Audubon Florida members contributed more than 2,400 photos of what they hope to protect in their communities, from beautiful birds to natural landscapes. We brought those images together in this collage representing Florida’s most iconic species.
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52 Bringing Natural Climate Solutions To Your Community
Florida is already experiencing a changing climate. As carbon accumulates in the atmosphere and the planet warms, we face more extreme storms, rising sea levels, drought, and intense heat. As a result of these combined threats, coastal bird populations have declined by more than 70 percent, and two-thirds of North America’s bird species face extinction if we fail to keep warming below 1.5°C.

To respond to this dynamic issue, we need dynamic solutions — and we have them. Natural Climate Solutions include coral and oyster reefs, salt marshes, mangroves, dunes, and barrier islands. Natural Infrastructure — like living shorelines, or blends of gray and green infrastructure — creates living systems that can respond to the ever-changing climate impacts that Florida has faced and will continue to face. Moreover, by keeping more carbon in the ground and capturing it in plants, we can reduce carbon dioxide in our atmosphere.

Natural Climate Solutions are a way of engineering with nature by preserving, restoring, or emulating natural systems and landscapes. They offer co-benefits that cannot be matched by traditional infrastructure. While providing natural flood and erosion control, they also improve air and water quality, enhance habitats for birds, fish, and other wildlife, increase recreational opportunities and land values, recharge groundwater, and sequester carbon pollution.

Across the state, investment in the health and resilience of our ranches, wetlands, and forests could deliver significant emissions reductions, while also improving the places that are becoming increasingly important for the survival of birds. In addition, widespread use of these Natural Climate Solutions could protect drinking water sources, increase the resilience of food systems, reduce the heat island effect in cities, and drive investment across the country. It is critical that policies are designed so that the benefits are felt equitably — from cleaner air across different communities within a city, to equal access to programs for private landowners, to ensuring that traditional and Indigenous land stewards have a say in the decision-making process.

Conserving healthy and restoring degraded landscapes add to this by preserving our water supply, protecting us from flooding and wildfires, combating climate change, and preserving biodiversity. Climate-smart management of both our recreation areas and working lands can help reach this objective.

Audubon is working to promote a slate of policy ideas that will drive the adoption of Natural Climate Solutions at the federal, state, and local levels. In Florida, while our coastal communities are most at risk, we know that every place — from the Panhandle to the Keys, from our inland counties to our coastal cities — is already facing climate impacts. Investing in Natural Climate Solutions can build resilience for all ecosystems and communities across our state.

Julie Wraithmell, Executive Director, Audubon Florida
Coastal Climate Solutions

Florida’s coastlines are vulnerable to climate change as sea level rise, storm surge, and more frequent and intensifying storms threaten our communities and our wildlife. Natural Climate Solutions protect us while providing habitat to iconic native species.

**PROTECTION FROM STORMS AND HURRICANES, INLAND FLOOD REDUCTION**
Coastal wetlands, like salt marshes and mangrove forests, act as buffers against incoming storms and hurricanes. These natural shorelines reduce flooding by slowing storm surge and absorbing stormwater. Research shows that 2.7 miles of wetlands\(^1\) can reduce storm surge by a foot and that one acre of wetlands holds up to 1.5 million gallons of floodwater.\(^2\)

**CARBON SEQUESTRATION**
Coastal wetlands can store more carbon than any other coastal ecosystem. A 2018 study shows that mangrove wetlands are responsible for storing more than 6.4 billion tons of carbon globally.\(^3\) Salt marsh and seagrasses add to this capacity.

**COST EFFICIENCY**
Natural infrastructure has been shown to provide significant, long-term, and cost-competitive benefits for challenges such as flood reduction. For example, it can attract more private investment and potentially lower operating costs. Research has illustrated that the average construction costs between natural and gray infrastructure are similar, but there are lower replacement and maintenance costs with living shorelines.\(^4\)

**ECOSYSTEM SERVICES**
Coastal wetlands absorb and filter out excess nutrients and other chemicals before flows reach the open water. Scientists have repeatedly confirmed the role wetlands play in cleansing and storing stormwaters, recharging our aquifers, and providing plentiful clean water for our families, our beaches, fisheries, wildlife, and Florida’s tourism economy. In addition to coastal wetlands, inland and upland systems play a huge role in ecosystem services. This includes reducing flood risk, improving air quality, and providing a refuge for species during major storms and sea level rise.

Audubon Leadership

Audubon leads the way in incorporating Natural Climate Solutions into our coastal stewardship program, as both the Alafia Bank (pg 10) and St. George Island (pg 16) initiatives show. Additionally, we advocate for full funding for the Florida Forever conservation program. Florida Forever is the state’s premier land conservation program, acquiring parks and preserves to provide recreational opportunities, habitat for imperiled wildlife, and other benefits like water recharge and carbon sequestration.
Audubon Florida’s Conservation Leadership Initiative (CLI) is an experiential learning program providing opportunities for undergraduate college students to immerse themselves in Audubon, strengthen leadership skills, and gain an understanding of career options in the conservation field. The program includes co-mentoring opportunities for Audubon leaders and college students to network, share, and learn from each other.

The 2021 CLI Cohort is especially concerned about climate change, and throughout the year will have opportunities to learn about climate-related issues through field trips, chapter meetings, and Audubon programs. Even after graduation, CLI students stay immersed in the Audubon network. In 2020, Olivia Sciandra (2019 Cohort) became the CLI intern, and in 2021 took a full-time position as a conservation organizer for Audubon Florida. She worked to raise awareness of climate change and impacts to birds through grassroots networks before moving on to pursue her Master’s degree. In 2021, three CLI students from the 2020 Cohort (Patrick Cline, Stephanie Wagley, and Richard Valdez) were employed on Audubon’s coastal team, assisting with shorebird stewardship and making a direct impact on nesting sea and shorebird populations.

Our CLI students not only take a step forward in their journeys to become conservation advocates, they also teach Audubon staff and chapter leaders to better engage and communicate with the next generation of environmental leaders. Darden funds are used to support the students attending Audubon Assembly and beyond, allowing them to immerse in Audubon Florida activities from day one.
Living Shorelines Protect Nesting Birds
FINDING NEW FOOTING IN TAMPA BAY

Hundreds of pencil-sized, green seeds drift on the waters near Sunken Island in Tampa Bay. Called “propagules,” the seeds of red mangrove (*Rhizophora mangle*) trees are actually pre-germinated before they drop from the tree canopy. These baby trees in search of land can remain afloat and viable for up to nine months — as soon as they encounter a shoreline or oyster bar, roots emerge, the propagule stands upright, and the young tree begins to grow. A new living shoreline at the Alafia Banks Bird Sanctuary, which is leased from and managed in collaboration with The Mosaic Company and Port Tampa Bay, is enabling mangroves to find new footholds and expand their coverage.

Mangroves are among the world’s most effective Natural Climate Solutions. Mangroves are heralded worldwide for their shoreline stabilizing properties. Intricate root systems combined with the year-round presence of a flexible, leafy canopy helps them buffer adjacent coastal communities from wave action and high winds. Three types of mangroves grow in Florida: red, black, and white. Red mangrove trees are especially appreciated for their arching prop roots, which extend into the water and help hold up the tree. These roots can help create new islands by trapping sediment, and also form an important aquatic nursery below the water’s surface. Mangrove islands provide Brown Pelicans, Great Egrets, and a host of other colonial wading bird species with the perfect habitat as nightly roosts and annual nest sites.

