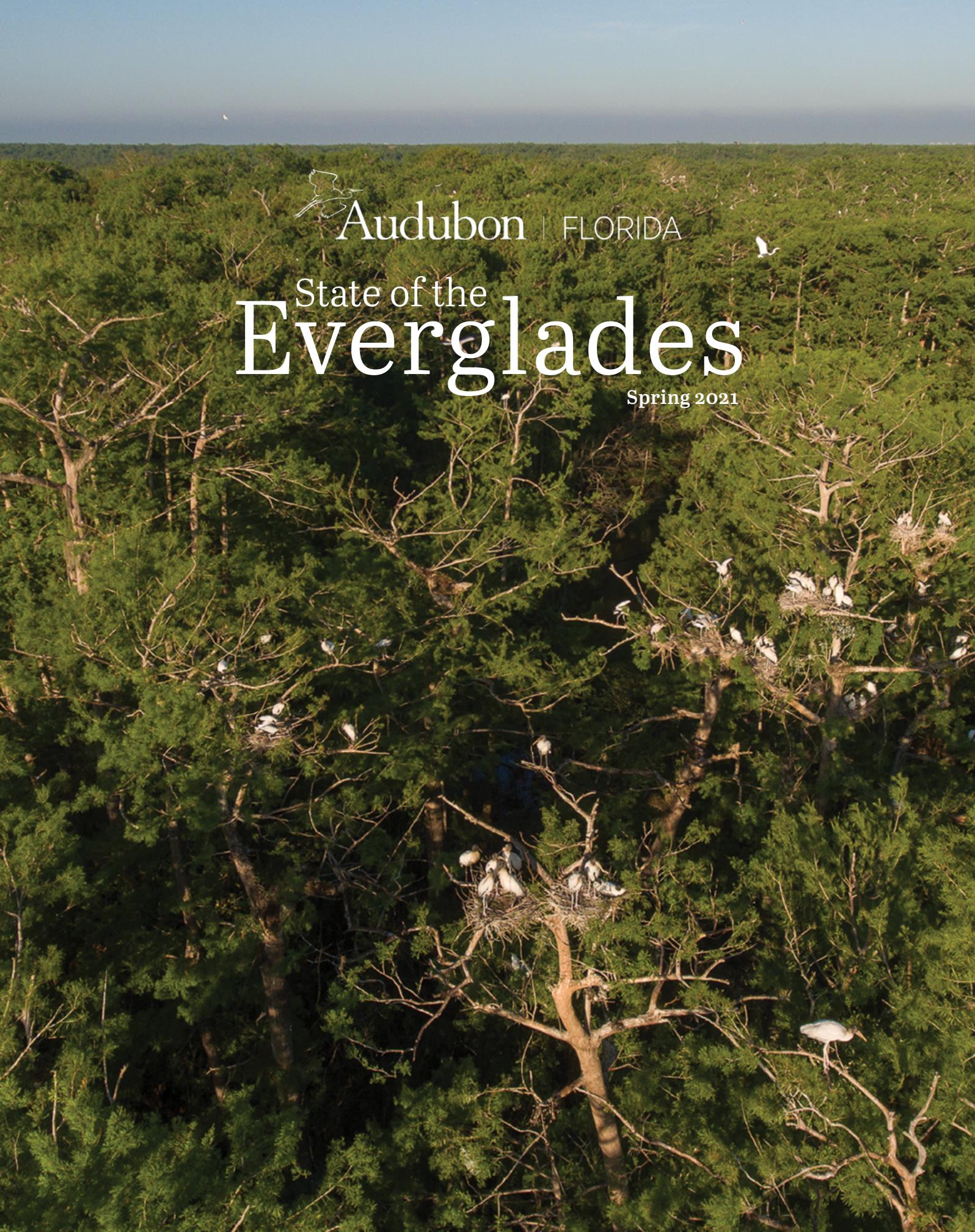




Audubon | FLORIDA

State of the
Everglades

Spring 2021



We are seeing rapid progress in Everglades restoration with water storage projects underway, the removal of the Tamiami Trail relic roadbed, restoration at our very own Corkscrew Swamp Sanctuary, and more. After a century of human impacts, we are improving water flow south and habitat for Florida's birds, other wildlife, and people. While we have a long way to go we want to share our successes with you, our volunteers, members, and supporters, so you can continue to be a voice for the River of Grass as we push for the funding and the will to keep these projects moving.

