



Everglades Cooperative Invasive Species Management Area

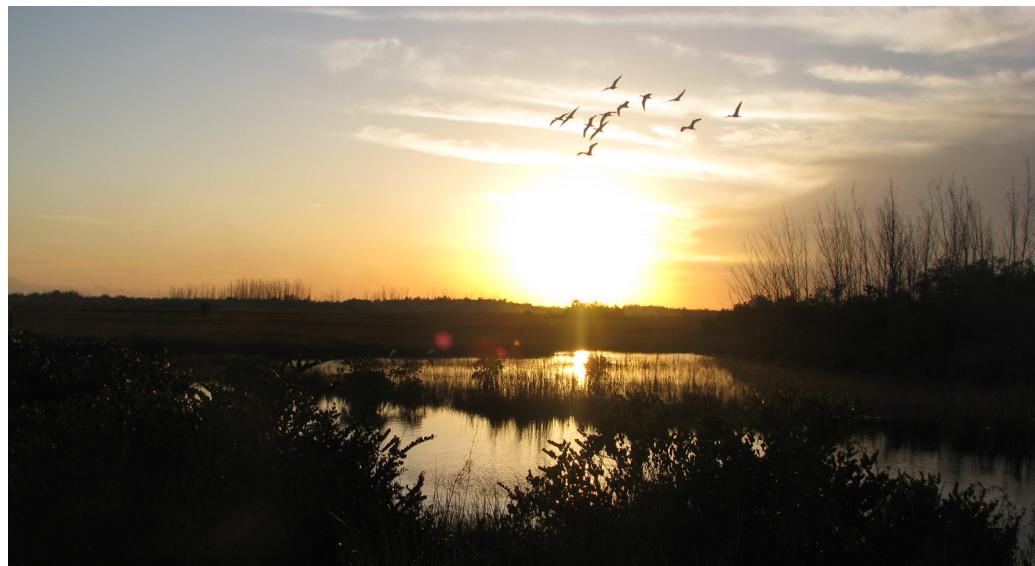
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Newsletter

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South Dade Wetlands (SDW) wildfire (Photo by Miami-Dade County).

South Dade Wetlands: Not So Boring After All!

by Robin Gray-Urgelles and Gwen Burzycki, Miami-Dade County

Have you ever driven the 18-Mile Stretch on US-1 from Florida City to the Keys and thought, "When am I going to get through this?! There's nothing to see!" You are passing through the 54,000-acre South Dade Wetlands (SDW, aka Model Lands), a large wetland preserve that is being jointly acquired and managed by the Miami-Dade County Environmentally Endangered Lands (EEL) Program and the South Florida Water Management District (SFWMD). SDW and the adjacent Southern Glades Wildlife and Environmental Area (SGWEA) encompass the largest chunk of freshwater marl prairie outside Everglades National Park and have almost all the ecological values of their more famous next-door neighbor.

Within one of the fastest growing urban areas, the EEL Program along with SFWMD has brought 20,600 acres under public ownership since 1994. Most of that is critically-important habitat for wading birds, waterfowl, raptors, migratory songbirds, as well as threatened and endangered species such as the wood stork, Eastern indigo snake, and the occasional Florida panther.

This area acts as a keystone, connecting a 3.5 million-acre contiguous wetland preserve representing most of the remaining Everglades watershed (including Loxahatchee National Wildlife Refuge, Everglades & Francis S. Taylor Wildlife Management Area, Big Cypress National Preserve, Everglades National Park, the SGWEA) with Biscayne National Park (Figure 1).

Like the rest of the Everglades, SDW has sweeping vistas of sawgrass prairie dotted with tree islands. The cool stuff, however, is in the details. On the 18-Mile Stretch, kingfishers, kestrels, and red-shouldered hawks perch on power lines; bald eagles soar on thermals; and wading birds feed in borrow pits which are remnants of Flagler's railway to the Keys. And why is there all that fencing? Special wildlife underpasses keep panthers, crocodiles, and alligators off the road and cars on.

Get off the main roads to appreciate pockets of woodstorks, snowy egrets, little blue herons, tricolored herons, and roseate spoonbills as the wetlands dry down and prey become concentrated.

