



Wading Birds: Indicators of Restoration Progress

Analysis of the 2014 SFWMD Wading Bird Report

Introduction

Wading birds are important ecological indicators – their health reflects the health of the broader ecosystem. The South Florida Water Management District uses wading birds as indicators of Everglades restoration progress, releasing the South Florida Wading Bird report each year. Now in its twentieth year of publication, this report details the nesting success of wading birds across the Greater Everglades. Audubon Florida scientists contribute data for several regions in this document.

In 2014, only 34,714 nests were counted in the Greater Everglades. This is a 28% drop in nesting compared to 2013. Tricolored Herons, Little Blue Herons, and Snowy Egrets showed the largest declines in nesting rates.

Restoring the Flow of Freshwater

Two main factors contribute to the success of wading bird nesting in the Everglades. One is the seasonal pattern of rainfall. The other is the managed movement of water through this highly-altered landscape.

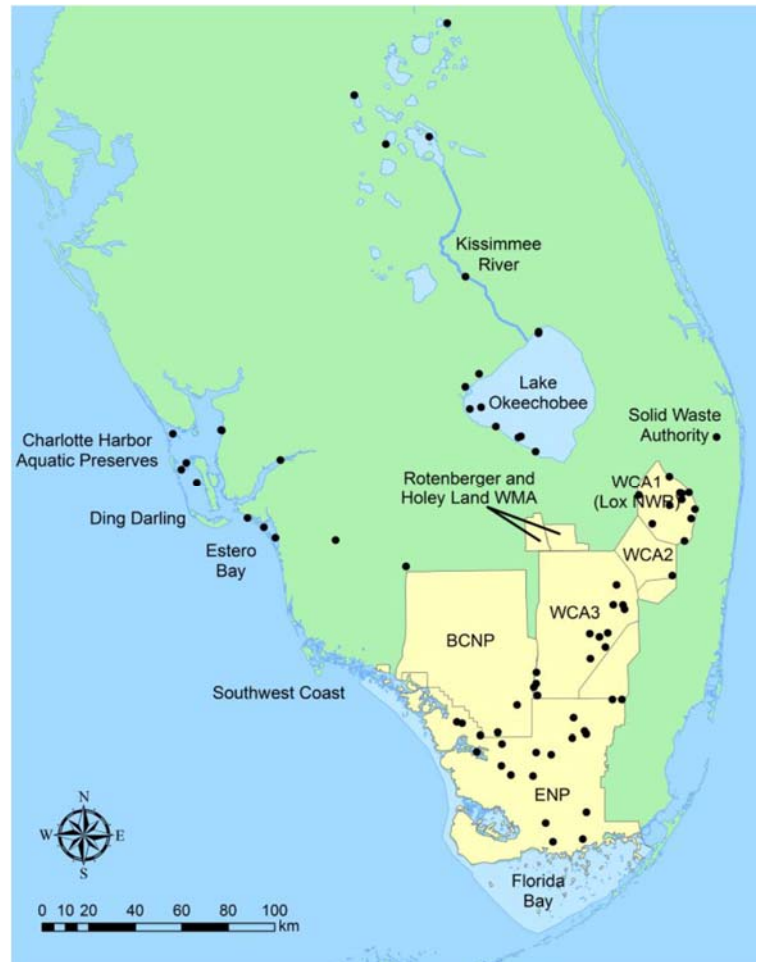
From June through October, South Florida's wet season brings higher water levels to the Everglades. This allows populations of tiny fish, grass shrimp, and other prey organisms to increase as water levels rise in wetlands around the ecosystem.

In the dry season, from November to May, water levels begin to slowly recede. This leaves fish trapped in increasingly shallow water, making it easier for wading birds to find enough food for themselves and their growing chicks.

The natural rhythm of seasonal water levels required for wading bird nesting success were disrupted in the early 20th Century. Canals and other flood control structures were put in place to drain Florida for development, resulting in a severely altered flow of water across the Everglades.

Wading birds have the greatest success in areas where restoration efforts are recreating historic patterns of water flow. For example, the 2014 South Florida Wading Bird Report shows nesting is improving in the areas of the Kissimmee River Basin where water flow patterns have been restored. Conversely, water flow patterns in Everglades National Park still need improvement. Poor water flow patterns combined with too much rain in the dry season can lead to low nesting, similar to what was observed this year.

Climate change, habitat destruction, and invasive species are also factors putting new pressures on wading birds. Improving water management and restoration efforts will increase the health of the Greater Everglades Ecosystem and ensure that wading bird populations are resilient to changing conditions.



Locations of wading bird colonies with 50 or more nests in South Florida, 2014. Source: South Florida Water Management District

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Northern Everglades

Kissimmee River and Chain of Lakes

⇒ 2,923 wading bird nests were recorded (excluding Cattle Egret) in the Kissimmee River Basin. This is a 48% increase from last year.

