Wood Stork Research

Why study Wood Storks on the SRS?

Wood Storks (*Mycteria americana*) are large wading birds that typically feed on fish in shallow wetlands. In the U.S. they occur mostly in Florida, Georgia, and South Carolina. The North American breeding population of Wood Storks decreased from about 20,000 pairs in the 1930's to less than 4,000 pairs in 1983. Since then the population has increased to more than 6,000 pairs. The Wood Stork was listed as a federally endangered species in 1984 due to population declines resulting from loss of foraging habitat. They have been feeding and roosting in aquatic habitats on the Savannah River Site (SRS) since the 1950's, including the Steel Creek Delta of the Savannah River swamp system. When the decision was made in the early 1980's to restart the Site's L-Reactor, concerns were raised regarding the Wood Stork because restarting the reactor would raise water levels too high for the Steel Creek Delta to be used as foraging habitat. After consultation with the U.S. Fish and Wildlife Service (USFWS), a research program focusing on Wood Storks was created at the Savannah River Ecology Laboratory (SREL) to monitor stork use of the SRS and to study the breeding biology and ecology of the Wood Stork in this unstudied (northern) portion of its range. Using research findings from the initial years of this program, impoundments stocked with fish were built to "replace" the potentially impacted Steel Creek Delta. This habitat, the Kathwood Foraging Ponds, was constructed in cooperation with the National Audubon Society (NAS) on its nearby Silverbluff Sanctuary. Research on this endangered species also focuses on issues such as the effects of contaminants.

Wood Stork preening

Wood Storks feeding at the Kathwood Ponds.

SREL stork research overview

SREL stork studies initially focused on the Birdsville breeding colony in Jenkins County, GA, which was thought to be the source of the storks commonly observed on the SRS. Wood Stork breeding success has been studied at this colony since 1984. These studies have shown that rainfall patterns and their effects on colony water levels and foraging site hydrology generally determine how many nestlings are produced and survive until fledging age. Analyses of foraging flights from the Birdsville colony suggested that storks rarely traveled as far as the SRS to feed during the breeding season, and that late-summer/early fall use of SRS wetlands was more common after the birds dispersed from their breeding colonies. This conclusion is supported by nearly 1,000 aerial surveys for storks in the Savannah River swamp system of the SRS since 1983. To feed efficiently, Wood Storks were shown to require shallow wetlands with high densities of

prey. Environmental disturbances that affect these habitats can limit the success of these storks.

Kathwood foraging ponds

Twenty-five acres of managed ponds were constructed at Kathwood Lake in 1985-86. These impoundments are jointly managed by NAS and SREL, which study the wading birds using the ponds. Wood Storks have fed in the ponds every year since their construction, with 305 storks observed in one pond on one day in August, 1998. Storks that were color-banded as nestlings in Birdsville and a coastal Georgia breeding colony have been observed at these ponds. These impoundments may be particularly beneficial as foraging habitat for juvenile storks, which typically make up 60-75% of the storks using the ponds, enhancing survival at a critical time of their life cycle.

Wood Storks at the Birdsville colony: adults with chicks on nest (top); Wood Storks and other wading birds in the colony.

The impoundments also function as an "outdoor" laboratory for studying the behavior of storks, including feeding rates and competition with other wading birds. Data collected from SREL studies at Kathwood have indicated that storks are very active nocturnally, feeding at least as much at night as during the day. Collection of behavioral information, such as feeding rates and length of time storks actively feed, is necessary to determine potential risks from contaminants to storks that may forage on the SRS.

Wood Storks nesting at the Birdsville colony.

Current research topics

SREL continues to monitor the use of SRS wetlands by storks to ensure compliance with USFWS recovery objectives for the Wood Stork. With the cessation of reactor operations, SREL's stork research has focused more on contaminant concerns, primarily on determination of possible risks associated with mercury in SRS wetlands. SREL monitors mercury concentrations in prey-sized fish in historical, active, and potential stork foraging sites and also studies the processes that affect those concentrations. Many feeding sites are Carolina bays and other temporary wetlands that do not have known sources of contamination. However, mercury has been found in stork prey from these sites; this mercury presumably results from atmospheric deposition and its availability to potential prey is enhanced by seasonal water fluctuations characteristic of temporary wetlands. Prey-sized fish from SRS reservoirs also are monitored for mercury. Although storks do not typically feed in lake systems, they did feed in one SRS reservoir when it was drawn down for repair in 1991. SREL, in a project partially funded by USFWS, is analyzing mercury levels in stork nestlings and the prey they receive as food. Monitoring the use of wetlands by storks and the levels of contaminants in potential prey, actual prey, and nestlings will lead to more accurate estimates of effects, if any, associated with Wood Storks feeding on the SRS.

Other SREL Wood Stork studies include coastal foraging ecology, large-scale movement patterns monitored via satellite telemetry, and determination of stork foraging strategies using stable isotopes.

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