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South Dade Wetlands: Not So Boring After All! (CONTINUED FROM PAGE 1)

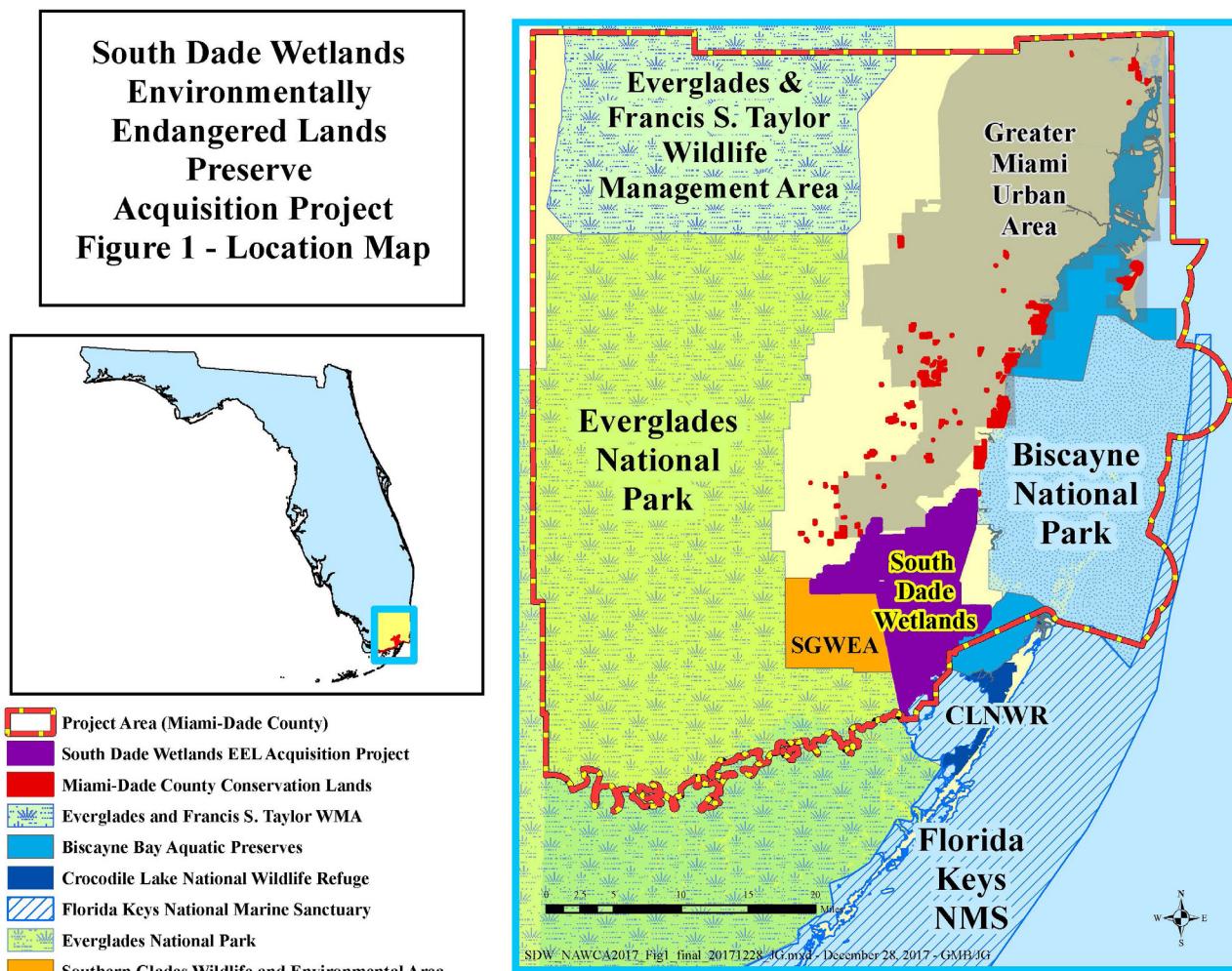


Figure 1. Map of South Dade Wetlands Environmentally Endangered Lands Preserve Acquisition Project.

SDW is within the Atlantic flyway, so during migration you will spot a variety of migratory songbirds flitting amongst trees. In summer, swallow-tailed kites soar overhead while state threatened white-crowned pigeons come up from Key Largo to munch on oily fruits of poisonwood.

