NATURE MATTERS THE FISH & WILDLIFE FOUNDATION OF FLORIDA

The Fish & Wildlife Foundation of Florida is a nonprofit organization that seeks to protect our outstanding animals and plants and the lands and waters they need to survive.

27,000 ACRES OF WILD FLORIDA PROTECTED IN **OSCEOLA COUNTY**

The late Fred DeLuca launched the Subway sandwich empire at age 17 with \$1,000. Johnny Morris started Bass Pro Shops by selling fishing gear in the back of his father's liquor store. Both grew their little stores into two of the world's most successful businesses. This spring, their philanthropic paths crossed in Florida to the lasting benefit of conservation. Fred DeLuca's widow Elisabeth has gifted 27,000 acres in the Everglades headwaters to the University of Florida (UF) via the University's foundation, simultaneously donating a permanent conservation easement to Ducks Unlimited (DU). Our own Foundation pledged \$200,000 to the project to endow long-term monitoring of DU's easement and provide funds for management of the tract's rare and endangered species.

UF will use the property as an ecological research station that includes education, outdoor engagement, and working-lands conservation. Our Foundation, the Florida Fish and Wildlife Conservation Commission (FWC), DU, and other organizations are helping UF craft its management plan for the property. Bass Pro Shops and Cabela's Outdoor Fund provided \$100,000 of the Foundation's \$200,000 commitment. "We're thrilled to help conserve this outstanding habitat, which will serve as a national model showcasing how wildlife management, water conservation, and ranching can thrive together," said Bob Ziehmer, Senior Director of Conservation at Bass Pro Shops and Cabela's.

ONE-THIRD OF THE WORLD'S REMAINING BREEDING POPULATION OF FLORIDA

GRASSHOPPER SPARROWS ARE THERE. Over the past decade, our Foundation has invested hundreds of thousands of dollars to save the grasshopper sparrow from extinction, thanks to your support. "Having the DeLuca property permanently protected is a tremendous step forward for the sparrow and the other notable species found there," said Foundation President and CEO Andrew Walker. Those species include red-cockaded woodpeckers, sandhill cranes, northern crested caracaras, Florida scrub-jays, gopher tortoises, burrowing owls, eastern indigo snakes, and a rare skink. Florida black bears and panthers traverse the property, which also includes vast open wetlands and wet woodlands.



CONSERVATION IN UNPRECEDENTED TIMES



"The year summer came with dread"—was how one national newspaper summed up the multiple environmental events of the past four months. Triple-digit temperatures near the Arctic circle; fires so massive they created their own weather; decades-long droughts punctuated by torrential rains and floods; massive die-offs of coral; fabled streams too hot for trout and salmon;

breeding waterfowl losing prairie potholes; fish- and eelgrass-killing algal blooms contributing to starvation of manatees.

People often wonder what it's like, working in conservation in the face of so many crises. It's certainly not easy. But those of us who devote our lives to conserving Nature have an advantage: we are aware and help achieve a number of daily conservation victories often unreported to the public.

Manatees are a case in point. More than 900 manatees are known to have died so far this year, surpassing the worst annual number of recorded deaths (830 in 2013). Most died of starvation this winter and early spring in the Indian River Lagoon, where thousands of manatees are drawn to the warm waters of a power plant, but where 58 percent of eelgrass-some 46,000 acres-has been lost in the last decade to nutrient pollution that has caused multiple super algal blooms and brown tides that deprive seagrass of sunlight.

The Florida legislature and the Governor responded to this unacceptable situation with an emergency \$8 million grant to restore manatee access to important freshwater springs (the manatees' natural wintering spots) and replant eelgrass statewide. Our Foundation is working closely with FWC to raise \$230,000 to replant six areas of the Lagoon possessing the best water quality. We also donate \$250,000 annually to public education on and restoration of Florida's 700+ springs-monies contributed by people who purchase the "Protect Florida Springs" license plate.

What's lost in current headlines is the great overall success story of manatee conservation. Thirty years ago, fewer than 1,300 manatees remained; today estimates run as high as 10,000. This is due to the work of many public and private partners, civic leaders, and volunteers. This year's tragic starvation event will only serve to galvanize further action and collaboration statewide.

The same is true for Florida panthers, which have rebounded from 30 animals to 200 by some estimates. Offshore, with the rapid approach of stony coral tissue loss disease, state and federal agencies and private partners rescued 2,000 corals from the Florida Keys to be bred for genetic diversity and increased resistance to disease and other stresses. Nearly 40 percent of these corals are being held in a facility created by our Foundation, SeaWorld, the Association of Zoos and Aquariums, and Disney.