*Sincerely,
Beth Alvi,
Director of
Policy*



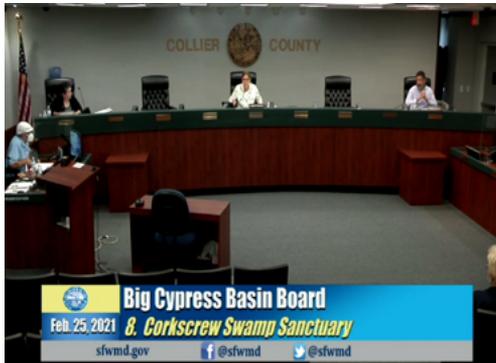
Wading birds. Photo: Arnold Collens

Science for Nature: Study Solves Mystery of Corkscrew Swamp Sanctuary's Disappearing Water

Modeling at Audubon's Corkscrew Swamp Sanctuary in Naples is pointing to the cause of extreme drying in the swamp since 2000. New flood control canals installed downstream of the Sanctuary have caused springtime ground water levels to drop substantially in the last two decades. Lower water levels contribute directly to Wood Stork nesting failures and reduce the water recharge and catastrophic wildfire protection benefits provided by the protected wetlands within the Sanctuary. Overdrainage also contributes to poor downstream water quality and red tide events.

"Witnessing the impacts on this world-class wetland, and especially the decline of our treasured Wood Stork colony, has been heartbreaking," said Shawn Clem, PhD, Director of Research at the Sanctuary.

Fortunately, there are opportunities to reverse many of these increasing impacts to the Sanctuary and the entire region. Scientists, policy staff, and the model team are devising and modeling several fixes aimed at holding more water and reducing drainage. Audubon will work towards engineered water retention; collaboration with the water agencies, local governments, and major landowning neighbors; buying and restoring wetlands; and even revising rules to better protect wetlands. Collier County, the Big Cypress Basin, and South Florida Water Management District have all expressed strong interest in collaborating further.



The Audubon team of Shawn Clem, PhD, and Brad Cornell presented the findings to the Big Cypress Basin Governing Board on Feb. 25, and to Collier Board of County Commissioners on March 8, 2021.

Read more at:
www.corkscrew.audubon.org/water-levels

Cover: Wood Storks sitting on nests in 2018. Photo: Mac Stone



Audubon Uses Satellites and Cameras to Unlock the Ecology of Florida Bay's Spoonbills

Roseate Spoonbills are the “canary in the coal mine” for the Everglades. Because this species has a clear relationship with hydrologic conditions in the River of Grass, the colorful wading birds can tell us if restoration is successful farther upstream. They also provide warning signals for upcoming changes or shifts to an ecosystem, including rising seas.

Audubon Florida’s Everglades Science Center (ESC) has been studying Roseate Spoonbills since 1939.

ESC has launched a new project to use cellular transmitters and trail cameras to reduce disturbance to the nesting birds while providing new insights into their behaviors in remote Florida Bay.

The Roseate Spoonbill study has three key elements:

- 1 > Tracking adult birds to learn more about their movements
- 2 > Conducting surveys and monitoring efforts of colonies in Florida Bay during nesting season to capture nesting and general population data
- 3 > Advocating for significant public policy changes

Our data and analyses guide decision-makers in restoration and water management decisions to improve this important habitat for spoonbills and other wildlife.

Trail Cameras

Trail cameras with motion sensors capture information that complements other sources of collected data while minimizing disturbance to the birds’ habitat and nests by reducing the number of human visits to active colonies from as many as seven per nesting cycle to just two. The use of these cameras will also reduce our carbon footprint, as well as wear and tear on the Center’s boats. In the near future, we aim to set up as many as 40-50 game cameras across Florida Bay.