Get your boots muddy to find the bracted colic root (*Aletris bracteata*, state endangered), Southern fogfruit (*Lippia stoechadifolia*, state endangered), and a host of air plants (*Tillandsia spp.*). Elsewhere in Florida, air plants have faced decline from the invasive bromeliad weevil (*Metamasius callizona*), but they seemingly take refuge here at the end of the peninsula.

The area, unfortunately, suffers from the same ills as the rest of the Everglades: overdrainage and invasive species. Without help, it would be too much to handle. Two Everglades Restoration projects are aimed at this area: the C-111 Spreader Canal and the Biscayne Bay Coastal Wetlands Projects. These projects will improve ecological functions and increase the height of the freshwater lens that is keeping saltwater at bay, improving resilience of this area against the effects of sea level rise.

While those projects are being developed and implemented, ECISMA has been riding to the rescue on invasive species. The SDW and SGWEA are Ground Zero for the Argentine black and white tegu, Florida's largest

Burmese python captured so far (18' 6") came from the SDW, and Old World climbing fern has taken foothold and is constantly finding new sites to colonize. SDW also has the Big Three: melaleuca, Australian pine, and Brazilian pepper, as well as that other nasty scourge, shoebottom ardisia. This would all be overwhelming and insurmountable without ECISMA.

SDW has been and is criss-crossed with cooperative projects to map melaleuca (NPS, SFWMD), trap tegus (FWC, UF), sting swamp eels (USFWS), prod pythons out of hiding (SFWMD), lose Lygodium (FWC-IPMS), and smash shoebottom ardisia (MDC-EEL). SDW is the Poster Child for why we need ECISMA. So as you travel through, take a new look at the 18-Mile Stretch.

Florida's Coneheadache

by Sue Alspach, Florida Department of Agriculture and Consumer Services (FDACS)

If the title is any indication, Florida is dealing with yet another invasive species. This time, the culprit is a termite with a cone-shaped head, a huge royal family, and a voracious appetite for anything made of wood or cellulose. The invasive conehead termite (*Nasutitermes corniger*) has moved into Broward County, leading the Florida Department of Agriculture and Consumer Services and its partners on a mission to put a lid on the problem before it spreads to forests and woody crops.

The conehead termite has settled comfortably in Florida where the climate is much like its native range – the Caribbean basin, Central America, and northern South America. It is assumed that coneheads entered the state in wooden packing material from a boat that traveled through its native range and docked at a marina in Dania Beach. This termite lives aboveground, building conspicuous nests and transportation tunnels on trees, shrubs, stumps, roots, and buildings (sometimes inside). Due to the presence of multiple queens and kings in each nest, the population in a colony grows rapidly. To feed its ever-expanding hungry horde, the colony's foraging area spreads widely and quickly.

Conehead termites were first discovered in Florida in 2001 when a Broward County homeowner noticed a strange phenomenon inside their house. Long, branching, dark brown tunnels covered the walls. A pest control company confirmed that conehead termites were building the tunnels. By that time, the adjacent marina was already heavily infested. Coneheads were eating the trees, bushes, boats, and spreading to vegetation on nearby properties. Typically in Florida, coneheads first infest vegetation on a property, then as their population grows, they scout nearby homes and businesses for new food sources.

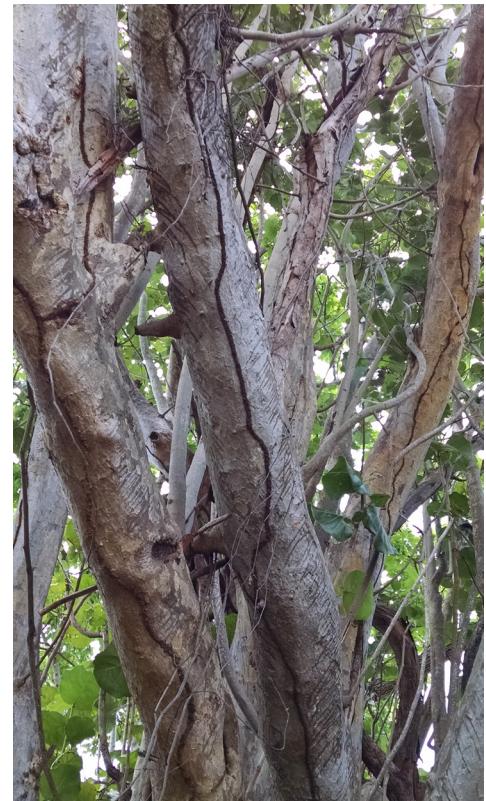
The largest infestations found to date in Broward County have been in heavily overgrown wooded areas, indicating that natural spaces such as state parks, Big Cypress National Preserve, and Everglades National Park, are prime for conehead colonization. Invasion in natural areas could spark a chain of negative impacts to the native ecosystem and ultimately impact the structural integrity of tree stands, making them more susceptible to blow overs.



