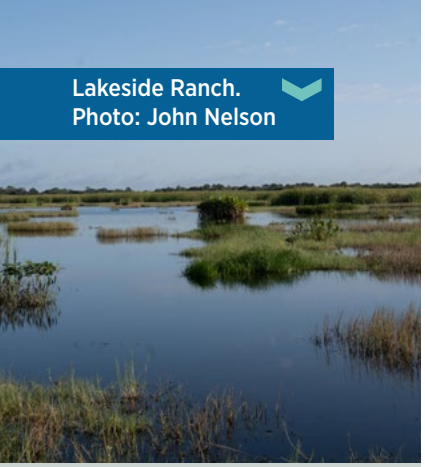
Audubon | FLORIDA

State of the Everglades

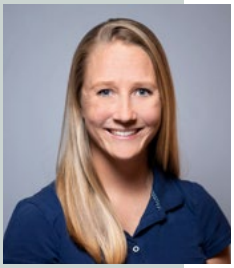
Fall 2021



Lakeside Ranch.
Photo: John Nelson

The Everglades is a landscape in motion. From the flowing water to the waving marshes to the wind skittering across mangrove leaves, the River of Grass is always moving. After decades of waiting and planning, completion of large-scale restoration projects means the Everglades' overall health is now a moving target. We rely on birds to tell us how restoration is improving ecosystems, and how climate change is already impacting South Florida. Through it all, Audubon continues to advocate for conservation projects and policies that protect these special places and species, from healthy wetlands to the beautiful birds that call these places home.

Sincerely,
Kelly Cox,
Director of Everglades Policy



Cover created with photos from Pierre Deguirre and Christine Sandberg/Audubon Photography Awards.

Completion of the Lakeside Ranch Stormwater Treatment Area Means a Healthier Lake O

In Everglades restoration, we often talk about "getting the water right." Success relies on restoring the right balance for the quantity, quality, distribution, and timing of water flows throughout the Greater Everglades. The completion of the Lakeside Ranch Stormwater Treatment Area this summer is a major step in cleaning water flowing into Lake Okeechobee, and making strides towards restoring this critical ecosystem.

Constructed wetlands, called Stormwater Treatment Areas (STAs), are important features that contribute to reaching that balance by filtering stormwater and absorbing nutrients through plants. The Everglades is very sensitive to nutrients like phosphorus, which in excess can degrade water quality throughout the ecosystem. This is why the South Florida Water Management District and U.S. Army Corps of Engineers have shepherded the construction of several STAs.

Lakeside Ranch Stormwater Treatment Area (STA) is a 2,700-acre wetland in western Martin County. These wetlands treat stormwater runoff from the Taylor Creek and Nubbin Slough basins before that water enters Lake Okeechobee; these basins have the highest phosphorus loads going to the lake.

This project has moved in phases — with Phase 1 completed in 2012 — allowing for more than 3,600-acre feet of water to be treated in the STA. Phase 2 was completed in 2020 and allowed for approximately 1,840-acre feet of volume for treatment. The increased water treatment capacity will improve the quality of the water entering the lake from the most phosphorus-rich basins in the lake's watershed.

This summer, thanks to the South Florida Water Management District, the third and final phase of this STA was completed ahead of schedule — the S-191A Pump Station. This pump station allows for additional flood control in the area and sends Lake Okeechobee water to the STA when it is in danger of drying, which will increase its efficiency.

The Lakeside Ranch STA was identified as a priority project in Governor DeSantis' Executive Order, "Achieving More Now for Florida's Environment," as well as in the Northern Everglades and Estuaries Protection Program and in the Lake Okeechobee Basin Management Plan. And it is no wonder — each year, this project removes about 16 tons of phosphorus from the water that would otherwise end up in Lake Okeechobee.

"This project is important for Lake Okeechobee's future," said Paul Gray, PhD, Everglades Science Coordinator for Audubon Florida. "By reducing nutrients going into the lake, we protect water quality for it, our coastal estuaries, and the Everglades."

Not only do STAs provide an important nutrient filtering function for the Everglades, they also operate as storage basins for flood attenuation and water supply, support abundant fish and wildlife, and provide for numerous recreational opportunities. In fact, Lakeside Ranch STA is open to the public for hiking, biking, and birding.