Two mangrove-fringed islands in Tampa Bay, Bird Island and Sunken Island, compose the Richard T. Paul Alafia Banks Bird Sanctuary. As one of Audubon’s Florida Coastal Islands Sanctuaries, Alafia Banks is designated by Florida Fish and Wildlife Conservation Commission as a Critical Wildlife Area (CWA).

Resilient as the trees may be, the islands are not immune to erosion or sea level rise. Over the years, erosion from a combination of ship wakes and storm events washed away or toppled valuable nesting habitat offered by the islands’ mangroves and sabal palms. Audubon has been working to devise a more resilient future by offsetting sea level rise as well as storm surges and waves.
Decades ago, sea walls and jetties were considered the only ways of fortifying natural shorelines. Rather than dissipating wave energy, hardened shorelines reflect it, often accelerating erosion on the remaining natural shoreline features. In addition to requiring expensive maintenance, they offer little habitat value to marine life. A living shoreline, on the other hand, provides the same stabilization but with the added benefit of this desperately needed habitat. Made with plants, sand, rocks, and/or concrete, living shorelines provide a substrate for oysters and other invertebrates that serve as the base of the food web and help filter coastal waters.

In 2011, Audubon began construction of a new living shoreline breakwater offshore near the edge of Sunken Island. The concrete wave attenuation devices — known as WADs — that make up the breakwater intercept incoming wave energy before it hits the shoreline, slowing or even stopping erosion altogether.

Since then, more than 6,000 linear feet of breakwater have been placed parallel to the shorelines, and we are now seeing results. The calm water between the island and the breakwater has reestablished shoreline nesting habitat that is perfect for American Oystercatchers. The breakwaters are constructed of specialized concrete that encourages attachment by oysters, which are an important food resource for oystercatchers and other birds feeding rapidly-growing chicks. While oystercatchers have had occasional success nesting on Sunken Island in the past, more pairs are nesting behind the newly-protected shoreline now and have fledged chicks since the installation.

In 2021, contractors worked with the Sanctuary team to remove an additional threat to native birds: invasive plants. Brazilian peppers, lead trees, and more were crowding out the mangroves and native trees that resident and migratory birds require for nesting and foraging habitat. Grants from the Tampa Bay Environmental Restoration Fund, the Environmental Protection Commission of Hillsborough County, and donations from Audubon supporters provided funding for restoration.

The team also replaced the invasive plants with native coastal hammock species including buttonwood and Florida privet. Continued retreatment is necessary in the battle against invasive species, especially during the first few years as the new plants become established.

Efforts like these help create a diverse habitat that will be more resilient in the face of rising sea levels and temperatures. The restored habitat supports nesting trees for herons, egrets, spoonbills, and pelicans, so they can raise the next generation. Wintering and migrating birds also take refuge in the habitat created.
LIVING SHORELINE ENTREPRENEUR HELPS PROTECT COASTAL HABITATS

What makes a financial advisor, used to walking the halls of Fortune 500 companies, leave it all behind to start a Living Shorelines business? A lucrative market, of course, but also the chance to make a lasting difference in vulnerable coastal communities.

After Thomas J. Brown flew from New York to Florida to learn about an emerging technology for a client, he knew instantly that it would change the tide of both his career and environmental conservation. Enter: WADs, short for “Wave Attenuation Devices,” and the foundation of Brown’s company, Living Shoreline Solutions. WADs are innovative structures that, when placed in the water along shorelines, reduce the amount of wave energy reaching the coast.

As sea levels rise and storms have become more intense and frequent, coastal erosion has worsened. Reducing the intensity and height of waves that hit the coast offers myriad benefits: erosion mitigation and prevention, increased protection for important shoreline habitats, and the opportunity to build back lost land by allowing sand to accrete. The advantages of WADs extend underwater as well; within the calmer waters between WADs and the shore, seagrass beds flourish, creating key fish habitat. WADs are an ecologically-minded alternative to dredging and other types of wave-refracting infrastructure that disrupt existing habitat or don’t offer the same habitat benefits. The ultimate result is a living shoreline that supports healthier, more productive coastal ecosystems that can better adapt to climate change impacts.

Brown recognizes that ecosystems need time to adapt to a rapidly changing climate and that the pace of sea level rise and other climate impacts outstrips some ecosystems’ adaptation potential.

“Climate change is a big issue especially if the land itself is disappearing into the water,” he says. However, he also recognizes the enormous potential for natural engineering solutions that can help bridge this gap. The demand for innovative climate technologies that protect communities, wildlife, and natural spaces make WADs both desirable and profitable. “I went into the business because one, I understood the technology and how it worked, and two, I saw unlimited worldwide demand,” Brown explains.

Brown’s first project with Living Shoreline Solutions was with Audubon Florida at Tampa Bay’s Alafia Bank Sanctuary. The sanctuary hosts up to 18,000 nesting pairs of birds and is one of the largest colonies in Florida. Reduced shoreline erosion has already protected vulnerable nesting islands through two storm seasons.

Since partnering with Audubon Florida, Brown has worked in Florida and across the United States to protect shores. By partnering with local governments, various organizations, and the Army Corps of Engineers, Living Shoreline Solutions has burgeoned, and Brown is excited for the projects on the horizon, both in the United States and beyond.

When asked about the legacy he would like to leave, Brown says “if my little role is that I have introduced to the US, and the world, technology that allows them to stop erosion and counteract some of the climate change issues that we are going to face in the next 50 years, then I have done my job”.

Living shorelines are composed of materials, like plants, sand, and rock, that help stabilize coasts and marine systems. The benefits of living shorelines include reduced erosion, protection from storm surge, and habitat for wildlife. Living shorelines also increase natural carbon storage, pulling carbon that contributes to climate change and global warming out of the atmosphere.
An Old Causeway Breaths New Life into Coastal Bird Colonies

The former St. George Island bridge causeway, located in Apalachicola Bay between Eastpoint and St. George Island, provides nesting habitat for thousands of waterbirds each summer, including American Oystercatchers, Least Terns, Royal Terns, Sandwich Terns, and Brown Pelicans. The site is an island remnant of the original 1965 causeway which provided seabird nesting habitat even with cars whizzing by en route to and from St. George Island. Safety issues with the original bridge resulted in construction of a replacement bridge, isolating the former causeway from land and providing a predator-free nesting site for seabirds into the future. The significance of this site was recognized by the State of Florida and it was declared a Critical Wildlife Area, a designation that provides additional protection to nesting birds.

Unfortunately, degrading seawalls threatened the productive nesting site with continual erosion and the potential for complete collapse. These seawall failures have allowed tidal and storm-driven waves to erode the upland nesting area of the causeway through washouts and even complete wash-overs.

A joint effort between Audubon Florida and the site managers at Apalachicola National Estuarine Research Reserve began in 2014 to stabilize the eroding sections of the causeway, with funding support from the National Fish and Wildlife Foundation’s Gulf Environmental Benefit Fund. After much planning and engineering, construction began after Hurricane Michael made landfall in 2018. In fact, the hurricane actually increased the urgency of the construction as storm surge washed over the causeway at one of the wall-failure sections, potentially impacting more nesting habitat.

The storm delayed construction, but HG Harders and Son commenced work in mid-January 2019, even as their equipment and workers were still digging themselves out of the storm debris. Barges and heavy equipment arrived at the causeway and rocks were placed along two of the failing seawall sections to protect the upland nesting habitat. To complete construction, a crane sat on a barge at the edge of the island, precluding any on-island impact to the nesting habitat.
The project wrapped in early April 2019, just as seabirds arrived at the site for breeding. Since then, the newly reinforced seawalls have held up, stopping erosion and protecting this vital nesting habitat. In the summer of 2021 all species fledged chicks, creating a pool of sea and shorebirds that will disperse throughout the region.