Conehead termite soldiers from Pompano Beach (Photo © B.L. Thorne).



Conehead termite nest on sabal palmetto (Photo by: Sue Alspach, FDACS).



Conehead termite tunnels on a tree (Photo by: Sue Alspach, FDACS).

Although the only known populations of this termite in the United States currently reside in Broward County, they may be elsewhere. The department is working diligently to eradicate two populations of conehead termites in Dania Beach and Pompano Beach. Floridians can do their part and notify the department of any suspicious tunnels or nests by calling the hotline at **888-397-1517**. For more information on the invasive conehead termite's biology and pictures of the termite, their tunnels and nests, visit FreshFromFlorida.com and search "conehead." With our homes and natural areas at risk, your reports can help us stop this 'conehead'ache.

Scleria Rides the Waves of Infestation into the River of Grass

by Ryan Brown, South Florida Water Management District (SFWMD)



Removing *Scleria lacustris* from WCA3A in 2015 (Photo by: SFWMD).

Exotic *Scleria* species have been creating waves in Florida lately. There are now four nonnative species of this genus that have naturalized in the state, all of which occur in the Greater Everglades Region. Two of these species were first discovered in Florida within the last two years.

Scleria lacustris (Wright's nutrush) is an annual sedge that grows in seasonally inundated marshes. Its home range extends from the lower African continent to the Greater Caribbean. While it is considered extremely rare in its home range, this plant has found the ideal conditions to proliferate in Florida. It was first documented 3 decades ago in central Florida between two wildlife management areas in Jane Green Swamp. Initially, it was listed as a Florida Exotic Pest Plant Council (FLEPPC) Category 2 species in 2005, but once its displacive nature and ability to alter the natural state of native wetland plant communities became apparent, it was reclassification as a Category 1 species in 2009.

Wright's nutrush has been making its way down the Everglades watershed and has found a suitable home in the Water Conservation Areas (WCA). The main causes of its spread are thought to be foraging birds and airboats moving the seed to new bodies of water. In 2011, we discovered it had reached WCA3B and more recently it popped up in WCA3A North and WCA3A South in 2015 and 2017, respectively. The South Florida Water Management District (SFWMD) and Florida Fish and Wildlife Conservation Commission (FWC) have been working to routinely monitor and treat these areas.

Last summer, ECISMA members teamed up at the southern end of WCA3B to methodically survey for Wright's nutrush. Multiple state and federal agencies, among other volunteers, split up into small teams on airboats were assigned to specific survey transects.

As a result of the workday, a

new infestation was discovered not far from where it had been documented in 2011. The size and density of the infestation suggested the introduction was not recent. Because Wright's nutrush had already gone to seed, the focus shifted to directly collecting seeds from the mature plants, bagging them and ensuring proper disposal. The established plants were then treated with herbicide to prevent further seed production. This seemed to successfully reduce the number of plants within the infested area in WCA3A North.

Given the size of WCA's, it is entirely possible that there are undocumented infestations of Wright's nutrush. Conducting more surveys is crucial to determining the extent of its occurrence in the Everglades. We are still hopeful these infestations can be eradicated once they are located, but until we know how much is present, we can't be sure whether containment or eradication are possible.



Scleria lacustris removed from WCA3B in 2015 (Photo by: SFWMD).

Scleria Rides the Waves of Infestation (CONT FROM PAGE 4)

ECISMA members will continue with systematic surveys in 2018. We aim to educate more members on field identification and survey techniques, while chipping away at the more than 660,000 acres making up the Everglades and Francis Taylor WMA (WCA's 2 and 3).



ECISMA *Scleria lacustris* airboat survey (Photo by: SFWMD).