The first set of 10 cameras was set up in January 2021 to test and pilot the efficacy of the data collected. Initial results appear promising for gathering an increased and consistent dataset of nest images for a limited number of nests.

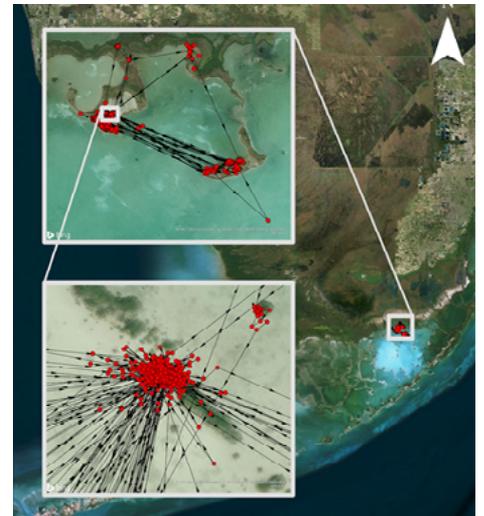


Roseate Spoonbill with a transmitter.

Cellular Tracking

In the remote reaches of Florida Bay, remote tracking technology is unlocking a world of information about the movements, routines, and habitat preferences of Florida's iconic spoonbills. Staff captured ten adult spoonbills nesting in Florida Bay and attached cellular tracking devices. This technology will enhance ongoing efforts to understand the effects of climate change, sea level rise, and Everglades restoration efforts on these charismatic Florida birds. Through this effort, the birds showed us a new colony that had never been discovered. We are also seeing that, while nesting, they are using different habitats for foraging. For example, they are using more ponds inside bay keys than the mangrove wetlands on the mainland that they historically preferred. Our data also show interesting flight patterns, providing clues to where spoonbills are going when not nesting, and when they are moving. We are now beginning to analyze these observations.

The combination of cameras and satellite tracking not only provides scientists with important clues to their survival, but also offers an opportunity to share our research with a broader audience and connect more people with the work.



Tracking birds lead to hints of new active colonies.



Roseate Spoonbills and Black-necked Stilts. Photo: Mac Stone

We are excited to collaborate with renowned National Geographic explorer and photographer, Mac Stone, on this project. Stone's career is rooted in the Everglades; he formerly worked as a researcher for Audubon Florida at the Everglades Science Center. He is sharing his trail camera expertise with the Everglades Science Center staff, training the team and helping them to install and maintain the cameras while immediately deploying the data.

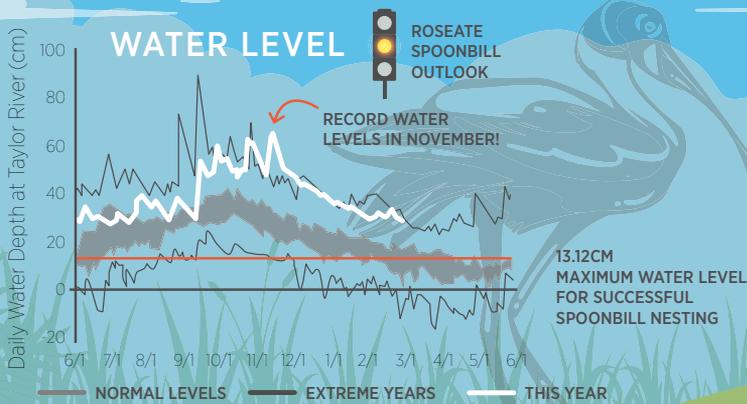
Bob Allen, original director of the Everglades Science Center, had to camp amidst the mosquitoes for months at a time to gather the foundational knowledge of Roseate Spoonbills that we take for granted today. Imagine what he would think of the mysteries we're able to unlock with the help of this exciting technology!