Conditions continue to improve for wading birds in this region. The Kissimmee River Restoration project is progressing and about 7,710 acres of wetland habitat have been restored to date. Wading birds have been able to take advantage of newly restored areas for foraging. Refinement of the Kissimmee operation schedule will also allow for better management of water levels that will help promote optimum foraging conditions for wading birds.

Lake Okeechobee

⇒ Nesting on Lake Okeechobee was below average this year with only 3,457 wading bird nests observed.

Most of the wading birds that nest on Lake Okeechobee look for food in the marshes around the edge of the lake. Ideal nesting conditions for birds occur when water levels in the lake dry down in a slow, steady pattern in the dry season. This leads to ideal conditions for birds to find food. Except for an early reversal in water levels, this year mostly followed the idealized pattern but the overall success of nesting did not yet follow suit. Even when conditions improve, wading bird populations may take time to respond. Maintaining the health of the Lake's marshes will help provide the conditions birds need to have successful nesting seasons in future years.

Central Everglades

⇒ A total of 19,096 wading bird nests were recorded across the Water Conservation Areas (WCA), including WCA-1 (Arthur R. Marshall Loxahatchee National Wildlife Refuge), WCA-2, and WCA-3. This is a below average amount compared to nesting efforts seen during the last ten years. White Ibis and Great Egrets nested at below average levels. Little Blue Herons and Tricolored Herons nested at record low levels. Only 4 Little Blue Heron nests and 7 Tricolored Heron nests were recorded across the WCAs.

⇒ Wood Storks were more successful, nesting at levels that were 69% higher than the average of the last ten years.

The largest amount of wading bird nesting in the Greater Everglades occurs in the WCAs. The natural hydrology of the WCAs have been altered to the extent that their water levels must be artificially managed.

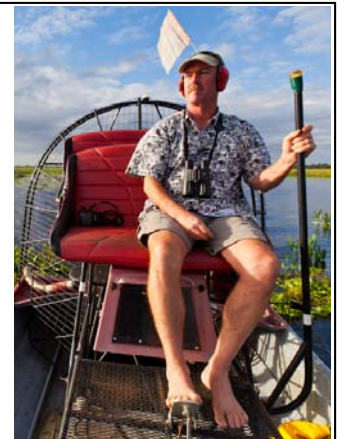
In WCAs 1 and 2, foraging conditions were good for wading birds early in the nesting season, but two rainfall events increased water levels, dispersing prey. These conditions contributed to the low nesting levels observed. In WCA 3, Wood Storks took advantage of good foraging conditions early in the season, but reversals in water levels lead to many abandoning their nests. Wood Storks were able to re-nest in April and May, when water levels dropped again. Nesting this late in the season is uncharacteristic for Wood Storks.

The reasons behind the sharp decline in Little Blue Heron and Tricolored Heron populations remains unclear. Additional research will help scientists understand their low nesting efforts and will help find solutions to ensure their recovery. Continuing efforts to restore the Everglades will expand the available area of good foraging habitat for all wading birds.

Invasive python species pose a new threat to wading bird nesting, as they are known to eat many species of aquatic birds. Everglades researchers have recorded radio tagged Burmese pythons in wading bird colonies. New monitoring

“Recent water management on Lake Okeechobee has improved the ecosystem, but the limited response from wading birds is telling us there more to do. The nesting increase around the Kissimmee River Restoration Project is a very promising sign that restoration is working for Florida’s birds.”

- Dr. Paul Gray, Audubon’s Northern Everglades Science Coordinator



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has started to determine if invasive snakes are preying on wading birds and their chicks. No conclusive evidence was found this year, but monitoring efforts of potential predation in rookeries will continue.

Western Everglades

- ⇒ Audubon scientists monitor wading bird nesting efforts in this region and reported a total of 623 nests across five different colonies.
- ⇒ Wood Storks returned to Corkscrew Swamp and produced 270 nests.

Audubon's Corkscrew Swamp Sanctuary is an old-growth bald cypress forest that historically supported large numbers of nesting Wood Storks. In the late 1950s and early 1960s, when Audubon first began monitoring Wood Stork populations in Corkscrew, an average of over 5,000 chicks fledged from this area each year. In recent years, nesting success has dropped significantly with no nesting occurring in 6 of the last 7 years. This year provided a sign of hope when Wood Storks returned to nest in Corkscrew. Audubon field biologists recorded a total of 270 nests. Of those nests, 160 were successful in fledging healthy chicks. A much wetter than average rainy season contributed to the successful nesting observed this year.

However, the sharp decline of this important nesting area is related to the loss and destruction of wetlands, particularly short-hydroperiod wetlands Wood Storks rely on for foraging early in the breeding season. These types of wetlands are only inundated with water for 6 months out of the year or less. Audubon is working on improving rules and strategies to increase recovery and protection of these valuable short-hydroperiod wetlands that are vital to ensuring the future sustainability of Wood Stork and wading bird populations.