Additionally, **your help** is necessary to stay ahead of this aggressive marsh invader. If you work in or frequent these areas, you are in a unique position to keep an eye out for *Scleria lacustris* during the Summer and Fall months. It typically appears by July and sets seed by October. It prefers open slough habitat, although it can also be found growing in sawgrass. Areas near airboat trails are likely introduction points, as these vehicles can easily pick up and spread seeds. Infestations should be reported on EDDMapS (<http://www.eddmaps.org/> or [I've Got 1 app](#)), a centralized depository for non-native species occurrences. By reporting infestations to EDDMapS, you can contribute to our growing knowledge of this problematic species.

A Peek at Peacock Bass in South Florida

by Dennis J. Giardina, Florida Fish and Wildlife Conservation Commission (FWC)



Peacock Bass from South Florida (Photo by: Jovan Mendoza).

Today it would be hard to imagine my agency, the Florida Fish and Wildlife Conservation Commission (FWC), introducing an exotic species to South Florida because we are now dedicated to the eradication of new exotic species, and South Florida is where we allocate most of our effort and expense to do so. In the early 1980s, FWC (formerly the Florida Game and Freshwater Fish Commission) developed a proposal to introduce Peacock Bass, an exotic, piscivorous (fish-eating) species to apply predator pressure upon other exotic fish species like Spotted Tilapia, which at that time dominated the fish communities of the canals of Miami-Dade County east of Krome Avenue (the core introduction area) and to improve urban freshwater fishing opportunities in southeast Florida canal systems.

Peacock Bass, or Butterfly Peacock (*Cichla ocellaris*), is one of 15 currently recognized species of *Cichla* native to the Amazon and Orinoco River Basins in South America. As their common names suggest, they are quite colorful and their meat is reportedly very good. They are a fecund, substrate-spawning species that can reproduce multiple

times per year with broods of two to three thousand offspring. In Florida, they have been documented to grow over 25 inches and up to 12 pounds, making them a prized sportfish of freshwater anglers.

By 1984, when FWC was given the green light to stock Peacock Bass, they had already been intentionally introduced to freshwater systems in Brazil, Hawaii, Puerto Rico and Texas, and accidentally introduced in Panama. An important observation was the apparent ability of Peacock Bass to coexist in Hawaii and Puerto Rico where they were stocked together with Largemouth Bass, *Micropterus salmoides* our premier native predator and sportfish.

The introduction of Peacock Bass in southeast Florida was originally predicated upon the following criteria: 1. *Existence of a justifiable need*. Native fish predators like Largemouth Bass, were unable to stop the explosion of exotic fish species and interconnecting canals provided an ideal environment for their proliferation, especially in Miami-Dade County. 2. *Presence*

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A Peek at Peacock Bass In South Florida (CONT FROM PAGE 4)