“Tropical Storm Fred in 2021 gave us a true test of the construction,” says Caroline Stahala, PhD, Project Manager for the Panhandle Sea and Shorebird program at Audubon. “Fred made landfall close to the causeway, and the causeway held up beautifully. We did not see any damage, which means it can be used by migrants, overwintering species, and then the breeding birds next summer.”

Protecting natural nesting habitat like dunes and coastline is critical for the resilience of beach-nesting sea and shorebirds, but these species need a constellation of breeding areas to bolster their populations. By taking advantage of remnant infrastructure, like the St. George Island Causeway, Audubon Florida increases nesting opportunities while continuing to work on additional shoreline protections.
Fish Island: A Florida Forever Success Story

Fish Island is a long, forested sliver in the expansive marshes between the Matanzas River and developed Anastasia Island just south of St. Augustine. Wading birds ply its half mile of shoreline and a pair of Bald Eagles nest in its forested interior. Public acquisition of this natural gem is an investment in the resilience of the area, its marsh and its wildlife, and brings us closer to completing the Florida Forever Northeast Florida Blueway project.

Audubon Florida joined a coalition to advocate for Fish Island as a future park. Working with concerned residents, Matanzas Riverkeeper, Save Fish Island, St. Johns County Audubon, North Florida Land Trust, and others to achieve conservation of the site, stakeholders argued that the benefits realized from the island’s water quality, wildlife, and recreation would far outweigh those expected from development. During public meetings, EagleWatch volunteer Rhonda Lovett shared photographs and details of her visits to the site. Amy Koch, president of St. Johns County Audubon, presented data indicating the nest on site was indeed active.

Audubon’s Northeast Florida Policy Associate Chris Farrell and St. Johns County Audubon worked with local supporters to highlight the water quality benefits of this project utilizing financial assistance from a “Water Quality Advocate” grant secured from the National Audubon Society. On July 23, 2019, Audubon’s Director of Policy Beth Alvi joined supporters from Northeast Florida before the governor and Cabinet to support the 57-acre acquisition, which was confirmed unanimously!

St. Johns County is managing the property for the State of Florida, and since the island’s purchase in 2019, has developed a management plan to protect its resources and created short trails through the upland pine habitat in preparation for an opening to the public. Compatible recreational access and interpretive signage are in the works.

As Florida’s population continues to grow, protecting vulnerable resources is more important now than ever. For wildlife, people, working lands, conservation corridors, and more, forests and wetlands are valuable investments in our efforts to protect and restore Florida’s water quality and watersheds.
As temperatures warm and rainfall becomes increasingly unpredictable, wetlands enhance our resilience to flooding, drought, wildfires, and harmful algal blooms while providing habitats for birds and other wildlife.

Unfortunately, nearly 80% of Florida’s wetlands have already been altered or destroyed. Those that remain serve as carbon sinks, sequestering millions of tons of carbon in the soil. Removing wetlands can be the carbon equivalent to putting thousands of combustion-engine vehicles on the road.

Florida is implementing the biggest natural infrastructure project in the U.S. as it restores the Everglades, the largest subtropical wetland ecosystem in North America and the largest mangrove ecosystem in the Western Hemisphere. In addition to filtering drinking water and creating recreational opportunities, the Everglades also serves as South Florida’s first line of defense against storms.

Additionally, wetlands help protect communities from flooding by receiving, holding, and cleaning surface waters on the land. This, in turn, recharges drinking-water aquifers and reduces the likelihood of catastrophic wildfires.

By protecting existing wetlands and green spaces and restoring others, we can have cleaner water and air, preserve homes for birds, protect against sea-level rise and storm surge, sequester carbon, absorb floodwaters, and provide cool, green space for people to relax and reconnect with nature.

For decades, Audubon has advocated for both Everglades restoration and water management that ensures water for the natural environment. We have directly worked with leadership at the state and federal level to secure the funding needed for ambitious projects, and celebrated this year as major initiatives began (pg 24) and others crossed the finish line (pg 30).
Resilience is defined in different ways. If you live near the coast, protection from storm surge and waves are resilience priorities. If you live in a city, having a safe place to cool off is a resilience priority. One area that is a priority for us all? Our drinking water supply. In Florida, water quality and quantity have become an issue across the state, especially in the Everglades. Florida annually experiences water feast and famine. Summer rainy season flooding wraps up with the arrival of a notably drier winter season, and with that come flocks of human snowbirds looking for Florida sunshine. Florida's wetlands are critical to the tourism economy and to local residents not only because of their aesthetic qualities, but also because they help recharge drinking water supplies while protecting local communities from catastrophic wildfire. Wetlands protect inland communities from flooding by absorbing the rainwaters that inundate Southwest Florida every year and even filtering nutrients before they reach the warming waters of the Gulf of Mexico. Inland wetlands boost our resilience to climate change impacts — but only if they remain healthy.

Less than 65 years ago, Corkscrew Swamp Sanctuary was home to the largest nesting colony of Wood Storks in the United States, hosting as many as 6,000 nesting pairs. At the time, wetlands blanketed the area with water levels that fluctuated throughout the year, rising during the summer rainy season and drying out in the winter. Many areas that are dry in winter became shallow wetlands as spring approached before deepening with late summer rains. These shallow wetlands typically provided an abundance of small prey fish and seemingly endless foraging habitat for Wood Storks, Roseate Spoonbills, Little Blue Herons, and more, just as breeding season peaked.

Today, our ecosystem looks dramatically different than it did a few decades ago. Audubon biologists conducting a hydrologic modeling study have determined that water levels at Corkscrew Swamp Sanctuary are dropping lower than they have in the past, and the hydroperiod (the length of time that wetlands can hold water) is shorter, significantly reducing the availability and functionality of wetland habitats in spring and fall.

Sanctuary staff have been monitoring Wood Stork nesting in the region for decades. Wood Storks are highly dependent upon the availability of fish

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Restoring Marsh and Prairie Habitat at Corkscrew Swamp Sanctuary

RESTORING WETLANDS IS AN INVESTMENT IN RESILIENCE TO CLIMATE CHANGE IMPACTS

Due to a combination of increased demand for water, land use changes, flood control efforts, and a siege of invasive plants, most of Florida’s natural wetlands have been degraded over the past century. To bring wetlands back, Audubon’s Corkscrew Swamp Sanctuary has undertaken an ambitious, five-year goal of restoring 1,000 acres of marsh and prairie in the Western Everglades by 2023.
throughout their nesting season from December through May. The over-drying observed at Corkscrew Swamp Sanctuary, coupled with the widespread loss of the wetlands that are critical for wading bird foraging, has likely contributed to the decline in Wood Stork nesting in recent decades.

The wetland plants that would naturally occur in these wetlands provide habitat for small fish — the prey of wildlife like Wood Storks. Unfortunately, more frequent drying has allowed aggressive Carolina willow to gain the upper hand in these wetlands, replacing the ideal plant communities and exacerbating the swamps water woes.

The Sanctuary’s land managers have estimated that approximately 1,800 acres of marsh and wet prairie habitat require restoration. Since taking on the effort in 2018, the land management team has made significant progress toward the restoration of marsh and prairie wetlands to highly productive and biologically diverse wetland systems. Goals of the project are to reclaim habitat for wildlife and in the long term, to reestablish the native plant communities. A three-step restoration process includes mechanical removal of willow and other woody shrubs; herbicide spot treatment; and finally, prescribed fire.