The Picayune Strand Restoration Project, now under construction, will also benefit Wood Stork populations. Once completed, this project will enhance habitat used by Wood Storks and other wildlife.

Southern Everglades

Everglades National Park

- ⇒ This year 6,486 wading bird nests were recorded in Everglades National Park. This represents a 48% decline in nesting compared to 2013. Wood Storks, White Ibis, and Great Egrets all nested in significantly lower levels as compared to last year. Snowy Egrets were the only species that fared better than last year with nesting efforts 11% higher than in 2013.

A wetter than average dry season combined with changes in water flow patterns kept water levels too high to support good foraging for most of the nesting season. This contributed to the low nesting levels seen this year. Speeding up efforts to improve water flow to the Everglades is key to restoring habitat and increasing nesting success in the Park.

Florida Bay

- ⇒ Only 126 Roseate Spoonbill nests were recorded in Florida Bay. This represents a nesting effort that is well below average and less than half of the number of nests reported last year.

This reduced nesting effort reflects the poor health of the Southern Everglades and Florida Bay. Measurements of

"It doesn't matter how many Wood Stork chicks fledge from colonies in the Greater Everglades if they don't survive to successfully breed. Productive and abundant short-hydroperiod wetlands, such as wet prairies, contribute to foraging opportunities and are important to help drive early nest initiation and increase survivorship. Protection and restoration of the functions provided to aquatic fauna and wading birds by short-hydroperiod wetlands is a key to stabilizing and recovering Wood Stork colonies in South Florida."



- Jason Lauritsen,
Director, Audubon's Corkscrew Swamp Sanctuary

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mean sea level rise have been increasing, as have measurements of water levels in the coastal areas. Roseate Spoonbills depend on foraging. Observed changes in coastal habitat water depths are the most likely reason for the low levels of nesting. Efforts are now underway to implement operations of three restoration projects: Modified Water Deliveries to Everglades National Park, C-111 South Dade, and the C-111 Spreader Canal Western Project. The improved operations will increase freshwater flows to Shark River and Taylor Sloughs. Speeding up restoration efforts in the Southern Everglades will improve and maintain the quality of habitat in coastal areas even as sea levels rise.

Audubon scientists have studied Roseate Spoonbills in Florida Bay for 75 years. Audubon has contributed data to the South Florida Wading Bird Report since its first release 20 years ago.

Audubon Recommendations

While some of the information in this document may seem grim, there is a clear path forward for reversing the negative trends and bringing back the extraordinary birds that call the Everglades home. Wading birds depend on wetland ecosystems for survival. Restoring more natural hydrologic flows across the Greater Everglades will improve the resilience of this important habitat. Restoration efforts will allow the Everglades to support greater wading bird nesting even in the face of other factors like sea level rise, invasive species threats, and fluctuations in rainfall patterns. Audubon recommends the following:

Northern Everglades

- Complete Kissimmee River Restoration by 2017 and coordinate Kissimmee River and Lake Okeechobee operations.
- Set a water reservation for the Kissimmee River Restoration project that protects water for natural systems in the Kissimmee Basin.
- Expand the Everglades Headwaters National Wildlife Refuge by working with land owners to acquire land and conservation easements.
- Ensure the new Basin Management Action Plan significantly reduces phosphorus flowing into Lake Okeechobee. Keep Lake Okeechobee water levels between 12.5 and 15.5 feet to maintain the health of the Lake's marshes.

Central Everglades

- Congressionally authorize, fund, and construct the Central Everglades Planning Project.
- Fund and construct the Broward County Water Preserve Areas.
- Improve interagency coordination and funding for invasive species management. Purchase land in the Everglades Agricultural Area before October 2015 and develop a plan for storing water on this land south of Lake Okeechobee.

Western Everglades

- Strengthen protection of existing short-hydroperiod wetland habitats by revising flawed permitting practices.
- Implement good land stewardship practices to manage for prescribed fire and invasive species. Complete the remaining portions of the Picayune Strand Restoration Project.

Southern Everglades

- Bridge an additional 5.5 miles of Tamiami Trail.
- Complete the construction of Contract 8 of the C-111 South Dade Project.
- Establish an operations plan for the C-111 South Dade, C-111 Spreader Canal Western, and Modified Water Deliveries projects that increase water flows to Shark River and Taylor Sloughs and maximize ecological benefits.
- Ensure optimal water levels in the C-111 Spreader Canal Western Project by raising water levels at S-18C and maintaining existing S-197 operations.
- Reinitiate planning for the C-111 Spreader Canal Eastern Project.
- Implement the Everglades National Park General Management Plan, which will increase protection around wading bird rookeries.