgia.

U.S. Fish and Wildlife Service. 2010. Endangered and threatened wildlife and plants; 90-day findings on a petition to reclassify the U.S. breeding population of Wood Storks from endangered to threatened. *Federal Register* 75(182):57426-57431.