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2022-23 Wading Bird Nesting in the Everglades

Overview

Florida's iconic wading birds are key indicators of the Everglades' overall health. Annual surveys of their populations reveal how the ecosystem responds to weather patterns and management practices each year, while long-term trends highlight progress in restoration efforts, the impacts of climate change, and the Everglades' resilience. For nearly three decades, Audubon Florida, in partnership with the South Florida Water Management District and others, has conducted these surveys and produced annual reports to track wading bird populations.

White Ibis, Roseate Spoonbill and Snowy Egret. Photo: Robert Wilson/ Audubon Photography Awards

Nesting in 2022 and 2023 was significantly lower compared to the exceptional highs of 2018 and 2021. However, these levels still demonstrate a steady increase in wading bird nesting in the Everglades—a result of ongoing restoration efforts.

Wading bird nesting in 2022 and 2023 was significantly lower than recent banner years. 2021 and 2018 each saw more than 100,000 nests—a milestone not reached since the 1940s.

A healthy Everglades ecosystem is resilient and capable of supporting exceptionally large populations of nesting wading birds. When conditions are right, the birds are ready. Although water level conditions in 2022 and 2023 were less ideal, the 52,532 and 46,174 nests recorded in those years were more than double those from 1999, a year once considered "exceptional" due to ideal foraging conditions. This demonstrates significant progress since the 1990s, likely driven by the completion of key projects under the Comprehensive Everglades Restoration Plan (CERP) and better water management practices.

While nest numbers show a steady increase over the last several years, that does not necessarily equate to more chicks hatching and surviving. There is much more work to be done to improve the hydrology needed to support the historic bird populations of the 1930s and 40s, when wading birds consistently made 150,000 to 250,000 nests each year.

Roseate Spoonbills. Photo: Tammy Coghill/ Audubon Photography Awards

With that said, there is still room for improvement—the modern Everglades still has not hosted nest numbers like those seen in the 1930s and 40s when wading birds consistently made 150,000 and 250,000 nests. South Florida was once the heartland for Wood Storks but continues to underperform, a worrisome trend that illustrates the profound shift in dry season onset and wetland recession rates in core foraging areas, exacerbated by increasingly irregular rainfall patterns driven by climate change. Continued investments in restoration projects, such as those under the CERP, and efforts made by the Corkscrew Watershed Initiative (CWI), offer hope for increasing the system's resilience. These projects aim to restore natural water flow, improve water quality, and create more stable foraging conditions every year.

With ongoing restoration progress, the Everglades has the potential to support more robust wading bird populations, even when weather patterns are less-than-ideal.

A Historical Perspective

Long-term wading bird nesting data collected by Audubon and partners provide an invaluable measurement of progress in restoring the Everglades ecosystem. Wading bird nesting numbers in 2022 and 2023 are comparable to typical years from 1931 to 1946, a period used to set restoration targets for CERP. This historic period was also punctuated by four banner nesting events that produced 100,000 to 220,000 nests, raising the average annual nests during this time to 79,875. Everglades wading bird populations were at their worst in the decades that followed, averaging only 21,434 nests per year from 1974 to 1991 with "banner" years reaching only 56,472 nests.

Today's Everglades has yet to match the exceptional high population numbers seen in the 1930s and 1940s, but tremendous progress has been made. The 52,532 nests recorded in 2022 are more than double the average from 1974 to 1991 and would actually have been considered a banner year during that period. Compared to recent years, nest numbers in 2022 and 2023 weren't far below the 10-year average of ~55,000 nests, and 2022 saw the third-highest nesting of the last decade, only lower than the two years that saw over 100,000 nests.