In 2021, the team completed vegetation shredding on 207 acres of willow and other woody vegetation. With this accomplishment, the marsh and prairie restoration project now stands at 867 acres currently under restoration, with a total of 45 acres completely restored. The project provides an opportunity to improve wetland function and restore wading bird foraging habitat.

By restoring the marshes and prairies at Corkscrew Swamp Sanctuary, we can regain healthy wetlands that provide quality wildlife habitat. These wetlands are also crucial for reducing the risk of catastrophic wildfires, holding floodwaters during severe weather events, and providing habitat to many of our threatened and thriving wading birds, amphibians, reptiles, and mammals that call these wetlands home.

Audubon’s Corkscrew Swamp Sanctuary, a Ramsar-designated Wetland of International Importance, was recognized as a Wetland of Distinction by the Society of Wetland Scientists in 2019.

Learn more about this special place and how you can see it for yourself on our 2.25 mile boardwalk at: Corkscrew.Audubon.org
Corkscrew’s Successful Experiment in Wastewater Treatment, “The Living Machine” Takes a Page from Nature’s Playbook

The survival of civilization may well require that we enter into the natural world and use its teachings to reshape and redefine our tools and technologies.

— John Todd, March 1990

BACKGROUND
As the cathedral of wetlands, Corkscrew Swamp Sanctuary’s old growth cypress forest and abundant resident wildlife offers some of the best nature viewing and photographic experiences in the world. Despite its remoteness, Sanctuary visitation started surpassing 100,000 visitors annually in the 1990s. Even with plans for the Blair Audubon Center on the horizon, Sanctuary managers realized that people need toilets and taps, and the wastewater they would produce could be a real problem for the swamp. With no sewer line to connect to in the sanctuary’s remote location, a septic system was the only option...and yet, septic would problematic due to the high water table and the sensitivity of the swamp to effluent.

A BETTER IDEA
Enter John Todd of Ocean Arks International. He designed wastewater treatment systems — called Living Machines — that used sunlight, bacteria, green plants, and animals to restore water to pure conditions.

In 1993, Dr. Todd proposed a Living Machine for Corkscrew Swamp Sanctuary that would occupy an area of only 70x70 feet, purify wastes without additives, and recycle 90 percent of the purified water back into the restrooms for reuse in the toilets. This innovative system was more environmentally friendly than a standard septic tank and cost substantially less to build and maintain than conventional technology. Completed in October 1994, Corkscrew Swamp Sanctuary’s Living Machine became the first treatment system of its kind permitted in Florida.

The key to accomplishing this is combining living organisms chosen specifically to perform certain functions and placing them in a contained environment — a Living Machine.

Through a multi-cycle process, waste is pumped below-ground for initial anaerobic digestion, then it goes to tanks where it is aerated and supplied with bacteria, green plants from algae to trees, snails, shrimp, insects, and fish. Here, ammonia and organic nitrogen are converted to nitrates. There, the sediment begins the cycle again to be eliminated.

The process then continues through crushed limestone to tank marshes which are planted with typical wetland species from Corkscrew Swamp including alligator flag, arrowhead, pickerel weed, blue flag iris, and swamp lily that remove the last vestiges of nitrogen through the root systems and convert them to harmless nitrogen gas.

When the effluent exits these marshes, it is clean. But to satisfy state regulators, it is disinfected with chlorine, pumped to a holding tank, and then pumped to a chamber to dechlorinate the water with sodium sulfite. The water is recycled into the restrooms for flushing. A separate line brings potable water from the drinking water system for hand-washing sinks and drinking fountains.

A unique feature of the Corkscrew Living Machine was the total coverage by an aluminum screen enclosure, which allowed control of insect populations.

The Living Machine is also an educational opportunity. The entire facility is open to the public and interpreted with signs and displays.
The Kissimmee River was once a haven for wildlife. Egrets, herons, and Roseate Spoonbills waded in the shallows of the curving waterway, foraging for prey in the midst of waving reeds and healthy wetlands. Snail Kites fed their chicks where the river flowed into Lake Okeechobee. Ibis nested here by the thousands. In all, 38 species of water birds and 39 species of fish made their homes in the 103 miles of the Kissimmee.

In a move of unparalleled hubris, people thought they could drain the wetlands and floodplain by aggressive channelization with no adverse effects. Between 1962 and 1971, the United States Army Corps of Engineers channeled the Kissimmee River and created a 30-foot deep, 300-foot wide, 56-mile long drainage canal (C-38). This project drained approximately 50,000 acres of the Kissimmee River’s floodplain wetlands, of which about 25,000 has been restored.

Audubon has been advocating for the restoration of the Kissimmee River since channelization construction began. We supported the restoration when Congress authorized the project in 1992, and advocated for water reservation until eventual approval in 2020. Through it all we have been a voice for birds and wildlife that have benefited from the newly restored river, as well as vocal proponents of how the natural channel will benefit flood control and water quality for surrounding communities.

Starting in 1999, the Army Corps of Engineers and partners at the South Florida Water Management District began to restore the natural curves of the river in the largest restoration project of its kind in the world. The project, which was Congressionally authorized in 1992, restores 40 miles of the river and floodplain and almost 25,000 acres of wetlands. The river’s floodplain will flood seasonally and the river will meander again in order to replicate its natural path. After restoration, Lake Kissimmee will rise 1.5 feet, storing water to feed the river during the dry season and rehydrating another 20 square miles of dried marshes around it.

The conclusion of the Kissimmee River Restoration project is a historic milestone for Everglades restoration. This event highlights an important shift in Everglades restoration projects across the state as we transition from construction to operation. We are thrilled with the ecological benefits we are already seeing from these projects.

— Kelly Cox, Director of Everglades Policy at Audubon Florida

The Kissimmee River Restoration project has already achieved innumerable benefits for the ecosystem. Now with construction complete, wading birds are returning in droves and are surpassing restoration goal numbers. Waterfowl and shorebirds have again become seasonally abundant in the area and the populations of bass and sunfish are steadily increasing. This project’s primary goal was to restore the Kissimmee’s ecosystems, but it also benefits everyone downstream. The project allows for more water to be stored during wet periods, it provides more flow during dry periods, and it allows for natural water filtration thanks to the wetland plant communities. Hurricane Irma showcased how the newly restored Kissimmee River would function during extreme events. Before restoration, the channelized Kissimmee River would flush water quickly into Lake Okeechobee, draining the surrounding floodplain. During and after the storm, the restoration completed to date allowed the Kissimmee Chain of Lakes to hold significant amounts of water rather than sending it into the lake, mirroring the ecosystem’s historic ability to respond to high water levels in the Northern Everglades.

Birds are resilient! They flocked back to the restored areas faster than we had hoped - if you build it they will come! This large-scale infrastructure improvement proves that ecosystem restoration holds benefits for both birds and people, and is an important water-resources investment for now and into the future.

— Julie Hill-Gabriel, Audubon’s Vice President for Water Conservation

Wetland habitats of the Kissimmee River channel and floodplain now support at least 159 bird species, 66 of which are considered wetland-dependent during some portion of their life cycles.
FPL Solar Stewardship Program, an Eco-innovation Partnership with Audubon Florida

We need solar power to transition to a cleaner future while pushing for a decline in carbon emissions. Working directly with energy companies, Audubon staff team up with solar site managers to provide as many natural benefits to plants and wildlife as possible at each site.

Florida Power & Light Company (FPL) and Audubon Florida have partnered to design and implement environmental enhancements at solar sites. FPL is the largest generator of solar energy in Florida, with 42 major solar energy centers in operation and eight currently under construction.