For more information, visit: sfwmd.gov/recreation-site/lakeside-ranch

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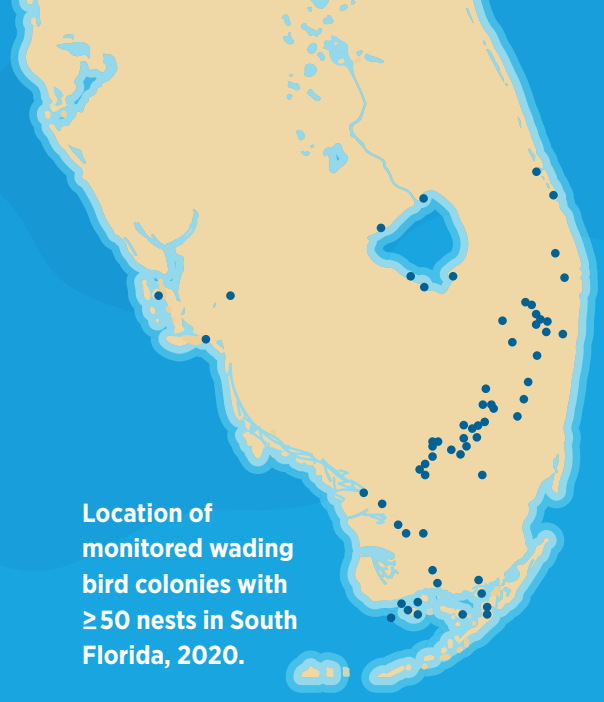
2020 EVERGLADES WADING BIRD REPORT

Each year, researchers from nonprofits, agencies, and universities work together to combine wading bird survey results from across the Everglades and in turn, the success of progress made on restoring the River of Grass.



Location of monitored wading bird colonies with ≥50 nests in South Florida, 2020.

White Ibis and Roseate Spoonbills had a successful nesting season in 2020, but many other species failed when an early arriving rainy season impacted the availability of food for chicks. Years of monitoring show us that in recent decades, wading bird nesting in South Florida has increased—but is still a fraction of the target for a restored Everglades ecosystem.

GREAT EGRET

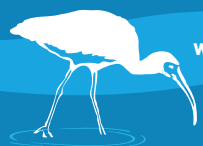
43,680

EVERGLADES WADING BIRD NESTS INITIATED

10-YEAR AVERAGE: **46,841**

✓ 2020 is typical for nesting in recent decades, but still substantially greater than the 1980s and 1990s.

ROSEATE SPOONBILL



WHITE IBIS

↓ 20%

While White Ibises had higher nesting success than Wood Storks, the overall number of nests for **WHITE IBISES, GREAT EGRETS, AND WOOD STORKS** was approximately 20% lower than the 10 year average.

LITTLE BLUE HERON

↑ DOUBLE

ROSEATE SPOONBILL nest numbers were more than double the decadal average.

TRICOLORED HERONS, SNOWY EGRETS, AND LITTLE BLUE HERONS

<10,000 NESTS PER SPECIES ↓

↓ 27%

SNOWY EGRETS, posted numbers 27 percent lower than average.

WOOD STORK

TRICOLORED HERON

SNOWY EGRET

WOOD STORKS were forced to nest late, but the rainy season arrived early, and nest devastation resulted.

Despite the challenges of COVID-19, researchers adjusted their reporting methodology and overcame obstacles to collect data to inform the wading bird report. However, it should be noted that data from 2020 is not as complete compared to previous years.

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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Roseate Spoonbill. Photo: George Cathcart/ Audubon Photography Awards

Climate Change Moves Roseate Spoonbills in Florida Bay

A changing climate is already forcing Roseate Spoonbills in Florida to adapt to survive. According to a new study by Heather Rafferty, in partnership with Audubon's Everglades Science Center, sea level rise has inundated areas where spoonbills once foraged in Florida Bay. As a result, these iconic pink birds have expanded where they go to find food, abandoning some of their historic foraging grounds altogether.

Roseate Spoonbills are highly sensitive to changes in their watery habitat. When sea level rise makes foraging areas too deep, their prey is not concentrated enough for easy feeding. When large quantities of food are needed — like during nesting season when they feed voracious chicks — Roseate Spoonbills often leave areas affected by sea level rise for shallower/more suitable conditions elsewhere.

Using ArcGIS software, Rafferty geospatially analyzed spoonbill tracking data and water level data collected by staff at the Everglades Science Center and Everglades National Park during three intervals of spoonbill nesting activity in Florida Bay.

Rafferty's findings indicate that 80-90% of the historic foraging area in Florida Bay may no longer support Roseate Spoonbill nesting.

New areas more suitable for foraging on mangrove islands in Central and Southern Florida Bay may be driving spoonbill movement into these locations. As Everglades restoration continues, Audubon staff will continue monitoring Roseate Spoonbills to see if improved hydrologic conditions increases foraging habitat.