Continued pg. 2



Conservation in unprecedented times continued

And after decades of debate, the news coming out of the Everglades is better and better. In one of many projects underway, a key section of the Old Tamiami Trail was removed this year, increasing the southward flow of water by more than 220 billion gallons/yearfreshwater critical to Florida Bay, where we are supporting FWC's restoration of the marine sponge ecosystem.

For me, the takeaway is this: the climate is changing, in profound ways. The world will look very different 50 and 100 years from now. Humankind will have to make

restoration and management of Nature one of its highest priorities if we want our wildlife, landscapes, and traditional outdoor pursuits to survive. But we are learning quickly how to respond, how to adapt to these unprecedented times. The myriad daily successes, large and small, add up. They argue for hope and a renewed sense of determination and promise.



USING MUSSELS TO RESTORE LAKE TRAFFORD



Lake Trafford in Collier County used to be a prized sportfishing location. But in the late 1990s, it was inundated with non-native hydrilla, which led to the accumulation of organic sediment (muck), poor water quality, and frequent fish kills. By 2010, restoration efforts successfully removed six million cubic yards of muck, and native fish and vegetation were reestablished through stocking and planting projects.

To help improve the water quality and quantity of popular sportfish, FWC turned to an unusual ally.

Paper pondshell mussels might not be much to look at, but they are an essential component of ecosystem health and clean water, acting as natural filtration systems. FWC biologists knew that employing mussels would help improve water clarity and quality. However, they were unsure if they would be able to successfully propagate paper pondshell mussels en masse, as this species has not been used previously in large-scale lake restoration. Our Foundation provided two grants totaling \$130,960 to help researchers answer the question.

Mussels need a fish host to reproduce, so bluegill were used to give the bivalves the breeding boost they needed. Researchers placed the mussels and fish in a specialized tank system purchased using Foundation funding. In the tanks, the mussels released

a mucus net that contained tiny baby mussels. Bluegill swam into the net, collecting the babies on their gills, the most conducive environment for their growth with no negative effects on the fish. The results were remarkable: biologists were able to produce 1,600 mussels with just 30 fish.

This project marks the first known successful use of native freshwater mussels to restore a large ecosystem in Florida. Biologists are now working to scale up the project and breed tens of thousands of mussels to stock Lake Trafford with the perfect amount of aquatic superheroes. They will also begin working to develop similar techniques for other native mussel species.

"FLORIDA IS SYNONYMOUS WITH FISHING. WE ARE HOPEFUL THAT THIS INGENIOUS PROJECT CAN PROVIDE A BLUEPRINT FOR FUTURE FRESHWATER FISHERIES RESTORATION." said

Foundation President & CEO Andrew Walker. "We are thrilled to see how successful FWC has been and we look forward to Lake Trafford again becoming one of the country's great sportfishing lakes."

Funding for the project comes from the Foundation's "Conserve Wildlife" license plate. Twenty-five dollars from each plate purchase supports the conservation of Florida's rare wildlife.

WOMEN IN SCIENCE

FWC Fish and Wildlife Research Institute (FWRI) researcher Lindsay Huebner has combined her love of the ocean with her passion for solving environmental science puzzles throughout her education and career. Her graduate thesis focused on corkscrew sea anemones and an associated cleaner shrimp. These anemones and shrimp form "cleaning stations," where the shrimp remove parasites and clean wounds on fish. Without this cleaning duo, fish health can suffer, causing ripple effects in reef ecosystems.

Our Foundation gave \$88,483 in "Conserve Wildlife" grants to fund her continued study of this relationship. In her surveys of benthic invertebrates and fish at ledges sites offshore from Tampa Bay, Lindsay and her fellow researchers found cleaning stations like those she studied in grad school. Since the Tampa Bay region is not part of the anemone's reported range, this was an unexpected discovery. It is not clear whether these anemones had been present but not documented in the Tampa Bay region previously, or if they have expanded their range due to warming oceans. She and her research collaborator from FWRI, Dr. Bob Ellis, are hoping to determine whether these habitats may be experiencing an influx of marine life normally associated with more tropical habitats further south.