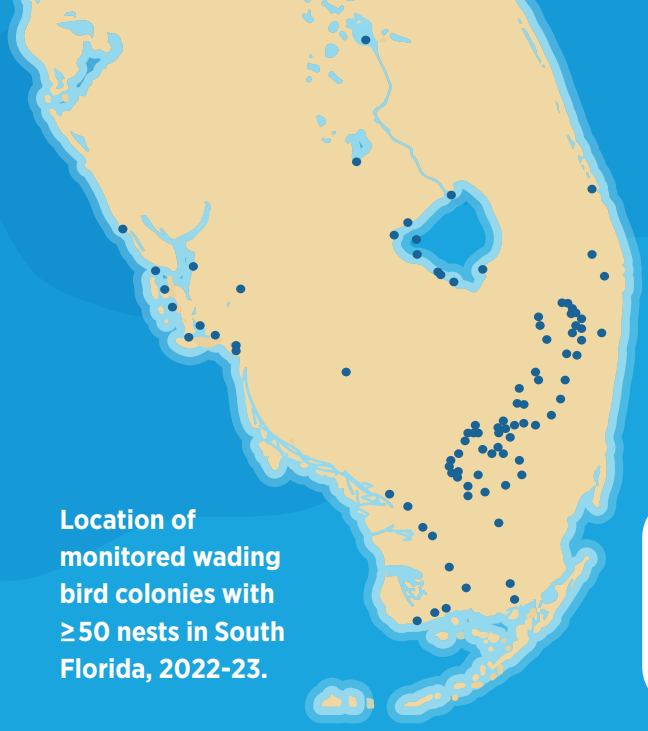
Concerns Remain

While these increases in total nesting numbers highlight progress in restoration efforts and underscore the system's potential to support greater numbers of wading birds, total nest numbers don't tell the full story. Nest productivity in 2022 and 2023 was less than ideal, especially because they were low in relation to previous years. In 2022, relatively dry conditions reduced prey availability and foraging habitat across much of the Everglades. In 2023, heavy rains in April caused water level reversals during the peak nesting season, forcing wading birds to expend extra energy to feed hungry chicks. This challenge was especially pronounced for tactile-feeding species like Roseate Spoonbills and Wood Storks, which fledged very few chicks in both years combined. For example, out of the 794 Wood Stork nests at the Cabbage Bay colony in 2023 (i.e., approximately 2,400 eggs) only 80 to 100 chicks fledged. While Wood Storks continue to initiate nesting on their historic Everglades breeding ground, repeated years of nest failure due to poor foraging conditions is hindering their ability to meet recovery targets. Birds must be able to not only nest, but also forage successfully to feed chicks.

More nests does not mean more success. In 2023, the Cabbage Bay colony fledged only 80 to 100 chicks out of an approximate 2,400 eggs in 794 nests.

Wood Storks. Photo: Jeffrey Karnes/ Audubon Photography Awards

In recent decades, Audubon has made significant strides in understanding Everglades hydrology and ecology. Restoration initiatives and improvements in water management infrastructure have reduced impacts on wading birds, but the system's need for resilience to climate events is greater than ever. As we move forward with a changing climate, science will continue to be pivotal in guiding restoration and resilience efforts to protect this unique and treasured landscape.



Location of monitored wading bird colonies with ≥50 nests in South Florida, 2022-23.

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EVERGLADES WADING BIRD REPORT

Each year, researchers from nonprofits, agencies, and universities work together to combine wading bird survey results from across the Everglades as a measure of success in restoring the River of Grass.

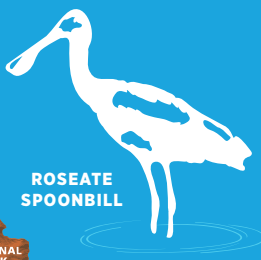
Wading birds need the right combination of wet and dry conditions throughout the year to breed successfully. A wet summer promotes an abundance of prey followed by a dry winter and spring results in dropping water levels that concentrates prey in shallow pools or other water bodies—the conditions that set most wading birds up for success.

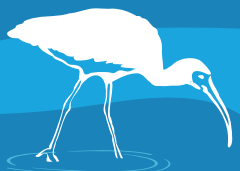
2022: 52,532
2023: 46,174

EVERGLADES WADING BIRD NESTS INITIATED

10-YEAR AVERAGE: ~55,000

✓ While lower than recent banner years, 2022 and 2023 are more than double the average from 1974 to 1991.





✓ **GREAT EGRET, WHITE IBIS, AND WOOD STORK** all met their conservation targets in both 2022 and 2023. The target for exceptionally large groups of nesting White Ibis was also met in both 2022 and 2023.