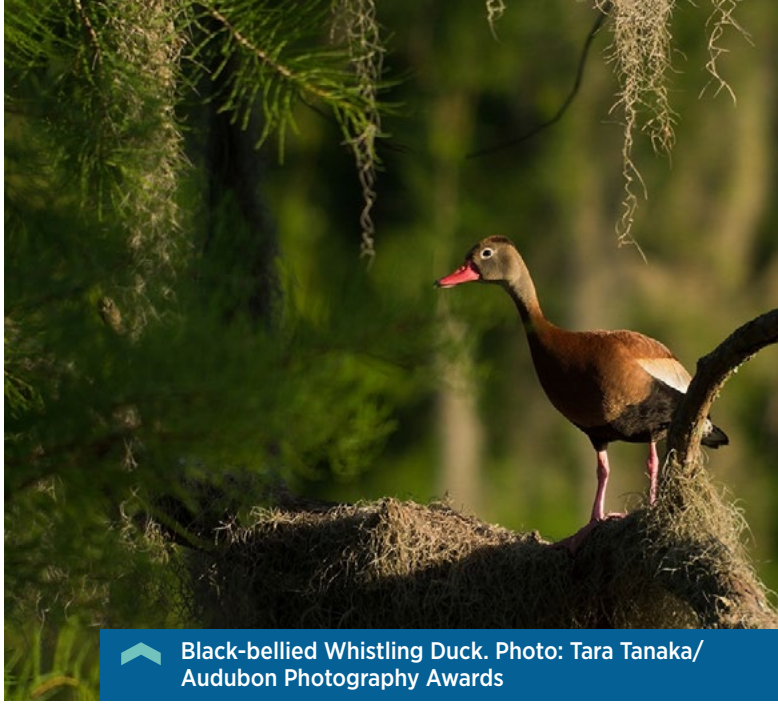
Rafferty completed this study as part of graduate work for Unity College.

Black-bellied Whistling Ducks Are On the Move

Black-bellied Whistling Ducks are changing their movement patterns. At Corkscrew Swamp Sanctuary, researchers have recorded higher numbers of Black-bellied Whistling Ducks compared to just fifteen years ago, and are beginning to look into why more waterfowl are choosing the Sanctuary as their winter home.

Black-bellied Whistling Ducks are beautiful, charismatic birds that make a distinctive whistling sound. They first arrived in the United States in the mid-20th century, and until recently had only been found in the Southeastern United States, Arizona, Mexico, the Bahamas, as well as Central and South America. Researchers confirmed the ducks bred in Florida in 1990, and now they are expanding their range into states as far north as Wisconsin, and also to larger expanses in Florida.

For more than 20 years, the Corkscrew Swamp Sanctuary's Boardwalk Naturalists have made daily observations of birds and other wildlife seen from the boardwalk. Recently, the Sanctuary's research team has worked to compile these data. While daily observations began in 1999, the first Black-bellied Whistling Duck data from the boardwalk came from two sightings in September of 2007. The Naturalists noted a few more whistling ducks in 2008, and then more and more with each passing year. According to recent data, Black-bellied Whistling Ducks are seen at the Sanctuary nearly half the days of the year, and nearly every day from June through September.



Black-bellied Whistling Duck. Photo: Tara Tanaka/ Audubon Photography Awards

"We are theorizing that, in general, whistling ducks are changing their movement patterns. Warmer temperatures may mean they are finding suitable conditions farther north. In addition, they are taking advantage of agricultural areas to find food. As their populations expand, we are seeing more and more of them here."
— Shawn Clem, Ph.D., Director of Research at Corkscrew Swamp Sanctuary

At the same time, Corkscrew Swamp Sanctuary's land management team is well on their way to restoring 1,000 acres by removing Carolina willow and other shrubs that crowd the marshes and reduce waterbird habitat, allowing the patchwork of diverse native wetland plants to return. Black-bellied Whistling Ducks at the Sanctuary have recently begun to take advantage of these restored wetlands to rest and find food.

As climate change continues to impact Florida, long-term data are critical to tracking trends and understanding relationships among species, as well as how they migrate.

Juvenile Black-bellied Whistling Ducks at Corkscrew Swamp Sanctuary.

To learn more about the Corkscrew Swamp Sanctuary science program, visit: corkscrew.audubon.org/science

Audubon Florida Continues to Advocate for Best Lake Okeechobee Management Plan

The Army Corps of Engineers has announced the framework for the new plan for Lake Okeechobee water management, called the Lake Okeechobee System Operating Manual (LOSOM). This new lake schedule will replace the Lake Okeechobee Regulation Schedule from 2008 and determines when and how much water from the lake goes east, west, or south. Some highlights of the new schedule include: eliminating harmful lake releases to the St. Lucie estuary under normal conditions, improving the timing and distribution of beneficial flows to the Caloosahatchee estuary while decreasing most harmful releases to the estuary, increasing freshwater flows south through Everglades National Park, and reducing damaging dry downs to Lake Okeechobee.