LINDSAY HAS ALSO BEEN AN INSTRUMENTAL MEMBER OF THE CORAL REEF EVALUATION AND MONITORING PROJECT (CREMP). CREMP IS ONE OF THE LONGEST-TERM CORAL REEF

MONITORING PROJECTS IN THE WORLD. Researchers visit the Florida Keys and Dry Tortugas annually to assess coral health and population demographics. Lindsay and her colleagues have found that stony coral tissue loss disease (SCTLD) has drastically affected the area. In fact, some coral species have completely disappeared from evaluation sites. To determine the cause of the disease, Lindsay and her collaborators from Mote Marine Laboratory, Drs. Erinn Muller and Abigail Clark, and The University of Miami, Dr. Stephanie Rosales, removed tissue samples from diseased and apparently healthy corals. The microbiomes of the samples were compared to evaluate what microbes are present, and whether there is a shift in the microbiome of coral disease lesions compared to the healthy corals. Water and sediment samples were also collected to understand if there are microbial shifts in the environment due to the arrival of SCTLD. While working with diseased coral can be disheartening, Lindsay attacks it as a scientific question to solve. Researchers like Lindsay are doing groundbreaking work, we're proud to help them thanks to your support!



GROWING [EEL]GRASS TO SAVE MANATEES

2021 has been grim for Florida's beloved manatees: more have died this year than any other, over 10% of the total population. Most have succumbed to starvation because of a lack of eelgrass, a key manatee food, in the Indian River Lagoon. In order to prevent future deaths, we are raising \$230,000 to replant six critical beds in the Lagoon and are working to raise another \$250,000 to establish an eelgrass nursery for continuing restoration efforts. Thank you to the donors to date who have responded so quickly, particularly the Maltz Family Foundation in Ohio. Mr. Maltz has long been a supporter of environmental causes, especially those involving habitat degradation and the loss of habitat for iconic species. "I recently learned of this latest struggle for the manatees and wanted to find a way to help that would have a direct impact," shared Mr. Maltz.





LEAVE A WILD LEGACY

ESTATE PLAN



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Protect nature and save on taxes with a gift of stocks, bonds, or mutual funds.



Taxpayers age 70-1/2 and older can transfer up to \$100,000 annually from their IRA accounts directly to the Foundation without first having to recognize the distribution as income

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Create a fund or utilize a donor-advised fund or field-of-interest-endowment to maximize your conservation impact. We can help you decide which is right for you.



REAL ESTATE

Let us turn your real estate or other tangible assets into a gift for nature.



LIFE INSURANCE POLICY

Name the Foundation as a full, partial, or contingent beneficiary of your policy.

CHARITABLE GIFT ANNUITY

We partner with the Community Foundation of Tampa Bay to provide our supporters with CGA and charitable remainder trust and charitable lead trust options.



FOUNDATION, SEAWORLD, DISNEY, AND AZA ESTABLISH **FLORIDA CORAL RESCUE CENTER**

In 2014 a heretofore unknown disease began rapidly killing brain, pillar, and 18 other species of stony coral off the port of Miami. Over the following years, it spread north and south, overtaking most of the 350-mile-long Florida Reef Tract.

As the disease approached Key West in 2018, FWC and the National Oceanic and Atmospheric Administration launched a never-before-tried national effort to rescue disease-free stony corals and ship them to aquariums and labs around the country to care for them.

That's when the ASSOCIATION OF ZOOS AND AQUARIUMS, SEAWORLD, DISNEY, AND OUR FOUNDATION DECIDED TO CREATE A FACILITY TO HOLD A LARGE NUMBER OF THE 2,000 RESCUED CORALS CALLED

THE FLORIDA CORAL RESCUE CENTER. Our Foundation rented an appropriate building, bought the necessary equipment, and paid for the electrical, climate, and security upgrades needed to create the center. Disney Conservation is providing the funds to operate the Center for its first three years, while SeaWorld has hired a team to provide around-the-clock care for the corals.

Some 750 rescued corals are now cared for at this facility. Eventually these corals and others being held throughout Florida and other states will be bred to maximize their genetic diversity and resistance to disease, higher salinity, and water temperatures. These super corals will be returned to Florida's Coral Reef by the tens of thousands. Nonprofit partners like the Ocean Rescue Alliance, the Coral Restoration Foundation, The Nature Conservancy, the Florida Aquarium, Mote Marine Lab, and many universities and public agencies are working together to perfect restoration technologies and learn how to induce coral spawning to accelerate reproduction and the birth of new generations of coral. FWC, meanwhile, is outplanting corals to test for the continued presence of stony coral tissue loss disease.

Restoring Florida's Coral Reef to full diversity and health will take decades and must contend with continued stresses. But rapid advances in our knowledge of fish, invertebrate, and coral biology; reef microclimates; and restoration techniques give us reason to be optimistic that tomorrow's reefs will more than justify the enormous public and private effort being made in Florida and around the world.