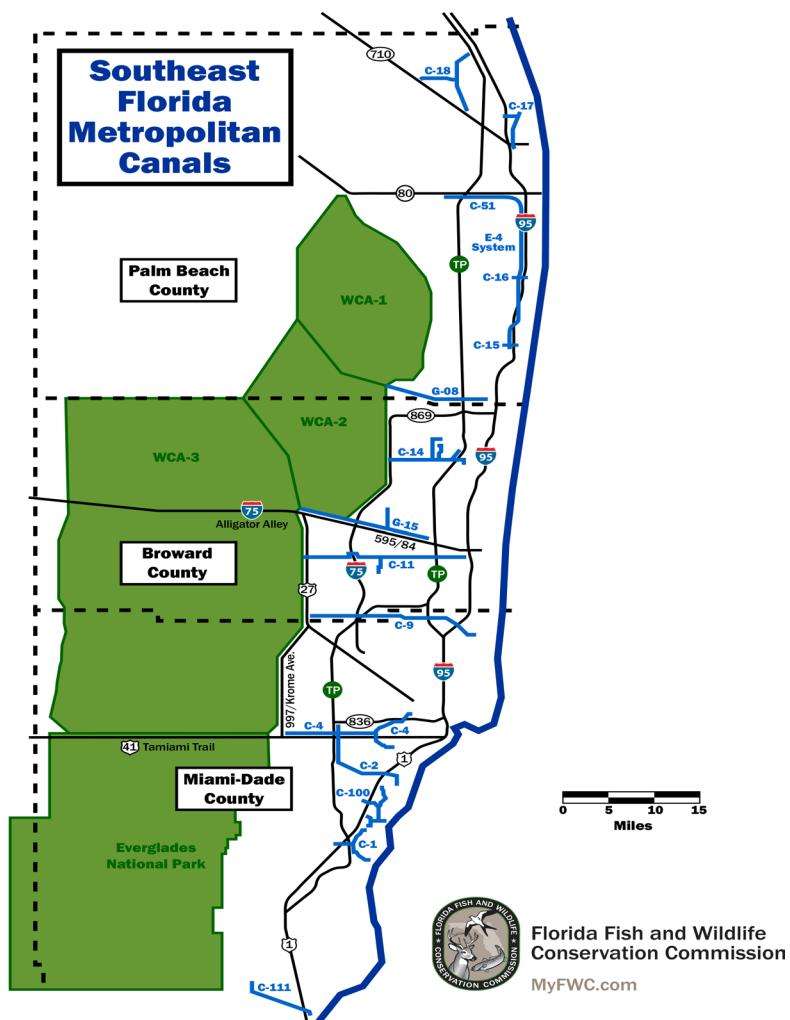


Figure 2. Map of targeted canal system for Peacock Bass in South Florida.

of a vacant or underutilized niche in a hospitable environment. Based upon population survey results, the consensus was that only a fraction of the available exotic fish prey base was being utilized, leaving room to support an introduced fish predator. 3. Predictable beneficial effects without an unacceptable adverse impact. The benefits to the public in terms of a novel freshwater fishing experience and its aid to the local economy are unquestionable. 4. Availability of an effective means to limit or control the species if it becomes too abundant or has unexpected detrimental effects. Based on research done at the time, Peacock Bass would not be able to persist beyond the core canal system. Most of the surrounding aquatic environs are subject to winter water temperatures that periodically drop below lethal temperatures and above salinity limits for Peacock Bass.

Due to their presence alone, Peacock Bass have reduced the number of exotic fishes throughout the targeted canal systems of Miami-Dade, Broward and Palm Beach Counties with no measurable adverse impact. They have been able to colonize man-made lakes and ponds, surrounding the targeted canal systems. They have expanded well into Everglades National Park and recently, perhaps due to a strong pulse of freshwater associated with higher than normal rainfall, schools of Peacock Bass have been captured on camera traps in Joe Bay in northeastern Florida Bay where the water salinity normally exceeds their upper tolerance limit. They have also expanded West into the canal systems along I-75 and U.S. 41 and have been illegally introduced into some of the canals and man-made lakes of Collier County.

Based upon the data collected since their introduction thirty-four years ago, the case cannot be made that Peacock Bass have become "too abundant" or have had "unexpected detrimental effects." In terms of "an available, effective means to limit or control the species," the salt water to the East and South and the seasonally cold freshwater to the North and West are really the only means available. During the record cold temperatures of 2010 for example, Peacock Bass were severely impacted even in the core canal system of Miami-Dade. There is no evidence to suggest that Peacock Bass are too abundant. Although they have continued to expand their range at least temporarily within Everglades National Park, currently there are no data to suggest that they are too abundant in a more natural environment either.

In the proposal to introduce Peacock Bass was an interesting cautionary note: In the late 1960s, a different species of Peacock Bass, *Cichla monoculus*, was accidentally introduced into the Panama Canal system. They quickly spread into Gatun Lake, the reservoir that forms the canal's main channel and there they proliferated. This aquatic system is very different from those of South Florida, most notably because Gatun Lake was created by the damming of the Chagres River and was originally populated by riverine fish species with no top-level piscivorous species in the mix. Unlike the introduction of *Cichla ocellaris* in Florida, within about five years following introduction to Gatun Lake of *Cichla monoculus*, two Smithsonian scientists were able to document a 60% decline in native freshwater fish due to their predation. This research was one of the first to demonstrate an impact of this magnitude by an introduced predatory fish species and in 2016 their research was replicated, showing a continued decline of native fish populations. <https://s.si.edu/2JbLm3s>

All Eyes on the Spectacled Caiman

by Justin Dalaba, University of Florida (UF)



An adult spectacled caiman from Miami-Dade county (Photo by: Nick Scobel, UF).

A pair of large reptilian eyes followed by rows of armor-like scales called scutes cruises past before stealthily slipping back below the water's surface. Is it the well-known Florida resident the American alligator (*Alligator mississippiensis*)? Or is it the less common South Florida native the American crocodile (*Crocodylus acutus*)? A closer look reveals there is yet another crocodilian resembling and living with these two residents in South Florida's ecosystem that does not belong.