↓ 6,695

Point of Concern: In 2022, there were 6,695 wading bird nests in Everglades National Park, an 81% drop from 2021. **WOOD STORK, GREAT EGRET, WHITE IBIS, AND SNOWY EGRET** nesting all decreased significantly. 2023 numbers only improved by 18%.

TRICOLORED HERONS, SNOWY EGRETS, AND LITTLE BLUE HERONS

<10,000 ↓

NESTS PER SPECIES IN THE EVERGLADES PROTECTION AREA

South Florida used to be the heartland for **WOOD STORKS** but today the megacolonies of the past—like the one-time largest in the country at Audubon's Corkscrew Swamp Sanctuary—are a distant memory. Over-drainage, particularly in Southwest Florida, and withdrawals for agriculture and public water supply have altered the region's water levels, reducing food for Wood Storks and increasing their vulnerability to predators.

THESE NUMBERS SHOW US THAT RESTORATION PROJECTS WORK.
AUDUBON CONTINUES TO BE A LEADING VOICE FOR EVERGLADES RESTORATION FOR THE BENEFIT OF BIRDS AND PEOPLE.

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Wood Stork.
Photo: Larry Temple/Audubon Photography Awards

Key Findings of the 2022-23 South Florida Wading Bird Report

Rainfall and Hydrologic Conditions

- In Water Year 2022 (May 2021 through April 2022), rainfall in the Everglades was significantly below average, with totals 12-26% lower than usual across different areas. Despite the dry conditions, water levels were generally higher than average, except in WCA-3.
- The wet season, starting in May 2021, was marked by below-average rainfall through early November, which limited the availability of fish and other prey needed by wading birds for successful nesting.
- As a result, wading birds faced poor foraging conditions during the nesting season, leading to limited and unsuccessful nesting.
- Additionally, water levels dropped too quickly during the dry season, causing many areas to dry out early, further hindering bird reproduction.
- On a positive note, the drier conditions allowed tree islands to recover from the previous year's high-water levels.
- Overall, the dry conditions of Water Year 2022 resulted in low prey production and limited nesting success, in contrast to the wetter conditions of Water Year 2021 (May 2020 through April 2021), which supported near-record nesting efforts.
- In Water Year 2023 (May 2022 through April 2023), rainfall was close to average, with heavy September rains from tropical storms raising water levels.
- Despite this, WCA-3A experienced lower water levels, possibly due to changes in water management.
- Water levels in WCA-1 and WCA-2A were good for prey production, but wading bird nesting was still below average for the second year in a row.
- Early in the wet season, some areas, particularly in northern WCA-3A, were too dry, reducing food for wading birds.
- Water levels improved by June but dropped sharply in July. A tropical storm in September helped raise water levels again.

System-wide Indicators

- Great Egret, White Ibis, and Wood Stork all met their conservation targets in both 2022 and 2023—a positive outcome for these species. The targets for exceptionally large groups of nesting White Ibis were also met in both 2022 and 2023.
- Nesting was delayed in both years, beginning in mid-February. This delay is likely due to sea level rise leading to higher water levels later into the season.
- Nesting success was low in both years for all species, with particularly poor results for Wood Storks. While habitat restoration progress has been made, there is a long way to go for consistent, high nesting years.
- Small heron species like Tricolored Heron and Little Blue Heron continued their concerning decline in nest numbers, achieving only a small fraction of the target of 10,000 nesting pairs for the Everglades Protection Area in both years. On the positive side, their numbers appear to be stable or climbing in coastal habitats.
- The ratio of tactile foraging species (Wood Stork, Roseate Spoonbill, and White Ibis) to visual predators (heron and egret species) was much higher historically than in the post-drainage Everglades. A restoration target is to have 32 tactile feeders for every visual predator. Like all indicators this is vastly improved over the 1980s and 1990s baselines but the ratios of 3.7 and 3.1 in 2022 and 2023 still fall well short.