Audubon | FLORIDA STATE OF THE SLOUGH SPRING 2021

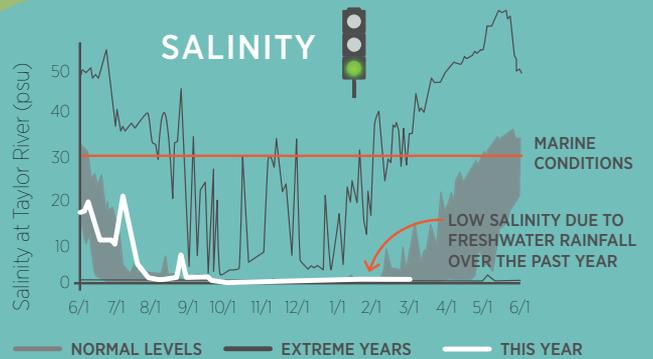
At the southern end of Everglades National Park, a series of sloughs convey freshwater to the Florida Bay estuary. Audubon researchers track these freshwater deliveries (or lack thereof) and their impacts on the ecology of Taylor Slough and the Bay.



Taylor Slough experienced record high water levels in November 2020. As a result, even though water is now drawing down at the right pace for the spoonbills, it is still higher than usual and likely will not be below 13.12 cm, the critical threshold needed to concentrate enough prey in shallow water for spoonbills to successfully rear their chicks in Florida Bay. The good news? Because the drawdown is on pace, the pattern should be perfect for other species of wading birds nesting higher up in the freshwater Everglades watershed.

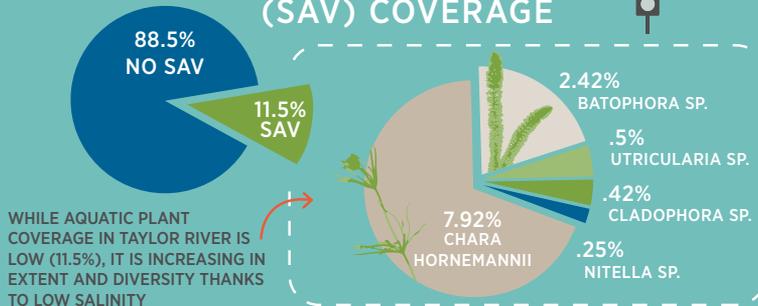
Florida Bay used to receive four times more freshwater from the Everglades ecosystem than it does today. As a result, rainfall makes all the difference between a healthy Bay and a hypersaline one, killing seagrass and the species that depend on it. Audubon uses our science to accelerate Everglades restoration projects to deliver much needed freshwater to Florida Bay.

Taylor Slough



Going through the dry season with these low values of salinity is great for aquatic plant and fish communities. This is a good indication that restoration infrastructure (C-111SC) can help keep salinity below normal when there is water in the ecosystem. Additionally, with the rainy season (June 1) starting soon, salinity will hopefully remain low for another year. We are excited to see that Taylor Slough is returning to a freshwater ecosystem, which greatly benefits wading birds.