These are welcome changes to the lake schedule, but unfortunately, they come with a price. Lake Okeechobee will regularly be held at much deeper levels which could significantly compromise lake ecology. Likewise, the estuaries still will experience harmfully high flows during significant weather events. These tradeoffs occur because there remains no silver bullet to solve these problems until more lake and Everglades restoration projects are completed.

The Lake Okeechobee schedule may be released, but our work is not done. Going forward, Audubon is working closely with partners to evaluate the available data and impacts in order to make more comprehensive recommendations to the Corps for the lake schedule in the coming year.

Notably, Audubon is recommending that the Corps build in operational flexibility to allow the agency some discretion in mitigating harm based on real-time environmental conditions or events. We are also advocating for consideration of "recovery modes" for natural resources that have experienced harm as a result of the lake schedule.

SENATOR MARCO RUBIO MEETS WITH EVERGLADES ADVOCATES

Senator Marco Rubio met with the South Florida Water Management District, Army Corps of Engineers, Audubon, and other Everglades advocates to discuss progress on restoration and the critical importance of sustained, significant appropriations to keep the world's largest ecosystem restoration on track. Senator Rubio emphasized that restoring the Everglades is essential to the Florida economy, as well as the protection of our water, wildlife, and quality of life.

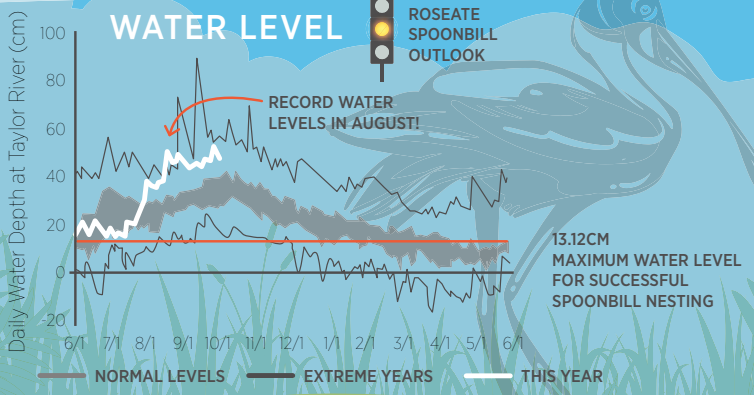
Snail Kite and Anhingas.
Photo: Carly Batts/Audubon Photography Awards

Audubon | FLORIDA STATE OF THE SLOUGH FALL 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.

WATER LEVEL

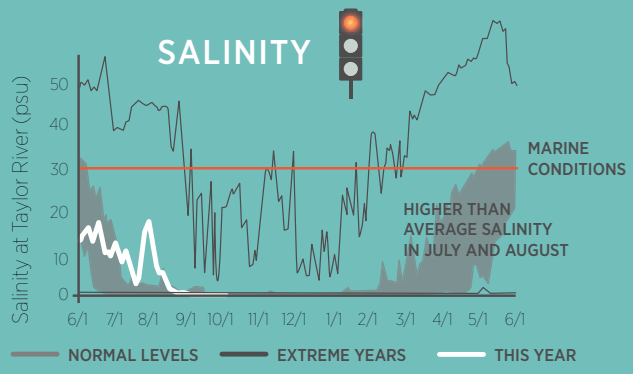
ROSEATE SPOONBILL OUTLOOK



Water levels at Taylor Slough for June and July remained within normal range, but in August broke a new high record. We hope that water levels begin to decline in the next few months, but there are indications that the drawdown might not be significant enough to reach the levels needed by Roseate Spoonbill during nesting season.