Nesting in the coastal area of Everglades National Park (the “fertile crescent”) was 15% in 2022 and 23% in 2023, compared to 24-42% in the five years prior to 2022, with a restoration target of 50%. Changes to rainfall patterns in this region greatly reduced the overall productivity, making it much less suitable for wading birds. Water flows to this region must improve in order to reach target nesting levels.

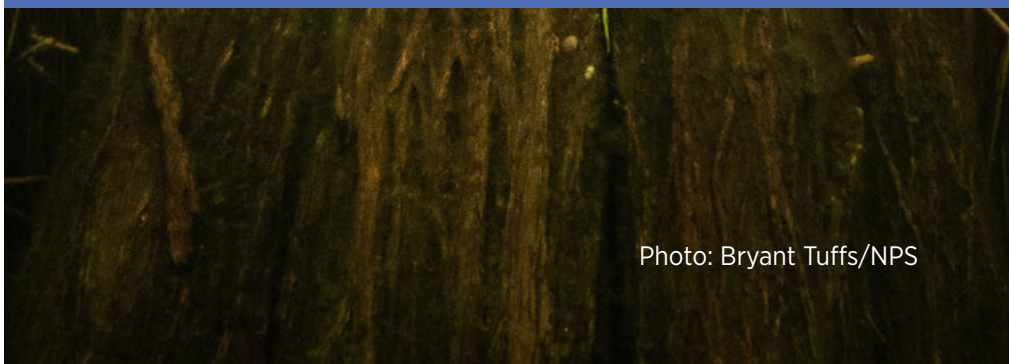

Photo: Bryant Tuffs/NPS

Great Egret, Snowy Egret, Tricolored Heron.
Photo: Philip Dodderidge/Audubon Photography Awards

Overall

- ***Funding for Wetland Restoration and Wading Bird Monitoring:*** All regions of the Everglades ecosystem will benefit from ensuring adequate funding for wetland restoration and ongoing wading bird monitoring. These efforts are essential for the long-term health and sustainability of the ecosystem, supporting both habitat restoration and population tracking.
- ***Identifying Causes of Nesting Declines and Assessing Restoration Success:*** It is crucial to effectively identify the causes of nesting declines and evaluate how Everglades restoration projects are achieving their intended benefits. This will help to refine management practices and ensure that efforts are on track to restore the ecosystem's full potential.
- ***Need for Continued Monitoring Funding:*** In 2011, the South Florida Water Management District (SFWMD) and the Army Corps of Engineers froze budgets for monitoring programs under the Restoration Coordination and Verification (RECOVER) Monitoring and Assessment Plan (MAP). Since then, monitoring efforts have decreased even as costs have risen. Ongoing monitoring is critical to assess restoration effectiveness and to guide adaptive management under the CEPP Operational Plan. To ensure the success of the Comprehensive Everglades Restoration Plan (CERP), funding for these monitoring programs must at least be maintained at current levels, but a concerted effort needs to be made to increase funds for the MAP.
- ***Prioritizing Hydrologic Restoration for Wetland Success:*** The restoration of hydrology for all wetland types is essential for the success of Everglades wading bird reproduction. Prioritizing this restoration will address the historical factors that have influenced wading bird populations, supporting better breeding conditions and overall ecosystem health.
- ***Regulatory and Collaborative Approaches to Water Level Restoration:*** Achieving effective hydrologic restoration may require regulatory improvements, incentives for wetland restoration, public funding, and collaboration among landowners, agencies, researchers, and other partners. Coordinated efforts will help ensure that restoration goals are met efficiently.
- ***Water Storage and Treatment Capacity in the Kissimmee Valley and North of Lake Okeechobee:*** It is crucial to implement a plan that increases water storage and treatment capacity north of Lake Okeechobee and in the Kissimmee Valley. This will improve water management and provide vital habitat for bird species in these areas, supporting overall landscape resilience.
- ***Climate Change Considerations:*** Climate change is having a growing impact on the timing of bird nesting in the Everglades and should be incorporated into water management considerations.

Nesting by Region

Northern Everglades

Okeechobee and Kissimmee Valley

Wading bird nesting on Lake Okeechobee in 2022 and 2023 showed similar numbers, but both years were about 40% lower than recent averages, primarily due to deep water levels. El Niño rains in 2023 led to worse outcomes due to increased water depth.