SUBMERGED AQUATIC VEGETATION (SAV) COVERAGE

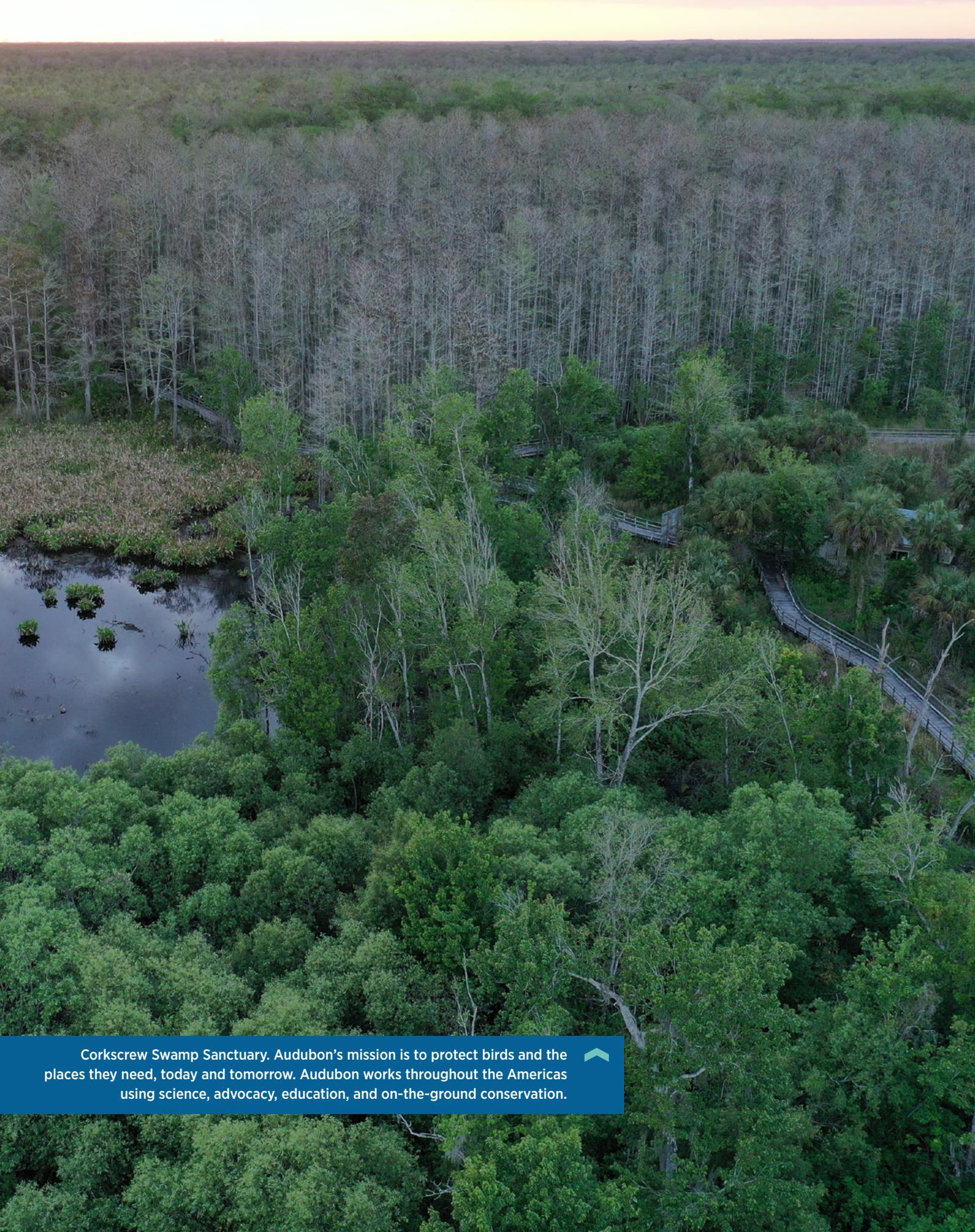


Diversity of aquatic plants has significantly started to increase in Taylor River, with an increase in total coverage SAV. A long period of low salinity allowed time for freshwater species like Nitella, Cladophora, and Utricularia to establish. Although higher than the previous few years, total coverage is still low; however, if salinity remains this low for the remainder of the hydrologic year there is a great chance that the coverage will start to increase as well.

FISH SPECIES CAPTURED THIS YEAR AT TAYLOR SLOUGH



During regular sampling 19% of fish caught were freshwater species. There were very few species that depended on moderate salinity, and virtually no high salinity species. This is a good sign, as it indicates the fish community is moving towards one dominated by freshwater species, which also means a greater abundance of fish available to predators like the spoonbill. In comparison, last year at this time we had only 8.1% freshwater species. That Bluefin Killifish were a significant portion of the catch is also very positive because this species takes a relatively long time to recolonize a habitat once it has been too salty. Although these findings are very positive and show a tremendous improvement over the last year, it still falls well short of the target of having freshwater species make up >40% of the catch.



Corkscrew Swamp Sanctuary. Audubon's mission is to protect birds and the places they need, today and tomorrow. Audubon works throughout the Americas using science, advocacy, education, and on-the-ground conservation.