OUR WATERS, OUR FUTURE: THE FLORIDA CORAL REEF **CONSERVATION FUND**

To ensure a steady source of revenue for funding the most promising coral restoration work by our partners, our Foundation has established the Florida Coral Reef Conservation Fund. We are asking Florida hotels, marinas, manufacturers, dive shops, and other businesses to add \$1 to their customers' bills or donate a small portion of sales to the Fund. Our goal is to grow the Fund to \$1 million year through these partnerships. We will distribute 100% of those donations as grants to the many organizations working to restore Florida's coral reef and maintain healthy fisheries. We want to thank the leadership of FWC Commissioner Robert Spottswood and the Key West Marriott Beachside Hotel.

LEARN MORE HERE.



DONORS

THANK YOU TO ALL THE INDIVIDUALS AND ORGANIZATIONS WHO DONATED FROM NOVEMBER 1, 2020 THROUGH AUGUST 24, 2021 TO HELP US ACHIEVE OUR IMPACT.

Hammerhead Shark Society (\$100,000+)

Bass Pro Shops & Cabela's Outdoor Fund Florida Power & Light & The Nextera Energy Foundation, Inc. Mrs. & Mr. C. Martin Wood III & The William Howard Flowers, Jr. Foundation, Inc.

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* Conservation Champions (recurring monthly donors)

These projects and more are funded thanks to the "Conserve Wildlife" specialty license plate. In April, we launched the redesigned plate in addition to online purchasing options for all our plates. Check it out at wildlifeflorida.org/cwt. \$25 of each plate purchase helps us conserve Florida's iconic wildlife, restore our unique springs, fund habitat restoration for game species, and protect our oceans. Make one your own by visiting your local tax collector's office or our website thanks to a partnership with Indian River County.



YOU CAN NOW PURCHASE ALL OUR PLATES ONLINE.



Dive into action and protect Florida springs today with our scuba diver plate.



Get the deer plate in your sights and show off your love for hunting.



Discover how much you can support marine habitats by purchasing our wave plate.

Photo by FWC

LEARN MORE AT WILDLIFEFLORIDA.ORG/BUY-A-PLATE.

FUNDING RESEARCH FOR FLORIDA FELINES



The Foundation recently awarded FWC \$114,000 to continue study of feline leukomyelopathy (FLM), a neurological condition characterized by a degeneration of the spinal cord. This follows an earlier \$150,000 grant, both made possible through sales of the Foundation's "Conserve Wildlife" specialty license plate (see above). FLM compromises the ability of some Florida panthers and bobcats to walk, run, and hunt. So far, FLM has been

confirmed in eight bobcats and three Florida panthers with additional probable cases involving 20 panthers and 19 bobcats. Because FLM has the potential to jeopardize years of conservation successes achieved for the endangered panther, **THE MOSAIC COMPANY JOINED US IN HELPING TO FUND TESTS TO BETTER UNDERSTAND THE AFFLICTION'S SPREAD.** These tests will also help FWC efforts at determining the cause of the disease, continuing the Foundation's efforts to help FWC collect and analyze data on the diseased big cats via trail cameras.

ADOPT A (PLUSH) FLORIDA PANTHER



To raise additional funds for conservation, panther plushes recently became available on our website for \$35. The "adoption" fee will further FLM research in addition to helping fund panther rehabilitation and help conserve other iconic Florida wildlife. **Buy yours online today!**

CAUTIOUS HOPE FOR THE FLORIDA GRASSHOPPER SPARROW

The Florida Grasshopper Sparrow is North America's most imperiled bird, now down to 30 nesting pairs in the wild. The U.S. Fish and Wildlife Service (USFWS), FWC, White Oak Conservation, our Foundation, and others have been breeding sparrows in captivity and releasing them into the wild to prevent the bird's extinction, which was imminent. Captive breeding has proven highly successful, with captive nesting pairs producing an average of 13 fledglings per nest. These are being released on FWC land south of Orlando. More than 200 captive-bred sparrows have been released in the past two years and are breeding successfully with wild sparrows. FWC and USFWS scientists have now confirmed that the offspring of these released birds have survived and begun breeding. And biologists at the release site have found more nests this year than at the same time last year.

Scientists hope that after five years, sparrow populations will be back at sustainable levels, and captive breeding will no long be necessary. In the meantime, it's buying us and the sparrow time to improve the bird's prairie habitat, establish new populations on adjoining lands, and more effectively exclude predators, including fire ants, from attacking nests.