Peak nesting numbers of the most common species in each year were as follows:

Species	2022	2023
Great Egret	565	703
White Ibis	786	405
Snowy Egret	536	637
Tricolored Heron	124	525
Wood Stork	40	58
Roseate Spoonbill	35	20

In 2023, three nesting surveys in the greater Kissimmee Valley found a total of 174 nests on Rabbit Island in Lake Kissimmee, with 70 nests of Great Egrets and 100 nests of White Ibis. Bumblebee Island on Lake Istokpoga remains the largest nesting area in the region, with a peak of 2,420 nests, including 1,400 White Ibis, 120 Great Egrets, and 500 unidentified "small white herons." Additionally, six other nesting colonies hosted about 900 birds, with approximately 85% of them being Cattle Egrets.

The Kissimmee River Restoration construction is complete, and agencies are now testing different water release patterns to observe how the floodplain responds. As a result, optimal water levels have not yet been achieved. Prior to restoration, surveys found about one bird per square kilometer. The restoration goal is to reach about 30 birds per square kilometer, and surveys in 2023 found approximately 40 birds per square kilometer. This positive response is expected to improve further as water levels and management are fine-tuned.

Other notable nesting locations included the Savannas Preserve State Park in Martin County with 54 nests in 2022 and 2023 of mostly White and Glossy Ibis. The Palm Beach Solid Waste Authority hosted 234 and 360 White Ibis in 2022 and 2023, with 194 Wood Storks in 2022 and 245 Tricolored Herons in 2023. These and other isolated locations contribute to the overall health of wading bird populations, especially for some less common species.

Policy Recommendations

Lake Okeechobee

- Advocate for a more flexible and responsive water management plan under the new Lake regulation schedule, the Lake Okeechobee System Operating Manual (LOSOM), that balances ecological health with flood control needs, ensuring that lake levels are managed in a way that supports wildlife, reduces the frequency of excessively deep water in Lake Okeechobee, and allows for necessary restoration drawdowns.
- Prioritize and fast-track the implementation of the Lake Okeechobee Component A Reservoir project, the largest water storage project upstream of the lake which will offer significant benefits to the entire ecosystem.
- Support resiliency measures in the watershed, with an emphasis on regional distributed water management projects (wetland restoration), especially in light of recent tropical storms and hurricanes, that will address in-basin water storage, mitigate flooding, and provide habitat and clean water sources.
- Support agency efforts to improve Lake Okeechobee water quality through updating the Basin Management Action Plan in 2025 and Best Management Practices implementation to meet Total Maximum Daily Load goals.

Western Everglades

Wood Storks continue to be the primary focus of wading bird surveys in the Western Everglades due to the storks' role as an indicator species and the region's historic importance for this wading bird. Conditions favorable for Wood Stork nesting are also favorable for most other wading bird species. Wood Stork nesting in the Western Everglades in 2022 and 2023 was similar to what has been seen in the last two decades. Nesting across the region was focused at three colony sites, with the BC-29 (inland Collier County) and Lenore Island (Caloosahatchee River) colonies continuing to thrive in the wake of the near-collapse of the Corkscrew colony.

In 2022, nesting initiated late (February) due to unusual late-season rainfall and the region produced 496 nests, 15% lower than the 10-year average for the region. This included no nesting at the historic Corkscrew colony, a site that has seen failed or no nesting 11 of the past 17 years.

Nesting in 2023 benefited from high water levels following Hurricane Ian, with Wood Storks beginning nesting prior to the January 1 target (storks initiating nesting before this date tend to be more successful) and producing 710 nests. Total nesting across the region was 22% higher than the 10-year average, including 34 nests at the Corkscrew colony and higher-than-average nesting at BC-29 and Lenore Island. Despite favorable wet season conditions, water levels dropped very quickly during the 2023 dry season, particularly at Corkscrew Swamp Sanctuary where nesting Wood Storks force fledged by April. Rapidly falling water levels during the dry season—faster than historic rates—is associated with the over-drainage of the Corkscrew Swamp observed since the mid-2000s.