Celebrating Everglades Restoration Progress

On a perfect Florida morning with bright sunshine and fluffy white clouds lazily floating across the sky, a heavy-duty excavator busily scooped up portions of the Old Tamiami Trail roadbed. Against this backdrop the South Florida Water Management District hosted a celebration of the roadbed removal project on March 30. The Governing Board of the district was joined by Governor DeSantis, agency and elected officials, and Florida's new Chief Science Officer Mark Rains.

▲ Northern Everglades Policy Analyst Doug Gaston with Jacquie Thurlow-Lippisch, governing board member of the South Florida Water Management District.

The Tamiami Trail roadbed has for decades acted as a dam blocking water from moving south into Everglades National Park and on to Florida Bay, starving the ecosystem of much needed water, harming wading bird and wildlife habitat, and contributing to flooding in the Central Everglades north of the Trail. Removal of the six mile portion of the roadbed is expected to be completed in January 2022 and will help restore the natural sheet flow of water under the recently constructed Tamiami Trail bridges and into Northeast Shark River Slough. The roadbed removal project is a component of the Comprehensive Everglades Restoration Plan (CERP) and one of twenty-nine projects accelerated for completion in response to the Governor's 2019 Executive Order "Achieving More Now for Florida's Environment." Audubon has been an ardent advocate for CERP and the roadbed removal project and looks forward to celebrating more progress towards restoring America's Everglades.

▼ Paul Gray. Photo: Dustin Angell

WEBINAR: A Legacy of Ornithology in the Sunshine State

Artists, scientists, hunters, poachers, and conservationists all played important roles in the preservation of bird life in Florida. Paul Gray, PhD, Audubon Florida's Everglades Science Coordinator, shared this look at the history of ornithology and Audubon in Florida with a focus on the Lake Okeechobee program in April.



Find it and other educational webinars here:
fl.audubon.org/about-us/everglades-program-webinars

Fixing Lake Okeechobee and Estuary Discharges Requires Innovation in the Okeechobee Watershed

The Lake Okeechobee Watershed (LOW) desperately needs more capacity to slow and clean water on its way to the Lake. The 2.6-million-acre watershed, which extends north to Orlando, is vast, flat, over-drained, and accounts for 90% of the water that flows into Lake Okeechobee. During the wet season (especially during extreme weather events) and when ground water saturation levels are high, water moves quickly through the watershed, causing the lake to rise rapidly. The most recent wet season is the perfect example: the lake rose 5.5 feet, to a high of 16.45 feet in November 2020, following an above average wet season capped off with an encore by Tropical Storm Eta.

The South Florida Water Management District's Lake Okeechobee Watershed Construction Project (Phase II) sets a storage target of 900,000 acre-feet, equal to about two to three feet of lake depth, to buffer lake levels during storms and reduce discharges to the Caloosahatchee and St. Lucie estuaries. Governor DeSantis' Blue-Green Algae Task Force echoed the need for water storage in the LOW in its Consensus Document #1, stating "regional storage and treatment infrastructure is urgently needed to manage flows to reduce damaging freshwater discharges to the northern estuaries, and also to achieve Total Maximum Daily Loads (TMDLs) as well as established Numeric Nutrient Criteria (NNC). Accordingly, the task force recommends that siting, design and funding of this infrastructure be a priority."¹ Water stored during the wet season also will help fight shortages during the dry season.



Little Blue Heron.
Photo: Arnold Collens



Anhinga. Photo: Trudy Walton/Audubon Photography Awards

The Lake Okeechobee Watershed Restoration Project, a component of the Comprehensive Everglades Restoration Plan (CERP), is intended to address water storage north of the lake but on its own will not meet established water storage targets. The restoration project has three principal components: a 46,000 acre-foot shallow reservoir called a wetland attenuation feature; restoration of approximately 4,800 acres of wetlands that were drained when the Kissimmee River was channelized; and 80 Aquifer Storage and Recovery wells. CERP envisioned significant surface water storage and quality components in the LOW including a 200,000-acre-foot storage reservoir, a 2,500-acre storm water treatment area north of the lake, and a 50,000-acre-foot reservoir and 20,000-acre-foot stormwater treatment area in the Taylor Creek/Nubbin Slough Basin. The water storage components currently in the Lake Okeechobee Watershed Restoration Project fall short of what was originally contemplated by CERP.