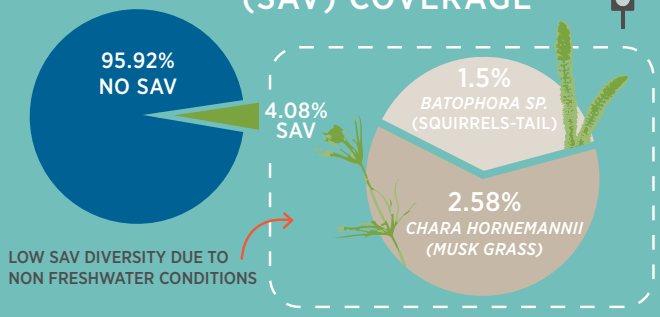
Florida Bay used to receive four times more freshwater from the Everglades ecosystem than it does today. As a result, rainfall makes all the difference between a healthy Bay and a hypersaline one, killing seagrass and the species that depend on it. Audubon uses our science to accelerate Everglades restoration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

SALINITY



The spike in salinity to nearly 20 practical salinity units (psu) in mid-July to mid-August is well above the normal range and suggests that there has not been enough freshwater flow through the Slough to push the salinity transition zone out into Florida Bay. This high and fluctuating salinity have negative and physiological effects on both plants and fish.

SUBMERGED AQUATIC VEGETATION (SAV) COVERAGE

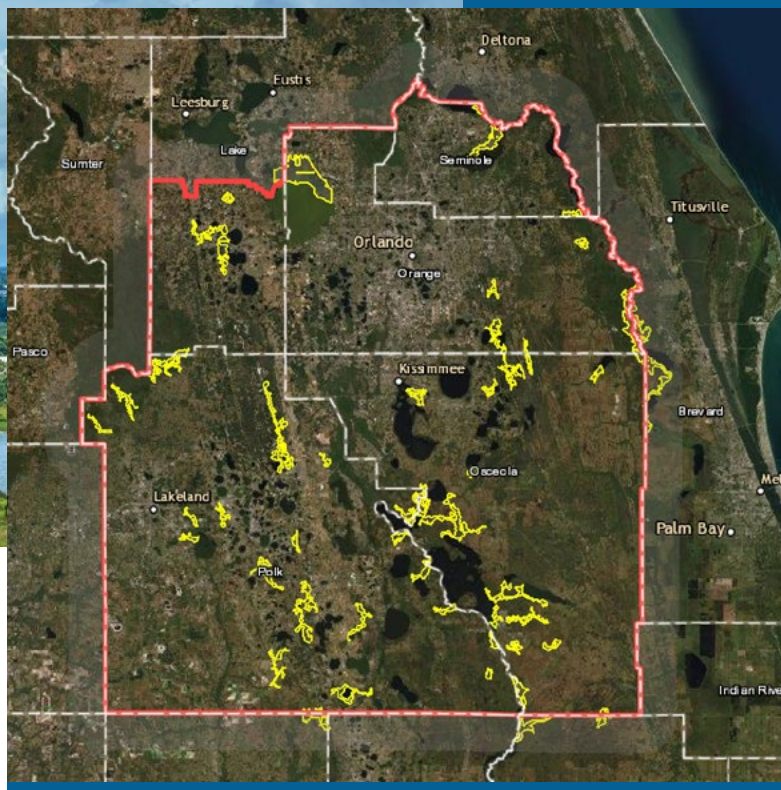


Higher than average salinity earlier in the year caused a significant decrease in diversity of aquatic plants in Taylor Slough, resulting in less than 5% total coverage. The spike in salinity from mid-July to mid-August probably prevented some low salinity plants from germinating, which will likely result in low coverage later in the year.

FISH SPECIES CAPTURED THIS YEAR AT TAYLOR SLOUGH

The Everglades Science Center team caught 341 fish, 15 of which are classified as freshwater species. At just over 75% of the total catch, the oligohaline (low salinity) species dominated the samples. Usually less than 5% freshwater species is troubling, but the overwhelming number of oligohaline species and nearly 5% freshwater species this early in the year is a promising start.

Orlando.



A GIS interface provides user-friendly data for land managers to determine water storage project viability. Yellow here represents surface water storage suitability areas.

Audubon's New Mapping Tool Can Protect Water in Orlando Region

The greater Orlando area is one of the most rapidly growing regions in Florida and is already experiencing water shortages. Cities have relied on the Floridan Aquifer for most of their supply, but restrictions have been placed on water withdrawals to prevent depletion. Increasingly, people are looking to surface water, but there is simply not enough. To solve this impending water crisis, the State of Florida founded the Central Florida Water Initiative (CFWI), encompassing 5,300 square miles around the Orlando region.

Because the region sits at the headwaters of three watersheds and is heavily drained, rainwater tends to flow away, thereby accelerating the exit of regional water. In an effort to sustain and enhance water resources in the Orlando area, Audubon launched a research study sponsored by Disney to identify projects that may assist in surface water retention. This critical research will inform efforts in the CFWI to manage water resources now and into the future.