Each FPL solar power plant encompasses a few hundred acres of land in order to host roughly 250,000 solar panels. However, unlike other types of development, an FPL solar site is designed to minimize the array footprint and any disturbance to the land, wetlands, and natural habitats. Concrete is not used to secure the panel systems to the ground, and once construction is complete, the facilities require minimal human activity — making them ideal for sharing with birds and pollinators.

FPL’s solar stewardship program involves site-specific habitat enhancement and preservation plans focused on providing habitat opportunities for birds, pollinators, and other wildlife. This is accomplished through a variety of prescriptive methodologies, including but not limited to: restoring hydrology to wetlands; increasing biodiversity through the use of appropriate native plant species; minimizing the prevalence of invasive species through integrated approaches; incorporating pollinator species into ground covers; and installing of artificial perches, nest boxes, and platforms.

ENVIRONMENTAL ENHANCEMENTS INCLUDE:

- Creating pollinator-friendly habitat areas to provide ample food sources for insects, songbirds, and hummingbirds.
- Installing wildlife friendly fencing at many sites to facilitate wildlife access and utilization.
- Planting native vegetation as a buffer near property edges, which will provide food sources and nesting habitat for a variety of songbirds such as bluebirds and wintering sparrows.
- Preserving wetlands and surface waters to provide habitat for a variety of wetland-dependent wildlife species such as frogs, snakes, turtles, and wading birds.
- Enhancing groundcover to increase biodiversity and forage for gopher tortoises, pollinators, quail and numerous other small mammals and birds.
FPL HORIZON SOLAR ENERGY CENTER LEADS THE WAY
Horizon was one of FPL’s first solar stewardship sites. The solar plant was completed in 2018 and generates 74.5 MW on 684 acres of former agricultural land, straddling Alachua and Putnam counties. Solar energy generation supports Audubon’s goals of reducing water consumption and carbon emissions from fossil fuels; environmental enhancements are added to these sites with input from Audubon to ensure sufficient natural resources are provided for birds, pollinators, and other wildlife. The Horizon facility generates zero-emissions electricity for FPL customers — enough to power approximately 15,000 Florida homes and equivalent to removing approximately 14,000 cars from the road each year.

A chain-link fence helps provide safety for people and security for the grid, but it doesn’t stop a wide variety of wildlife from using the resources. During an Audubon tour through a 2.5-mile hiking trail, birders spotted fresh tracks left by a raccoon, deer, and even a bobcat, making it clear that the property is a benefit to many types of wildlife.

On that tour, birders recorded American Kestrels perched on wire, Eastern Meadowlarks and Eastern Bluebirds perched on the panels, an Eastern Phoebe hunting below the structures, and a Belted Kingfisher. It is clear that solar stewardship sites such as FPL Horizon Solar Energy Center are doing much more than powering people’s homes and businesses: they are also providing important habitat in a rapidly urbanizing world.

FLORIDA SOLAR SITES
Solar is a clean, reliable form of energy that can propel Florida into a healthier future for people and wildlife. Solar sites are good neighbors, and can boost regional economies.

6,539.8 MW TOTAL SOLAR INSTALLED

ENOUGH SOLAR POWER FOR 780,586 HOMES

11,219 SOLAR JOBS

3% OF FLORIDA’S ELECTRICITY POWERED BY SOLAR

PRICES HAVE FALLEN 45% OVER THE LAST 5 YEARS

FACT #1

LESS GLARE THAN MOST WINDOWS

FACT #2

SOLAR FARMS ARE QUIET AND SAFE

FACT #3

PROPERTY VALUE

ADOBE DIGITAL SIGNATURE

TO LEARN MORE ABOUT AUDUBON FLORIDA’S EFFORTS, GO TO FL.AUDUBON.ORG
In 2005, Syd Kitson had a crazy idea: To build a new community—a town—that would be mainstream sustainable, and at its heart, it would be powered by solar energy. This was before solar was fashionable or even economical, and he had some big hurdles to overcome. Pitching the CEO of Florida Power & Light Company opportunistically in an elevator in the Capitol, Kitson made a compelling argument. “He listened as I explained we were building a new city of just under 20,000 homes and six million square feet; we wanted it to be the most sustainable and environmentally responsible new town,” Kitson described. The following week, Kitson received a call from a group of individuals working for Florida Power & Light Company, and collaboration began.

Whether it’s solar, or the major conservation acquisition Kitson brokered in the creation of the town, or its emphasis on native plants and restored wetlands to attenuate flooding, protect from fire in droughts, and reduce and absorb algae bloom-fueling fertilizer use, Babcock Ranch’s sustainable design choices didn’t just make environmental sense, they made economic sense. An investment that has paid returns, these features distinguish Babcock from a field of communities competing for new residents. “From an economic perspective, Babcock Ranch is already ranked in the top 30 in the country in home sales, and we are breaking all of our records. I have other developers calling me—my peers—and asking ‘Do you mind if we take your playbook?’ and I say, it’d be the greatest compliment you could ever give me.”

Babcock Ranch is not a subdivision or a gated community, but a unique town that inspires a very special feeling for many people. “If you see the before and after pictures [of wetland restoration projects included in Babcock’s community design], it’s stunning. And what amazes me is how fast nature heals itself,” Kitson said. “That’s why I am so optimistic about the future — because I truly believe that it’s not too late for us to get this right.”

Climate change presents dire risks to Florida. The rise of innovators and entrepreneurs helping Florida meet the challenge of climate change is demonstrating that climate action isn’t just the right thing to do, it’s smart business.

Syd Kitson
KITSON & PARTNERS | CHAIRMAN & CEO | BABCOCK RANCH

SUSTAINABLE COMMUNITY DESIGN AHEAD OF ITS TIME MADE SMART BUSINESS SENSE AT BABCOCK RANCH

In 2005, Syd Kitson had a crazy idea: To build a new community—a town—that would be mainstream sustainable, and at its heart, it would be powered by solar energy. This was before solar was fashionable or even economical, and he had some big hurdles to overcome. Pitching the CEO of Florida Power & Light Company opportunistically in an elevator in the Capitol, Kitson made a compelling argument. “He listened as I explained we were building a new city of just under 20,000 homes and six million square feet; we wanted it to be the most sustainable and environmentally responsible new town,” Kitson described. The following week, Kitson received a call from a group of individuals working for Florida Power & Light Company, and collaboration began.

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In addition to being a successful businessman, Kitson has been a thought leader in Florida for years, serving as Chairman of both the Board of Governors of Florida’s State University System as well as the Florida Council of 100. Kitson believes “people come here because of our incredible environment. But if we destroy that, we’ve taken away one of the greatest economic engines we have in the state. This is a point in time where people want to take action, and you’re going to see a lot of that from companies large and small.” In demonstrating sustainability’s economic viability, Kitson has set the stage for entrepreneurship to help Florida meet the challenge of climate change head on.
When rain falls in Florida, it does not stay in one place. Even though Florida is flat by most definitions, water falling as rain inland starts heading for the coast. It travels slowly to the nearest wetland, where herbaceous plants filter out excess nutrients. Then, it seeps through swamps, sloughs, or rivers until it reaches the sea. Rainwater also percolates vertically, down through soils and limestone, eventually recharging aquifers.

Since the turn of the 20th century, development has drained and paved many of these wetland features, reducing the landscape’s ability to hold and clean water. The result during storm events is flooding.

Unfortunately, in trying to move water quickly to tide to relieve flooding from rainfall events, pollution in stormwater is also carried quickly to the coasts. As it floods farms and yards, stormwater picks up excess nutrients like animal waste and septic tank effluent on its way to the sea. In urban areas, stormwater flowing across roads and parking lots can pick up oil, antifreeze, and heavy metals. Historically, this stormwater would have spent time in wetlands being cleaned by plants and recharging the aquifers. Canals, swales, and storm drains instead rush that water quickly to the sea. The 20th century systems for keeping people and property safe during storm events are now recognized as conduits for pollutants to harm local waterways and feed algal blooms.