To illustrate the point, the water storage capacity of 46,000 acre-feet is approximately 15 billion gallons of water. By contrast, Hurricane Irma raised lake levels by three feet — or 500 billion gallons — in just thirty days. Reconsidering how to increase the storage capacity and where to situate the surface water features of the Lake Okeechobee Watershed Restoration Project may provide opportunities for improvement that will justify the billion-dollar price tag.

The challenges are large, but so is the watershed, as are the number of partners and approaches we can tap. Through cooperation and tenacity, we can make Lake Okeechobee's and south Florida's futures better.

¹BFATF Consensus Document #1 page 3



 Roseate Spoonbill. Photo: Jean Hall



 Lake Okeechobee. Photo: Dominic Agostini

Funding A Bold Vision for America's Everglades

Audubon, together with our coalition partners, is working actively to ensure that the Biden-Harris Administration gets onboard with what has always been a high-priority bipartisan cause in Florida — funding for and expediting progress on Everglades restoration.

Earlier this year, the entire Florida delegation spoke with one voice, asking for full funding for America's Everglades. And, the late Rep. Alcee Hastings spearheaded a letter to the Administration asking the President and Vice President to execute a "Bold Vision for America's Everglades" by including \$2.9 billion in federal restoration funding over four years.

The U.S. Army Corps of Engineers has indicated their ability to invest \$725 million per year for four years for Everglades projects beginning in 2022. The Integrated Delivery Schedule (IDS) is the U.S. Army Corps of Engineers' implementation plan for restoration projects designed to deliver multiple benefits to the Greater Everglades and Florida's

communities, including providing drinking water for nine million Floridians.

We're also reminding the Administration and Congress to prioritize funding for Everglades restoration and to fully fund the construction of all federally-authorized Everglades restoration projects identified in the IDS as they develop the Infrastructure package. These actions will expedite restoration efforts that have been decades in the making, getting them across the finish line. The bipartisan plan to restore America's Everglades involves constructing and maintaining a suite of resilience-building water infrastructure projects that will remove barriers to water flow. These projects clean water, store it, and then send it south, mimicking the way water once flowed through the ecosystem. The proposed federal funding commitments to the South Florida Ecosystem Restoration program will result in unprecedented progress in Everglades restoration.

Wading birds and American White Pelicans using the spreader apron on the newly restored Merritt Canal portion of Picayune Strand Restoration Project. Photo: Ken Humiston



Nutrient Source Reductions Needed to Improve Picayune Strand Water Flows

Almost a year ago, the South Florida Water Management District engaged a large team of stakeholders and consultants to study ways to improve water quality moving south through the western Everglades. Strategies aim to prevent nutrient-laden water coming off farms, roads, and urban development from being washed by newly restored water flows from the Picayune Strand Restoration Project into Rookery Bay, Collier Seminole State Park, and the Ten Thousand Islands National Wildlife Refuge. The study identified the best technologies, locations, and funding options to reduce this pollution from harming these coastal “Outstanding Florida Waters” or “OFWs.” The timing of these results is important, as the Picayune Strand Restoration Project will be completed by 2024 or 2025 and waters will be flowing across this restored region. Unfortunately, the study could not find enough land and projects to fully clean up all the expected pollution.

Audubon and our allies strongly advocate a parallel effort to work with the farmers, Collier County, and other landowners to reduce the nutrients at their sources, which would allow the downstream projects to be more effective and economical on less land. This is a pollution

challenge that exists in many other parts of the Greater Everglades and has stymied agencies and farmers in reduction of algae blooms and cattails. The study recommended source control efforts be undertaken; a step that has yet to be initiated. That is expected to be a primary next step in assuring clean restoration waters for these vital estuaries.