Appropriately named for sporting an apparent pair of spectacles in front of their eyes, spectacled caiman (*Caiman crocodilus*) first came to Florida from Central and South America in the early 1950s when protective legislation

prevented trade in American alligators as pets. Caiman were once a common item behind the glass of many tourist shops, but eventually found a way out of their confines and into Florida's ecosystem.

Caiman are now found (sometimes predictably) within or adjacent to two important Everglades restoration projects: the Biscayne Bay Coastal Wetlands and C-111N Spreader Canal. Their core range is near Homestead Air Reserve Base (HARB), where biologists uncovered some of the first evidence of breeding in 1974. Fast-forward nearly half a century and they still survive in this core area, with the occasional appearance in other areas of southern Florida (i.e. Palm Beach, Broward, and Collier counties).

Overlapping in range, caiman could compete with American alligators and federally threatened crocodiles for food and space. Managing this caiman problem is especially challenging given their secretive nature. While they are generally considered a "smaller" crocodilian, we have captured adults up to 7.5 feet (~2.25 meters) in length in South Florida.

With funding from the Florida Fish and Wildlife Conservation Commission (FWC) and support from the South Florida Water Management District (SFWMD), the University of Florida (UF) set out on a mission to prevent the spread of caiman from their core distribution. This involves regular weekly surveys and rapid

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All Eyes on the Spectacled Caiman (CONT FROM PAGE 7)



UF biologists with a captured adult spectacled caiman (Photo by: Nick Scobel, UF).

response to opportunistic sightings. An evening of surveying involves two UF biologists equipped with 8x42mm binoculars, high-lumen headlamps and spotlights, alert eyes, and plenty of caffeine for long nights.

In the past year, UF removed 26 caiman from South Florida, bringing the total removed to 126 since this effort began in 2012. Recent intelligence about caiman in a new area came from a SFWMD python elimination program participant and may indicate their potential to become a more widespread problem in the Everglades.

Several important questions are still unanswered. First, how many caiman are out there and how much area do they occupy? A better estimate will provide a sense of whether we are removing enough caiman to detectably impact their core population. Second, do native crocodilians respond to caiman removals by reoccupying these areas? We consistently observe new caiman immigrating to areas where caiman removals occurred. Finally,

can we improve detectability based on observable trends such as weather conditions, habitat preference, or time of year?

Continued removal will help answer these questions and give a more complete picture of how caiman affect native wildlife. In studying the diet of removed caiman, UF biologists found seven native prey species, representing only a snapshot of their complete diet. Some common prey leftovers found include insect exoskeletons and reptile scales. Although, this excludes some remains that digest more quickly.

A recent, yet notable discovery of mature follicles in an adult female in early June provides new insight into caiman reproduction. With consideration for limited data and a comparison to previous findings, this suggests females may reproduce almost a month earlier than in their native range. Learning more about the time of year caiman prefer to nest in South Florida could lead to more targeted search efforts and might increase removal rate, furthering our knowledge of the species.

Native or Nonnative?



Native American alligator



Invasive spectacled caiman



Native American alligator (top) and invasive spectacled caiman (bottom) (Photos by: Jenna Cole, UF).

If you see a nonnative crocodilian:

1. Take a photograph
2. Note the location
3. Report your sighting by calling **1-888-IVE-GOT1**, visiting [www.ivegot1.org](http://ivegot1.org), or by using the free [IveGot1 smartphone app](http://ivegot1.org)

2018 Everglades Nonnative Fish Round-Up

by Kelly Gestring, Florida Fish and Wildlife Conservation Commission (FWC)

With fishing rods and bows in hand and eyes on the prize, sixty-four anglers head out for a day of friendly competition. This is the 9th year The Everglades CISMA has hosted the Everglades Nonnative Fish Round Up, which aims to raise public awareness about potential impacts of releasing nonnative fish into Florida waters. Anglers had 24 hours to remove as many nonnative freshwater fish species as possible from April 27th to 28th.

Participants this year reeled in a grand total of 1,826 fish weighing 1,013 pounds. This collective catch consisted of 18 different nonnative fish species that were brought into four weigh-in sites located in Miami-Dade, Broward, Palm Beach and Collier counties. No new species were collected this year but some uncommon ones were caught including Green Severum, Yellowbelly Cichlid and Pike Killifish.