While colonies at BC-29 and Lenore Island have supported Wood Storks in the Western Everglades despite the decline of the Corkscrew colony, the rapid rate of development throughout Southwest Florida, particularly inland Collier County, will further impact Wood Storks without adequate wetland protections and restoration. With much of the region's wetlands in private ownership, threats facing Wood Storks include loss of foraging grounds (particularly wetlands that have water on the landscape for less than half the year), changing water levels due to drainage and impoundments, and disruption of natural water connections. Triggered by changes in hydrology and lack of fire, expansion of native shrubs and trees (e.g., willow, red maple) into marshes has also become a widespread problem in the Western Everglades, with dense shrubs preventing wading birds from foraging.

The Western Everglades once provided critical early-nesting season foraging for Everglades wading birds and was historically tremendously important for the U.S. Wood Stork population. Increased efforts to protect, responsibly manage, and restore Western Everglades wetlands is necessary to ensure a future for Wood Storks in the Everglades. While Wood Storks have been successful in establishing new colonies outside of Florida, those new sites are vulnerable to climate impacts. Returning the species to its historic Everglades range will provide resilience for this species. The Picayune Strand Restoration Project, restoration of marsh vegetation at Corkscrew Swamp Sanctuary and other parts of the Corkscrew Regional Ecosystem Watershed, and water level restoration via the Corkscrew Watershed Initiative will all help improve nesting and foraging conditions in this region. Protecting remaining wetlands from development impacts, including monitoring to detect potential water level impacts and ensuring active management (particularly frequent prescribed fire), is needed for long-term success.

Policy Recommendations

- Continue to support progress within SFWMD's Corkscrew Watershed Initiative to reduce over-drainage and restore the water levels of Corkscrew Swamp Sanctuary.
- Encourage active management of wetlands, including appropriate prescribed fires and control of shrubs in marshes and wet prairies, to combat "shrubification" and maximize their capacity as foraging grounds.
- Revisit permitting practices to strengthen protection of short-hydroperiod wetlands which serve as critical foraging grounds for wading birds early in the hydrologic year.

- Ensure permitting for land use changes throughout the region does not allow alteration of the hydrology of remaining wetlands, including wetland hydroperiods, timing of inundation, and connectivity/flow.
- Advocate for burden-shifting policies to ensure that water managers and developers are required to demonstrate that land use changes will not adversely affect hydrology of wetlands, hydroperiods, inundations times, and connectivity/flow.
- Prioritize short hydroperiod restoration through permitting incentives, public funding (such as Everglades restoration), and collaborative agreements.
- Support the acquisition and restoration of wetlands and foraging habitat as well as the conversion of appropriate farm fields back to wet prairies and other short hydroperiod wetlands.

White Ibis. Photo: James Seward/ Audubon Photography Awards

Central Everglades

Water Conservation Areas

2022 Nesting Effort and Success

In 2022, biologists counted 39,275 wading bird nests across Water Conservation Areas 1, 2, and 3 (WCA-1, WCA-2, and WCA-3). This total was near the five-year average and above the ten-year average. Nesting numbers for most species were consistent with recent years, but notable exceptions included Wood Storks, which experienced a significant decline in nesting, and Roseate Spoonbills, which showed a slight decrease despite an overall upward trend. White Ibises and Great Egrets maintained near-average nesting numbers, with White Ibis displaying an overall increase.

Wood Stork nesting was particularly low, though some new nesting sites and pre-nesting behaviors were observed later in the season. Meanwhile, long-term trends indicate declines in Tricolored Heron and Little Blue Heron nesting since 2000, though Little Blue Heron numbers have risen since 2015. In 2022, Little Blue Heron nesting was higher than usual, whereas Tricolored Heron nesting remained consistently low. Black-crowned Night Herons, which are known nest predators of smaller herons, have been increasing in number, potentially contributing to reduced nesting by Tricolored Herons and Little Blue Herons in the WCAs. Smaller herons may also be shifting to coastal nesting areas, such as Florida Bay, where 44% of Tricolored Heron nests were located in 2022.