In partnership with Soil and Water Engineering Technology, Inc., we developed an interactive GIS-based mapping tool that will identify suitable locations for passively storing surface water and/or recharging ground water. The tool used four primary considerations to evaluate potential projects: hydrography, topography, land use, and soils. Secondary datasets are also included in the interactive tool, including: property values, number of landowners, proximity to conservation and greenway lands, listed species, wetlands, flood zones, and other parameters of interest.

Importantly, these mapping tool parameters allow us to distinguish between areas that would be viable for aquifer recharge versus those that would be suited for surface water storage. Recharge areas have deep, sandy soils that allow water to freely move downward, while surface storage areas have soils that reduce or prevent downward seepage. Because of these differences, recharge areas should be managed to hold water on-site to promote percolation into the ground water aquifer. Surface storage features essentially are wetlands and lakes and should be managed to support surface water retention.

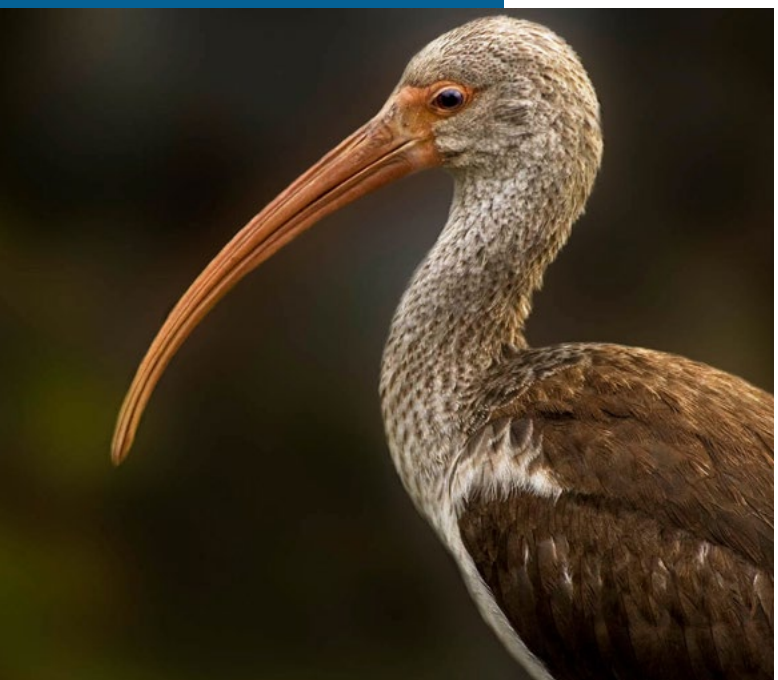
For the purposes of this project, Audubon scientists selected areas larger than 400 acres as a minimum effective size for a potential water project. In all, 224 promising surface storage project locations were identified. This free tool will be posted on Audubon's website, making it available to agencies, local governments, landowners, land managers, and regional stakeholders to help evaluate possible projects.

State Funding Request Could Yield Critical Conservation Dollars

Audubon is gratified to see a robust environmental budget request this year from the Florida Department of Environmental Protection (DEP) to help them carry out their charge. Everglades restoration is a priority for both the state and the federal government, and the State of Florida is leading the way. When Governor DeSantis was sworn into office, he made an unequivocal commitment to protect and restore the Everglades and our state's water resources, promising to set aside $2.5 billion towards this effort over the next four years. Governor DeSantis is more than three-quarters of the way towards meeting his commitment, having already set aside $2 billion for water and the Everglades thus far.

DEP's budget request aligns with this ongoing commitment. For FY 2022-23, the department has requested $771.1 million for water and Everglades, of which $480.9 million is for expediting Everglades restoration using sound science in partnership with the federal government. The Comprehensive Everglades Restoration Plan is a 50-50 cost-share program with the federal government, and for the last several years, the state has been ahead in its investment. As more projects come online and the Army Corps of Engineers moves rapidly to plan and complete projects, federal appropriations requests over the next few years will increase substantially. The State of Florida must keep its foot on the gas pedal of state appropriations for Everglades restoration to keep up this momentum.

White Ibis. Photo: Linda Wood/ Audubon Photography Awards



Issue	Funding Request
Everglades (Total)	**$480.9 million**
CERP	$352 million
NEEP	$73.2 million
Dispersed Storage	$5 million
Storage North of the Lake	$50 million

Florida Department of Environmental Protection budget request for FY 2022-2023.