Status of Picayune Strand restoration. Note that remaining phases are either under construction* or awaiting completion of the SW Protection Feature in lower left corner of map. Credit: Mike Duever

Status (1 April 2021)
Picayune Strand Restoration Project

Roads (75%) and Logging Trams (93%) returned to original ground level (degraded)

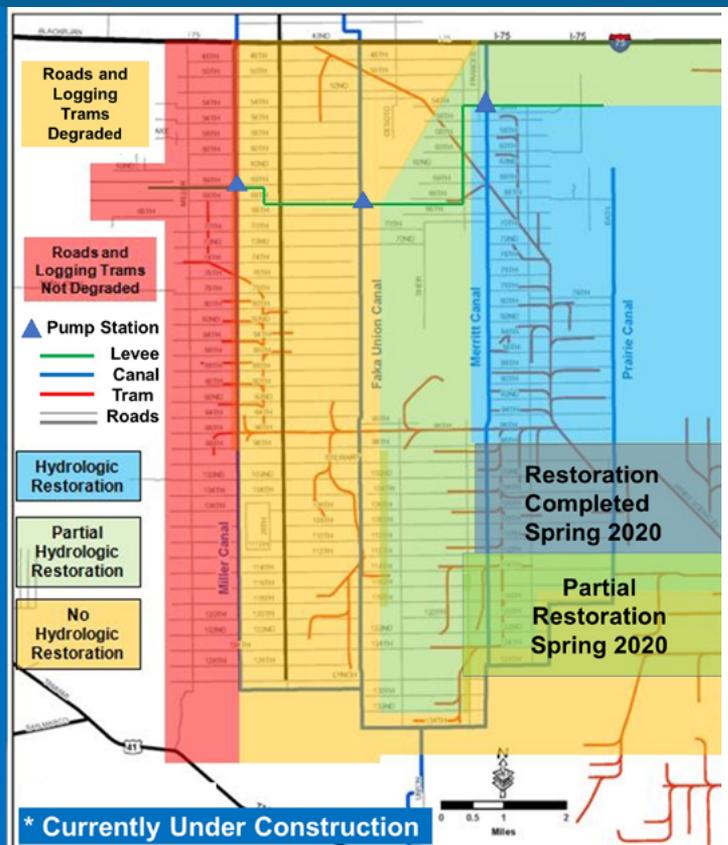
Canals 53% Plugged
 Prairie Canal – 7 Miles
 Merritt Canal – 9 Miles
 Stair-Step Canal – 4 Miles

3 Pump Stations Built

Remaining Work
 Construct Southwest Protection Features*

Degrade Last Trams & Roads*

Plug Canals
 Faka Union Canal – 9 Miles*
 Miller Canal – 8 Miles
 Stair-Step Canal – 1 Mile*



Publix Announces Corkscrew Swamp Sanctuary Grant

On Earth Day Publix announced that it is contributing \$2 million to restore wetlands in the Everglades, with \$1.2 million of those funds earmarked to support 500 acres of the marsh and prairie restoration at Corkscrew Swamp Sanctuary! These funds will help us restore wetland habitats within the Sanctuary so that they better clean nutrient pollution from our groundwater and watershed, reduce the risk of catastrophic wildfires in our community, hold floodwaters during severe weather events, and provide habitat to a myriad of wildlife species that call these wetlands home.

“In Florida, our quality of life and prosperity depend upon a healthy environment,” explained Julie Wraithmell, Executive Director of Audubon Florida, at the announcement event.



Audubon Florida Executive Director Julie Wraithmell makes remarks during Publix's press event in Lakeland.



Corkscrew Swamp Sanctuary is the heart of the Western Everglades. By restoring these 500 acres, we will continue to improve habitat for species like the Wood Stork, while holding and cleaning water that downstream communities like Naples and Bonita Springs rely on.”

- Lisa Korte, PhD
Sanctuary Director



BECOME A CLIMATE ADVOCATE

To request a training webinar for your conservation group or chapter, email State Field Coordinator Laura Aguirre at laura.aguirre@audubon.org.

DONATE

Audubon's efforts depend on you. Learn more about giving by contacting Alison Niescier at alison.niescier@audubon.org

LEARN

Explore everglades conservation and our efforts: fl.audubon.org/conservation/everglades



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