Reproductive success in 2022 varied across species. Great Egrets and Black-crowned Night Herons experienced low success rates due to poor environmental conditions and colony abandonment. In contrast, Roseate Spoonbills had relatively high success, with many fledglings observed early in the season. However, overall nesting and survival were limited by dry conditions early in the season, followed by heavy rains.

2023 Nesting Effort and Success

In 2023, an estimated 25,775 wading bird nests were initiated in the WCAs—a 59% decrease from the five-year average and 79% of the ten-year average—indicating a below-average nesting

effort. Species such as Great Egret, White Ibis, and Roseate Spoonbill exhibited notably reduced nesting efforts. White Ibis nesting saw a significant drop, and Roseate Spoonbill nesting reached only 50% of the five-year average. In contrast, Wood Stork nesting increased, exceeding both the five- and ten-year averages.

Smaller herons fared better in 2023, with Little Blue Heron achieving its highest nesting effort in 28 years and Tricolored Heron also showing increased nesting numbers. Black-crowned Night Heron continued their upward trend, with a record-high count of 1,882 adults. However, as aforementioned, their predatory behavior may be affecting other heron species.

Nest success in 2023 was monitored at five colonies in WCA-3, focusing on Great Egret, White Ibis, Roseate Spoonbill, Black-crowned Night Heron, and Egretta heron species like the Little Blue Heron. Dry conditions and high nest locations prevented a full assessment of Wood Stork nest success, though most nests likely failed. Roseate Spoonbill nesting came in waves instead of all at the same time, with less than half of the nests being successful, suggesting that environmental cues essential for nesting were absent or unclear. An April rain event caused widespread nest abandonment and brood reduction. Additionally, fluctuating water levels in April and May further harmed nest success and post-fledgling survival.

Policy Recommendations

- Ensure the timely completion of the Central Everglades Planning Project (CEPP) by prioritizing the removal of more than 25 miles of canals and levees in the WCAs, which will help eliminate flow barriers and maintain alignment with the integrated delivery schedule.
- Continue prioritizing funding and construction of the Everglades Agricultural Area Reservoir to increase water management flexibility in the WCAs.
- Expedite CEPP South to improve water flowing southward prior to reservoir completion.
- Increase funding for invasive exotic control to maintain critical wading bird habitat, like the Arthur R. Marshall Loxahatchee National Wildlife Refuge in WCA-1.
- Fund and construct the Broward County Water Preserve Areas.
- Continue to move forward with updates, upgrades, and studies to improve the operations of the Central and South Florida system.

Southern Everglades

Mainland Everglades National Park

In 2022, there were 6,695 wading bird nests, an 81% drop from 2021. Wood Stork, Great Egret, White Ibis, and Snowy Egret nesting all decreased significantly. Only 12 active colonies were found, down from 24 in 2021. Most Wood Stork nests failed, but the Cabbage Bay colony had more success with many young nearing fledging in June. Other species like Great Egret, Roseate Spoonbill, White Ibis, and Tricolored Heron had better success with many young fledging in April and May. A late nesting of Great Egret occurred at Alligator Bay in August, but the outcome was not recorded.

In 2023, there were 7,914 wading bird nests, an 18% increase from 2022. The number of active colonies remained the same as in 2022, but half of what was observed in 2021. Wood Stork nesting increased by 37%, though most nests failed. Great Egret nesting decreased by 12%, and White Ibis nesting increased by 29%. Snowy Egret nesting rose significantly, with a 400% increase. Wood Storks struggled to fledge many chicks, especially at Broad River, Cabbage Bay, and Cuthbert Lake. Great Egret, Roseate Spoonbill, and White Ibis had more success, but Wood Stork nests were mostly abandoned, with only 80 to 100 chicks fledging from Cabbage Bay out of 794 nests.

Florida Bay Spoonbills

The number of spoonbills nests in Florida Bay in both 2022 (157 nests) and 2023 (153 nests) were consecutively the lowest number of nests in Florida in the last decade and well below the mean. As has been documented

throughout the previous decade, these outcomes are symptomatic of the high-water levels that have resulted from ongoing and well-documented sea level rise. Most of declines in the last decade have occurred at colonies located in the northeastern and northwestern regions of Florida Bay.