TURNING TAMPA BAY KIDS FROM IPHONES TO ARCHERY

Fishing was women's work in Jovan McNeill's family. His great-grandmother taught his mother how to cast her lines and reel in her catches. McNeill's mother passed the family skill on to her son, taking him once a month to reconnect outdoors. In the busyness of a single-parent household, that quiet time together was invaluable.

McNeill wanted to share those formative experiences with others, giving kids a chance to put down their phones and bond with their families and nature. In response, he founded Cloud Nine Outdoors (CNO). CNO WORKS WITH INNER-CITY YOUTH, MANY OF WHOM LIVE SURROUNDED BY THE WATER OF TAMPA BAY BUT HAVE NEVER PICKED UP A FISHING POLE OR BEEN ON A BOAT. "It's hard to put into words the expression on their face when they catch their first fish or choose archery over iPhones," said McNeill.

With our support, CNO took each participant to an archery range for two days, and then applied their skills in the woods on a wild hog hunt. Successful hunters learned how to process their game.

In addition to exposing children to new experiences, McNeill is creating a generation of outdoor recreation and conservation advocates. CNO's programs incorporate animal identification, game species anatomy, and environmental stewardship. It also gives kids a source of consistency; they stay with CNO leaders throughout the



year, year after year. While teaching a love of nature, leaders also impart life skills. Their participants have a 100% graduation rate, and all have gone on to college or trade schools with scholarships from CNO. Thanks to the Foundation supporters who purchase our "Wildlife Foundation of Florida" (deer) plate, we are able to fund programs like CNO's for women and minority youth.

SPECIES SPOTLIGHT: THE EASTERN INDIGO SNAKE

The eastern indigo snake *(Drymarchon couperi)* is the longest native snake in the United States. Adults are typically 60-84 inches (152-213 cm), but the longest eastern indigo reached 110.4 in. Male snakes grow longer than females. They are a shiny blueish-black color with some red or orange scales around their chins and sides of their face. Juveniles have more red scales on their heads, but otherwise look very similar to adults. Their scales are mostly smooth, but adults have ridges on some of them.

The snakes feed mostly on small mammals, birds, amphibians, eggs, and reptiles, including other snakes and baby alligators. Eastern indigos do not use constriction to hunt; instead they use their large size and powerful jaws to attack and eat their prey. Biologists believe that the eastern indigo is mostly immune to rattlesnake venom. They are non-venomous and usually show no aggression to humans unless they are cornered. When feeling threatened, they flatten their heads, hiss, and make a rattling sound with their tails. Actual bites are very rare.



The eastern indigo's range extends from south Georgia, throughout Florida, and in some areas of Alabama and Louisiana as well. It is found most commonly in Florida and Georgia's sandhill plant communities where oaks and longleaf pines are common.

The eastern indigo is also found in pine flatwoods, hardwood forests, moist hammocks, and around cypress swamps. They change habitats seasonally, searching for dens in the winter, using gopher tortoise burrows as their dens. They are only active during the day and can tolerate cold temperatures better than other snake species.

Eastern indigos breed from November to April. They lay their eggs in gopher tortoise burrows from May through August. A single clutch is four to 12 eggs. When they hatch, the baby eastern indigos are typically 16 in. long. Parthenogenesis is a type of asexual reproduction which may be possible for eastern indigo snakes.

CONSERVATION STATUS

The eastern indigo snake is listed as a threatened species by the US Fish and Wildlife Service. The species may already be extirpated (locally extinct) within Alabama. The destruction, fragmentation, and degradation of their habitat is the main threat facing the eastern indigo. Eastern indigo snakes lose more than 5% of their habitat yearly in Florida alone. They are frequently killed or injured by people hunting for rattlesnakes. The illegal process of "gassing" is also responsible for many of the deaths of eastern indigos. Gassing involves pouring gasoline into gopher tortoise burrows to flush out rattlesnakes. Pollution, vehicle strikes, and pet trade capturing also contribute to eastern indigo deaths.

WHY IS THE EASTERN INDIGO IMPORTANT?

Eastern indigo snakes are at the top of the food chain; their health ensures the health of their habitat. Top predators play an important role in the food chain, keeping other species from overpopulating and harming the ecosystem. Population recovery efforts include releasing captive-bred snakes into the wild, as well as restoring and protecting their native habitat.



PYTHON CHALLENGE

This summer's Python Challenge was a resounding success, thanks in large part to a generous \$10,000 Ultimate Grand Prize for removing the most pythons donated by Virtual Business Services.

223 pythons were removed.

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612 participated in the contest. 116 participants were members of the military. The longest python was 15 ft. 9 in. A novice won the Ultimate Grand Prize for removing 41 pythons.