Urban Climate Solutions

Audubon works with communities, decision makers and agencies to implement the 21st century stormwater solutions Florida needs to protect our environment and quality of life.
Birds dominate the landscape at Lake Elberta, a stormwater park in downtown Tallahassee. From my vantage point on the raised walking trail, upslope from the lake itself, I can see the tops of the Florida State University stadium and collegetown. My eyes are drawn to the dozens of Canada Geese paddling at the lake’s edges; the contrasting white and black plumage of Great Egrets and Anhinga (respectively) on the small, reedy island; and an easily spooked Wood Duck with eight tiny and fuzzy ducklings. Despite its small size, Lake Elberta is a birding hotspot, harboring not only a long list of regular residents, but rarities as well.

I did two laps around the paved walking trail, slow enough that the double loop took about 45 minutes. The hot and humid June afternoon spawned multiple thunderstorms, but I had managed to snag a few patches of sun. Taking a right out of the parking lot, I made my first stop at a large garden bed of native flowers, waving in the breeze. A nearby sign points to the partnership that made it happen: “Native plants provide numerous benefits for native insects and the creatures that consume them. For this reason, Apalachee Audubon volunteers, in partnership with the City of Tallahassee and Native Nurseries, have planted native plants and trees in several areas of Lake Elberta Park.”

Trees dot the grassy slopes, and both Great-crested Flycatchers and Eastern Kingbirds used the coverage of their branches to rest before swooping to the marsh plants after an insect snack. On the edges of the lake grew multiple species of wetland plants, including bright yellow winter daffodils.

Still, I could tell the lake was filled with stormwater. The remnants of a tropical storm had moved through the day before, dropping heavy bands of rain. The water filled the lake, but also washed some pieces of trash that now clung to the surface in multi-colored pieces. Volunteer groups periodically organize clean-ups here. For example, in the spring of 2021 Apalachee Audubon led a volunteer group and removed 37 bags of trash.

The building of Lake Elberta coincided with an influx of development into the area. As Rob Diaz De Villegas explains for WSFU: “It collects stormwater runoff from Doak Campbell Stadium and its large parking lots, Gaines Street, and everything uphill to the north. Two ditches form a V to the south of the lake, carrying runoff from Cascades Park and Florida State University. These eventually connect to Munson Slough and then flow into Wakulla Springs.”

In the past, city planners viewed urban stormwater ponds simply as a means of managing runoff, but in recent years, they have increasingly been recognized as an opportunity to provide recreational opportunities for urban communities. These features might previously have been ringed with chain-link fences but now often have walking trails and native landscaping meant to maximize their wildlife and recreational value.

As I walked, I heard regular screeches and pounding of a construction site visible from the trail, putting up student apartments. As the area becomes more urban, the importance of Lake Elberta as a vehicle for stormwater capture and as a wildlife haven increases.

I’m not the only one who has had a good birding day at Lake Elberta. “Believe it or not, Lake Elberta Park currently ranks #4 in terms of bird species observed at a given place in Leon County,” says Peter Kleinhenz, past president of Apalachee Audubon, “In fact, I know several birders who made the park their first stop when visiting Tallahassee due to its ease of access and diversity. Rarities like Red-necked Grebe and Magnificent Frigatebird have been seen there but, even on ‘slow’ days, a casual birder should be able to see 20-25 species of birds simply by walking the paved path around the lake.”

The City of Tallahassee continues to work with local partners like Apalachee Audubon to remove invasive species and plant native trees, further enhancing the habitat here.
Florida Water Rules are Being Revised, and Audubon is at the Table

While Florida public policy has long aspired to manage water resources to balance benefits for natural systems, economic uses, and population growth, today wetlands, springs, rivers, lakes, and estuaries suffer from decades of over-drainage, pollution, overuse, and poor management. As sea levels rise and waters warm, embedding safeguards in our stormwater infrastructure design and operations are a must for the future resilience of Florida.

With a reputation for using science to guide our work and birdlife to measure ecosystem health, Audubon staff members are known for providing sound technical advice. Beth Alvi, Director of Policy, and Chris Farrell, Northeast Florida Policy Associate, have been tapped to represent environmental interests on Technical Advisory Committees for two Florida Department of Environmental Protection programs.

Alvi, with more than two decades of experience in water policy development, implementation, conservation, and resource management, has worked in leadership roles in both the private and public sectors. She was appointed to the Clean Waterways TAC in December 2020 by then-DEP Secretary Noah Valenstein.

SEPTIC TANK RULES UPDATE TO HELP WATER QUALITY

The Clean Waterways Act also directed DEP to create an Onsite Sewage Treatment and Disposal Systems (OSTDS) Technical Advisory Committee. That committee is tasked with providing recommendations to the Governor and Legislature related to permitting, locating, and marketplace availability of OSTDS systems, including ways to fast-track the use of enhanced nutrient-reducing technology.

Farrell, a team member at Audubon for more than a decade, is one of the environmental representatives appointed to this TAC by DEP Secretary Shawn Hamilton. He brings a diverse set of skills to the committee as an ecologist who has engaged in many water-related regulatory and policy efforts throughout Florida. The committee met for the first time during the summer of 2021 and must submit its recommendations to the State by January 1, 2022.

Water quality is not only important to our wildlife but our way of life. State rules can help Florida shift to nature-based solutions that safeguard both.

— Chris Farrell, Northeast Florida Policy Associate
Natural Climate Solutions are all around us. The charismatic mega-structures like coral reefs and salt marshes get a lot of attention because, well, they are critically important for Florida and beyond. Solving climate issues naturally, however, can happen one small landscape at a time.

Florida was resilient before people tried to make this complex place more convenient. By the 1960s, postcard visions of people recreating across lush green spaces beneath palm trees swaying in the breeze not only helped sell real estate, but also encouraged the quick replacement of the native landscape that had evolved within Florida’s climate.

Since then, we’ve learned that some pretty plants require much more maintenance than others. Other lessons? Shade trees on the landscape keep air temperatures down. Ground cover reduces erosion while providing habitat for birds and other animals without mowing. Florida-friendly plants generally need less watering, and virtually no pesticides or fertilizer, the latter of which can exacerbate algal blooms with every rain event.

Landscaping with Florida-friendly plants can make a huge difference in not only creating habitat for birds and other wildlife, but can also make us more resilient.

First Your Yard, Then Your Community!

In late 2020, 99 volunteers worked with Frances M. Weston Audubon to plant 150 keystone native trees and plants on the upper bank slope of Washerwoman Creek at Bruce Beach City Park in Pensacola. This planting included keystone native live oak, sand live oak, bald cypress, red mulberry, and persimmon trees. Later, another volunteer effort convened to conduct deep watering, manual and organic weed control, plastics pickup, and organic fertilization.
In 2019 Audubon’s Survival by Degrees report sounded a stark warning: Without meaningful action to mitigate the impacts of climate change, two-thirds of North American bird species are at risk of extinction.

In order to give our Natural Climate Solutions the right conditions to thrive, we must actively work to reduce carbon emissions in addition to planning for resilience in the face of a changing climate.

But how do we truly begin? By knowing how much carbon we are emitting, and from where. In order to set a high bar for carbon reductions, we first have to know where we’re starting from (pg 48). Moreover, to effectively go after both reductions and emissions strategies, we must work with partners region-wide (pg 50).
East Central Florida Bands Together to Develop Carbon Baseline

In the winter of 2021, Audubon Florida worked to develop common sense baselines for greenhouse gas emissions for 18 visionary cities and counties, in partnership with ICLEI-Local Governments for Sustainability, the East Central Florida Regional Resilience Collaborative (R2C), and local universities.