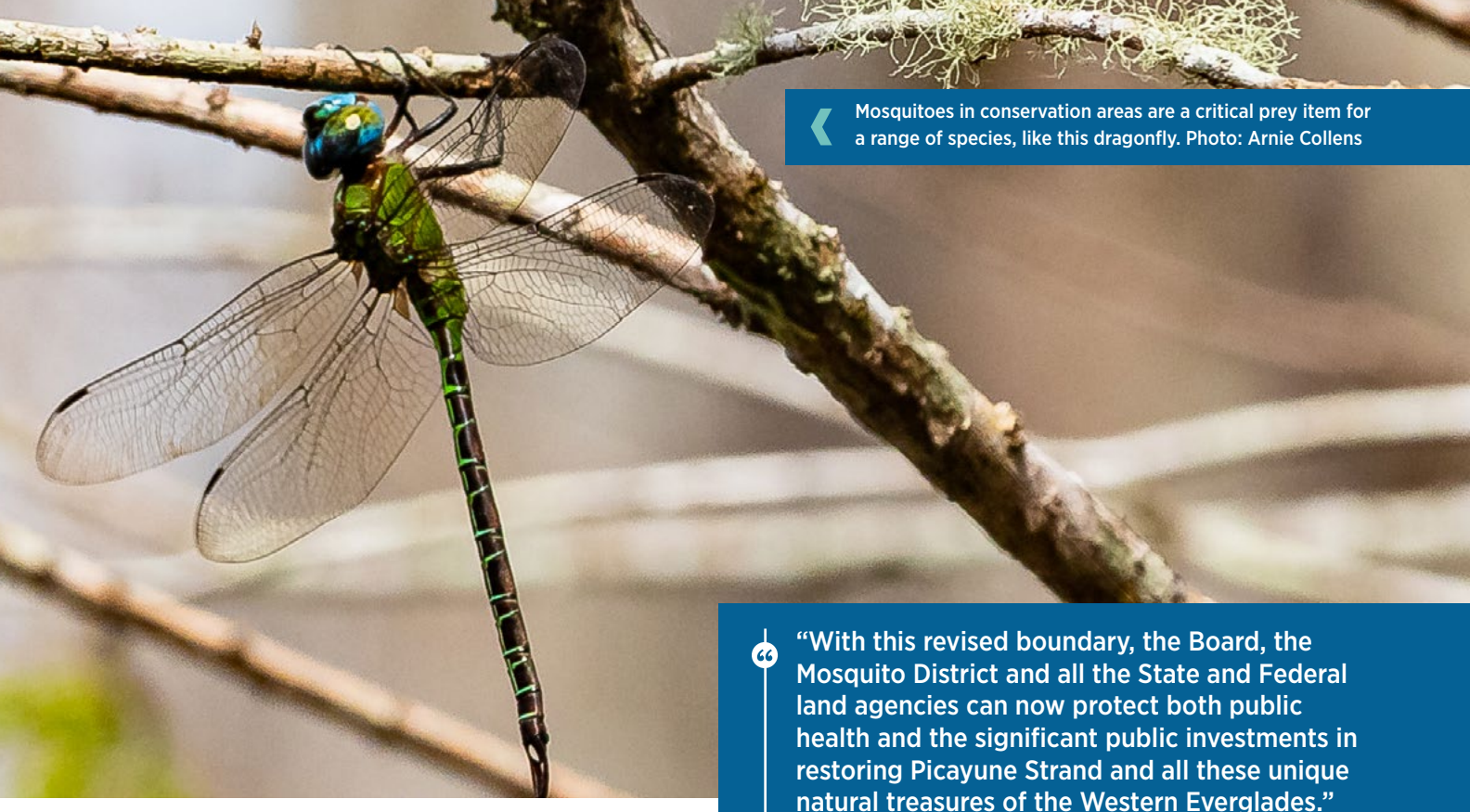
Federal Budget Brings Record Funding Levels to Restoration

The federal government is in the process of developing budget proposals for Everglades restoration funding through both bipartisan infrastructure legislation and President Biden's budget. Audubon Florida and our partners have been advocating for increased funding for Everglades restoration to support ongoing projects throughout the Greater Everglades ecosystem. This request for increased funding follows the Army Corps of Engineers' recent indication of their ability to spend $5 billion over the next five years on Everglades restoration. This sustained, generational funding would allow the Corps to focus on project completion rather than yearly budget forecasting by providing continual funding over a longer timeframe.

Currently, the bipartisan infrastructure package presents an important opportunity for federal funding for America's Everglades. $1.6 billion of Aquatic Ecosystem Restoration Program funding from this legislation would allow already planned projects under the Comprehensive Everglades Restoration Plan to move forward.

Likewise, President Biden's administration is preparing their fiscal year 2023 budget. As this budget takes shape, it is vital that the administration include an increase in Everglades funding beyond historic levels. Based on the 2020 Integrated Delivery Schedule (IDS), the fiscal year 2022 appropriations request was $725 million. To ensure that Everglades restoration is completed by 2030, funding requests going forward should, at a minimum, be $850 million per year.