Roseate Spoonbill nesting in Florida Bay in 2022 was characterized by very low nesting numbers (157 nests), severely delayed and scattered nest timing, as well as extremely low nest productivity (0.25 chicks/nest). In 2022, record high water levels at these locations indicated that the prey at these locations did not become concentrated until mid-March and only then for very brief period (less than five days).

In contrast to 2022, water levels in coastal foraging habitats in 2023 were lower than in recent years, thereby concentrating prey for longer periods. In addition, newly available water level data from the interior ponds of the bay keys indicated water levels that would provide a much-needed supplemental food source for Roseate Spoonbill. Although these conditions did not result in a larger nesting effort than 2022 (153 nests), nesting activity was more concentrated in time and had much higher production (1.39 chicks/nest).

Tricolored Heron. Photo: David Cook/ Audubon Photography Awards

Southern Estuaries

The number of small herons (Tricolored Herons and Snowy Egrets) in Florida Bay was well below the mean since 2014 (when data was first collected) with only 525 nests observed. However, nests were not counted at two of the largest colonies during the peak nesting of June and July. These species were better surveyed in 2023 and returned to more normal numbers (total for Snowy Egrets and Tricolored Heron combined was 1,235, most of which were Tricolored Heron). This increase could be a result of the same favorable foraging conditions that benefitted Florida Bay's spoonbills. Florida Bay once again accounted for the region with the highest percentage of Tricolored Heron nests with 44% of all nests found in the Everglades.

In the Charlotte Harbor area there were record numbers of Tricolored Herons (76 nests) and Snowy Egrets (99 nests) in 2022—only to be exceeded by good margins in 2023 (Tricolored Herons at 172 nests and Snowy Egrets at 226 nests). This again indicates that these small herons may be moving out of the freshwater Everglades in favor of coastal environments, perhaps because of the increase in night herons in the interior, new foraging opportunities caused by sea level rise on the coasts, or some interaction of both. In 2023 there was also the largest nesting effort of White Ibis on record (262); numbers came from only one colony (Broken Island) which suffered loss of tree leaves in Hurricane Ian that possibly made it more attractive to this species.

Although Estero Bay had much lower overall nesting effort when compared to Charlotte Harbor, it exhibited a similar pattern between the two years of relatively high numbers of nests for the region for Tricolored Heron (40 nests) and Snowy Egret (25 nests) in 2022 that were then exceeded in 2023 (47 and 35 nests respectively). 2023 had 45% more wading bird nests than the 10-year average and a 73% increase over 2022.

Policy Recommendations

- Implement the Combined Operational Plan (COP) for the Modified Water Deliveries Program, C-111 Spreader Canal, and South Dade projects, applying adaptive management to make changes where needed. Remove high and low water constraints from the COP.
- Develop the BBSEER plan that provides regional hydrological benefits to both Florida Bay and Biscayne Bay that includes backfilling the C-111 canal, alternative methods for seepage management, and operational flexibility. Furthermore, BBSEER needs to safeguard the Bird Drive Basin and Pennsuco wetlands so these important water recharge areas can be incorporated into the operations after the project is completed.
- Ensure optimal water levels in the C-111 Spreader Canal Western project by raising water levels at S-18C and greatly curtailing dumping water to tide via S-197.
- Develop and implement a sustainable long-term management and recovery plan for the listed species, the Cape Sable Seaside Sparrow.

Snowy Egret.
Photo: Ethan Slattery/Audubon Photography Awards

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Find the full 2022-23 South Florida Wading Bird Report at

fl.audubon.org/wading-birds

This report was produced in March 2025 by Audubon Florida in collaboration with South Florida Water Management District, University of Florida, Everglades National Park, National Park Service, Florida Fish and Wildlife Conservation Commission, Holey Land Wildlife Management Area, Rotenberger Wildlife Management Area, Ding Darling National Wildlife Refuge, Charlotte Harbor Aquatic Preserve, Estero Bay Aquatic Preserve, Florida Department of Environmental Protection, Florida Atlantic University, Palm Beach County, Florida State Parks, and Texas A&M University.