These baselines are a critical first step in helping local governments track the effectiveness of their efforts to improve energy efficiency in their own operations and shift to renewable energy sources over time. Both can result in cost savings to taxpayers and reduced emissions that contribute to climate change.

The municipal GHG inventories assessed the emissions produced by government operations in municipally-owned buildings, municipal fleet usage, and waste services, among others. Student fellows from University of Central Florida, Florida Institute of Technology, and Stetson University partnered with a representative from a participating city or county. Each fellow provided important bandwidth for their assigned local government in developing the GHG inventory, while receiving specialized training from ICLEI and experience in this growing field.

By understanding their municipal operations, local governments create a critical framework for local resiliency decisions to reduce emissions and maximize efficiency; student fellows earn valuable experience in project management, resilience planning, and municipal operations.

Audubon Florida funded and co-facilitated the GHG inventories with the R2C and ICLEI as part of their commitment to strengthening climate resilience through science, innovation, and entrepreneurship for the benefit of Florida’s communities, ecosystems, and birds.

Looking at your greenhouse gas emissions and calculating how much you’re contributing to climate change can help you lessen the impact that climate change will have directly on your community. — Tracy Alt, University of Central Florida Student

“...and making everyone who walks through the door want to be part of the change.”

Julie Wraithmell, Executive Director of Audubon Florida

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Southwest Florida Cities and Counties Find Climate Power in Regional Resiliency Compact

In late 2020 and early 2021, all fourteen coastal jurisdictions in Southwest Florida and the Seminole Tribe of Florida voted to form the Southwest Florida Resiliency Compact, an agreement between county and municipal governments in Southwest Florida to collaboratively identify, prepare for, adapt to, and mitigate climate change impacts.

Upon joining the Compact, members ratified a memorandum of understanding (MOU) which is a non-legally binding agreement that lays out a commitment to “identifying common climate change vulnerability assessment methodologies; strategies for adaptation and mitigation actions that will enhance the resiliency of their communities; learning from one another’s prior efforts and planning documents; leveraging their resources; and pursuing public-private partnerships.”

The entire Southwest Florida coast is taking this important step to augment the region’s ability to protect its natural resources and bolster its resilience in our changing climate.

Local actions taken together can add up to big impact. This Compact is great news for Southwest Florida’s natural resources, economy, and communities.

— Julie Wraithmell, Executive Director for Audubon Florida

The list of participating jurisdictions includes Collier County, Lee County, Charlotte County, City of Punta Gorda, City of Sanibel, City of Fort Myers, City of Cape Coral, Town of Fort Myers Beach, Village of Estero, City of Bonita Springs, Captiva Erosion Prevention District, City of Naples, City of Everglades, City of Marco Island, and the Seminole Tribe of Florida.

THROUGHOUT THIS PROCESS, THE COMPACT WILL:

- Adopt a curve for future sea-level rise planning.
- Develop modeling tools to help governments assess current and future vulnerabilities to sea-level rise, storms, and freshwater flooding in SWFL.
- Coordinate best mitigation and adaptation practices.
- Seek funding and resources for climate efforts.
- Engage and collaborate with different stakeholders in the SWFL community to collaborate (organizations, businesses, associations, individuals, universities).
- Develop a regional legislative strategy; develop regionally consistent education and messaging.

Regions that are organized into Compacts are better poised to demonstrate their readiness and capacity for state-coordinated efforts, including funding. Governor DeSantis’ resilience budget tackles the challenges of sea level rise, intensified storm events, and localized flooding by establishing the Florida Resilient Grant Program which will provide $1 billion over four years to provide grants to state and local government entities.
Shaping state and federal laws to enable and incentivize Natural Climate Solutions is key to increasing their use.

Specific bills can encourage green infrastructure like living shorelines instead of sea walls while others specifically set up funding structures to help pay for these initiatives. Legislation like this is mirrored on the federal level, where appropriations also go towards funding research, conservation, and restoration.

**2021 STATE LEGISLATION THAT CAN BE USED FOR NATURAL CLIMATE SOLUTIONS**

Two bills that aimed to address the adverse effects of sea level rise and flooding caused by climate change sped through the House and Senate committees and were signed by Governor DeSantis in 2021. HB 7019 (Rep. Busatta Cabrera, R-Coral Gables) and its Senate companion, SB 1954 (Sen. Rodrigues, R-Estero), create the Resilient Florida Grant Program within the Department of Environmental Protection (DEP), authorizing the Department to provide grants to local governments to help combat rising sea levels.

The bill provided $100 million in grant funding (subject to appropriation) to local governments to fund resiliency planning and support vulnerability assessments and mitigation plans to prepare for the threats of flooding and sea level rise. The bill authorized counties to enter into agreements to form regional coalitions to plan for the resilience needs of communities and to coordinate intergovernmental solutions. The bill required DEP to develop a comprehensive statewide flood vulnerability and sea level rise data set by July 2022. By July 1, 2023, DEP must use the data to complete a comprehensive statewide flood vulnerability and sea level rise assessment. The bill also created the Florida Flood Hub for Applied Research and Innovation within the University of South Florida College of Marine Science. The data will be used to inform a Statewide Flooding and Sea Level Rise Resilience Plan, which would be updated and submitted to the Governor and the Legislature every three years.

Join our Advocate newsletter list to stay up-to-date on advocacy opportunities: FL.Audubon.org/advocate-signup
A complementary bill, HB 7021, also filed by Rep. Busatta Cabrera (R-Coral Gables), and its Senate companion, SB 2514, filed by Senate Appropriations, guaranteed funding for the projects mentioned in HB 7019/SB 1954 by establishing the Resilient Florida Trust Fund within DEP (to be terminated on or before July 1, 2025). The trust would also cover the cost to implement the plan, the operation of the grant program, the grants, and the administrative and operational costs of the Florida Flood Hub for Applied Research and Innovation. Since passage in Spring 2021, the Department of Environmental Protection has begun building the grant program and soliciting pre-applications to get this funding in motion.

FEDERAL LAWS MOVE FLORIDA IN THE RIGHT DIRECTION: GROWING CLIMATE SOLUTIONS ACT AND BLUE CARBON FOR OUR PLANET ACT

Audubon science shows that reducing emissions will help birds that would otherwise be vulnerable to extinction due to the effects of climate change. We also know that with the right resources, our working lands can be managed to better absorb and store carbon pollution—a natural solution to climate change.

The Growing Climate Solutions Act is a farmer-centered proposal empowering America’s agricultural producers to play a voluntary role in mitigating the impacts of climate change and in slowing habitat loss for countless species of birds and other wildlife. It will not only help to create a cleaner future for both people and wildlife, but will also preserve bird habitats, and help rural economies.

The Blue Carbon for Our Planet Act would provide much-needed research and funding for federal agencies to gauge the potential for coastal ecosystems to remove carbon dioxide from the atmosphere and store it in their stems, branches, leaves, roots, and soils. Coastal ecosystems are vulnerable to climate change and are disappearing quickly, putting both birds and people on the coast at risk of sea level rise and increasing storms and flooding.

Tell your elected official that you care about Natural Climate Solutions in an email, postcard, or meeting.

Florida Communities are Already Making a Difference!