Fully funding Everglades restoration at the federal level is critical to ensuring that Everglades restoration remains on track for completion.



Mosquitoes in conservation areas are a critical prey item for a range of species, like this dragonfly. Photo: Arnie Collens

> **"With this revised boundary, the Board, the Mosquito District and all the State and Federal land agencies can now protect both public health and the significant public investments in restoring Picayune Strand and all these unique natural treasures of the Western Everglades."**
> **— Brad Cornell, Southwest Florida Policy Associate for Audubon Florida and Audubon Western Everglades**

Collier County Proposal to Expand Mosquito Spraying Threatens Western Everglades and its Food Web

This summer, the Collier County Mosquito Control District moved forward with a proposal to expand the boundary of their operations into new areas. This expansion would include vast areas of conservation lands, including portions of Rookery Bay National Estuarine Research Reserve, Ten Thousand Islands National Wildlife Refuge, all of Collier Seminole State Park, and all of Picayune Strand State Forest — a high profile Everglades restoration project.

Mosquito control methods rely heavily on pesticides, which can have cascading ecological impacts. Mosquito larvae are ecologically important on conservation lands, acting as a food source for fish, amphibians, and reptiles. Unfortunately, spraying would not only impact mosquitoes, but would likely also impact other insects which serve as pollinators or as the base of the food web for wading birds, bats, fish, reptiles, and other important species. In fact, research from Audubon's Corkscrew Swamp Sanctuary has shown that moths in the area are the primary pollinators of the endangered ghost orchid.

Certain species of mosquitoes do present public health concerns by transmitting illness such as encephalitis and West Nile. Mosquito spraying in human communities would continue in an attempt to curtail the spread of these illnesses to protect public health. Tropical viruses like Zika are more commonly found in urban areas and are transmitted from exotic mosquito species only found there.

In November, after months of collaboration with Audubon Florida, Audubon Western Everglades, Florida Wildlife Federation, and all the land management agencies, the Collier County Commission voted to rescind their previous approval to expand the Mosquito Control District boundaries into uninhabited conservation lands, but kept expansions for new urban areas. Audubon Florida and its allies continue to collaborate with the U.S. Department of the Interior, the U.S. Army Corps of Engineers, the Florida Department of Environmental Protection, and the South Florida Water Management District to reach a solution that would address protecting public health from mosquito borne illness while also protecting public conservation lands and the species that rely on these wild places.

Oil Drilling Permit Near Big Cypress Denied Over Environmental Concerns

In November 2021, the Florida Department of Environmental Protection rejected an application for a proposed exploratory oil well in Immokalee. In their denial, the agency cited concerns about potential impacts to water resources, wildlife, wetlands, and drinking water supplies in the area.

The proposed oil well would have been located in Collier County within the Big Cypress watershed and just a stone's throw from important conservation lands like Okaloacoochee Slough State Forest, Florida Panther National Wildlife Refuge, and Audubon's Corkscrew Swamp Sanctuary. These conservation lands are of critical importance to the Greater Everglades Ecosystem and are home to listed species like the Florida panther, gopher tortoise, and ghost orchid.

The proposed oil well would have also been located less than two miles from regional drinking water wells and just three miles from the Seminole Tribe of Florida's reservation lands. Audubon's Southwest Florida Policy Associate, Brad Cornell, serves on the Big Cypress Swamp Advisory Committee and weighed in on the oil drilling application by expressing concerns about the threats this project could pose to drinking water, wetlands, and wildlife.

> **"Immokalee is not at all like coastal cities — it is a predominately agricultural community that relies on farmworkers from Haiti, Central America, and Mexico to support the farming economy. If an oil well were proposed elsewhere in the state, there would be an uproar of opposition. This is clearly an equity issue and we have to not only stand in defense of the environment, but of the Immokalee community."**
> **— Brad Cornell, Southwest Florida Policy Associate for Audubon Florida and Audubon Western Everglades**

Audubon applauds the State of Florida's decision to reject the oil drilling application to safeguard drinking water and protect the Everglades, including the community of Immokalee.

> **"We have invested millions of dollars in Everglades restoration in Southwest Florida. We have to protect our investment by guarding against threats from projects that could compromise restoration success."**
> **— Kelly Cox, Audubon Florida's Director of Everglades Policy**

Bald cypress trees within Audubon's Corkscrew Swamp Sanctuary. Photo: R J Wiley

American White Pelicans. Photo: Renee Wilson

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