ON OUR ROADWAYS
- Electric Vehicle Infrastructure
- Fleet Conversion Timelines
- Climate Mayors Electric Vehicle Collaborative

IN OUR NEIGHBORHOOD
- Green Building Programs
- Cool/Green Roofing Standards
- Stormwater Management Incentives
- Tree Canopy Coverage Criteria

IN GOVERNMENT
- Municipal Building Energy Efficiency Initiatives
- Greenhouse Gas Emissions Inventories & Tracking

Advocate for Natural Climate Solutions in your community — see page 58 for more information.
Under state and federal environmental laws, people who propose development impacting natural resources have to avoid and minimize some of those impacts, and when they can’t they are required to mitigate them. That means paying for natural resources elsewhere to be protected or restored — and that’s where Alex Preisser, President of Mitigation Marketing, comes in. Born and raised in Central Florida, Preisser combines her background in biology with an expert knowledge of the permitting processes of state, federal, and local environmental regulatory agencies to deliver meaningful conservation results. In her role, she oversees on-site restoration activities and manages federal and state permitting compliance at the company’s banks located throughout the state, while also managing the marketing and sale of mitigation credits.

Mitigation Marketing, founded in 1998, was the first company of its kind in Florida. Today, the company remains the largest firm specializing in marketing support for mitigation banks. Preisser notes that success in this line of work comes from savvy risk assessment, a good eye for investment, and thoughtful project management: “We identify problems early on in the process,” she explains. “We have never had a project fail because we invest in our education. If we have a bank that’s successful, we will make money—it’s a green investment.”

Beyond ensuring the company’s own success, she keeps her eye on the larger environmental goals. “What we do is valuable to the environment so we must meet our milestones to have our projects make a big difference in the long run.” Mitigation Marketing is instrumental in helping achieve no net loss of wetlands—an ongoing environmental quest to increase the wildlife corridor, decrease water pollution, and create additional open outdoor space.

While Preisser’s university education was in Utah, she grew up in Winter Park, FL, and had always planned to return home after college. “I just love everything about Florida. It’s so diverse and I truly love being out in parts of Florida that most people do not get to see.” In her role, she is able to enjoy Florida’s special places; the 900-acre Hilochee Mitigation Bank within the Withlacoochee River Basin in Polk County is one of Preisser’s favorite projects. The restoration and enhancement plan creates wetlands, enhances both the wetlands and the upland forests, and establishes native marsh vegetation. “The wildlife out there is amazing, and we get to see eagles, Sandhill Cranes, gopher tortoises, coyotes, and bears on our wildlife cameras.”

Mitigation banking continues to evolve and Preisser enjoys maximizing its benefits for Florida’s natural resources, and sharing her perspective as a “woman in this industry, coming home to my three kids in snake boots and a shovel.”

In addition to their beauty, wetlands and other natural spaces can function as natural climate solutions. While improving air and water quality and enhancing habitats for birds, fish, and other wildlife, they also offer flood and erosion control, recharge groundwater, offer storm protection, and sequester carbon pollution.

“I will continue to put my skills and knowledge to good use,” she said. “Florida is THE place to do [mitigation] banking; everything is on the cutting edge.”
Bringing Natural Climate Solutions to Your Community

Our members, chapters, and community partners are key stewards of this work, and many of you are already engaged in spreading the word about nature's power as a climate solution. If you're wondering whether work that you're already doing falls in this category, the flow-chart and guidelines on the next page will help you 1) Determine if a project includes nature-based solutions and 2) Incorporate climate messaging about new and existing projects for advertising, funding, or advocacy purposes.

Use this flow-chart to analyze relevant chapter projects or local and regional efforts. If you find that your current projects or project plans do not include nature-based solutions, the information provided in this document can be used as examples of how you could adapt your project(s) to help you explore how they could be incorporated! Need further assistance? We'd love to help! Email us at flconservation@audubon.org.

Does your Project/Advocacy Address Nature-based Solutions?

1. **Does your project directly restore habitat or avoid habitat conversion and/or degradation?**
   - Examples: Restoring coastal or interior wetlands, conversion of wetlands, forests, and rangelands, and reducing nutrient inputs from runoff
   - **NO**
   - **YES**

2. **Is new habitat being created and/or is natural infrastructure being utilized?**
   - Examples: Native plant gardens, planting living shorelines, green roofs, street trees, green spaces, etc.
   - **NO**
   - **YES**

3. **Does the project utilize or encourage other nature-based solutions that increase habitat and/or native vegetation?**
   - Examples: Regenerative grazing, conservation ranching, etc.
   - **NO**
   - **YES**

4. **Are you educating community members or decision-makers about habitat creation, protection, and/or restoration?**
   - Examples: Educating public about plants for birds, a local restoration project, etc.
   - **NO**
   - **YES**

5. **Does the project address issues other than conservation of a specific bird species or increasing birding recreation?**
   - Examples: Bird banding projects, creating bird boxes, monitoring bird burrows, colony watch, bird blind creation, birding trips, etc.
   - **NO**
   - **YES**

*Email us at flconservation@audubon.org with the project description and we will help you decide.*
1. Natural Climate Solutions play an important role but are not a substitute for greenhouse gas emissions reductions and a renewable energy transition. Increased emissions and rising temperatures will lessen ecosystems’ abilities to store carbon. We need to work on increasing renewable energy and decreasing greenhouse gas emissions to avoid the worst climate impacts and give nature and people more time to adapt. Natural Climate Solutions are an important component of an overall climate strategy, but not the only strategy.

2. Nature-based solutions and Natural Climate Solutions can help address the causes and effects of climate change. Natural infrastructure blunts some climate impacts, by reducing heat, flooding, storm surge, biodiversity loss; projects that qualify as natural climate solutions actually increase or protect ecosystems’ carbon sequestration capabilities.

3. Nature-based solutions and Natural Climate Solutions offer additional benefits for our economies, communities, and wildlife. Natural infrastructure and natural systems can improve air and water quality, benefit pollinators, support industries and businesses, create jobs, attract tourists, increase property values, and offer recreational opportunities.

4. Natural Climate Solutions protect birds and the places they need, today and tomorrow. Maintaining and restoring existing natural resources and finding innovative ways to address environmental challenges will protect essential habitat.

**TALKING POINTS FOR SHARING NATURAL CLIMATE SOLUTIONS WITH OTHERS**

We need your help! Florida can continue using 20th century solutions or employ more modern nature-based solutions — but we need your help to spread the word! When talking to decision makers in your community, you can help ensure Natural Climate Solutions are part of the conversation.

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4. Natural Climate Solutions protect birds and the places they need, today and tomorrow. Maintaining and restoring existing natural resources and finding innovative ways to address environmental challenges will protect essential habitat.
Audubon uses bird banding studies to learn more about the places birds need, and how we can best protect them while improving the resilience of their populations into the future. As part of our work at the Center for Birds of Prey, Audubon’s EagleWatch program staff band juvenile Bald Eagles treated at the Raptor Clinic to learn more about their nesting habits. Are more Florida eagles nesting on artificial structures? Are eagles born in nests that sit on cell and utility towers more likely to raise their own chicks on artificial structures? Or do they choose trees for their nests?

With support from Duke Energy, Audubon has banded and released 22 fledgling Bald Eagles during the most recent eagle season. 70 have been banded since the program began.

“Banding resights like these bring us one step closer to understanding the future of Bald Eagle nesting habits,” explains Shawnlei Breeding, Program Manager for Audubon EagleWatch, “We depend on community scientists to help us track these majestic birds.”

References

1. https://www.habitat.noaa.gov/storymap/barrier_island_restoration/index.html#

To request a copy of our works cited list, email flconservation@audubon.org

To report a banded Bald Eagle, click here: Usgs.gov/labs/birdb-lab