Competing team at the Davie weigh-in site with a stringer of Mayan cichlids (Photo by: FWC).



Sorting catch at the Arches weigh-in site (Photo by: FWC).

An added bonus for some of the anglers was taking home dinner, as participants were encouraged to keep their catch for consumption. More than 200 pounds of the total catch was donated to a local food bank and some fish were donated to Flamingo Gardens wildlife sanctuary as food for their captive animals.

This cooperative effort would not have been possible without dedicated staff from the Florida Fish and Wildlife Conservation Commission, U. S. Fish and Wildlife Service, Miccosukee Tribe Wildlife Program and several volunteers who ran the weigh-in sites. A big thanks to Shea Bruscia of the National Park Service for all her work behind the scenes, and to our sponsors who were instrumental in the success of this event!

Results and winners are posted on the website at:
www.evergladescisma.org/roundup

Bay Snook (*Petenia splendida*) Eradication

by Kelly Gestring, Florida Fish and Wildlife Conservation Commission (FWC)

Bay Snook (*Petenia splendida*) first popped up on our radar in 2014 when Jeff Kline of Everglades National Park discovered them in an isolated series of waterways in Pinecrest Gardens in Miami-Dade County. These large, fish eating cichlids from Central America have since been a concern for the Florida Fish and Wildlife Conservation Commission (FWC). If they were to escape into the wild, they could potentially cause harm to South Florida's native fish communities. This concern triggered the first of several ECISMA nonnative fish removal efforts that used methods less destructive to the fish community but were unsuccessful at eradicating Bay Snook.



FWC staff applying rotenone to Pinecrest Gardens, November 2017 (Photo by: FWC).

Attempts to eradicate Bay Snook were hampered by the presence of large numbers of highly prized koi that visitors did not want harmed.

Hurricane Irma provided an opportunity to remove the bay snook and other unwanted exotic fish, since most of the koi were killed but the Bay Snook were left untouched. The decision was made to renovate the waterways containing Bay Snook using rotenone (a plant-based, biodegradable compound commonly used to remove unwanted fish). Staff from FWC and USGS conducted the renovation in November 2018.

A total of 158 Bay Snook and 1,019

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Removing Nonnative Lizards from Florida's Everglades Ecosystem

by Eric Suarez, Florida Fish and Wildlife Conservation Commission (FWC)

Argentine Black and White Tegus (*Salvator merianae*) are a large invasive lizard to keep an eye out for. These invaders from South America have become well established in localized parts of central and southern Florida, and they have an appetite for a wide variety of native plants and wildlife. South Florida is a particularly important area for tegu management due to the proximity of these lizards to nesting sites of imperiled species, such as American crocodiles (*Crocodylus acutus*), least terns (*Sternula antillarum*), white-crowned pigeons (*Patagioenas leucocephala*), gopher tortoises (*Gopherus polyphemus*) and burrowing owls (*Athene cunicularia*).

To date, ECISMA partners and private landowners have removed over 5,500 tegus from the environment in hopes of minimizing adverse impacts on the Everglades ecosystem. FWC has continued its trapping efforts along the eastern part of their introduced range and has contracted with the University of Florida (UF) to continue trapping and removal efforts in the heart of their core range. Other ECISMA partners such as, the United States Geological Survey, Everglades National Park, Florida Power and Light,

and private landowners continue to trap and remove hundreds of tegus from south Miami-Dade County. In the 2018 tegu active season, 545 tegus have been removed so far from Miami-Dade County.



Argentine black and white tegu in burrow (Photo by: Brittany Mason, UF).

Nile monitors (*Varanus niloticus*) are another large invasive lizard, native to sub-Saharan Africa, with a carnivorous appetite for many native insects, mammals, birds, eggs and other reptiles. They are semi-aquatic with a rudder-like tail and are likely to be seen basking along the banks of canals or other water bodies in south Florida. Like the tegu, Nile monitors are effective nest predators and can potentially impact nesting sites of imperiled species in Florida. Active management of this species through direct removal efforts is vital

to conserving Florida's native wildlife. From 2011 through June 2017, ECISMA partners removed 88 Nile monitors from Palm Beach County. From July 2017 through June 2018, the FWC removed 27 Nile monitors, for a total of 115 since management efforts began (51% removal rate). The FWC is experimenting with different live trapping methodologies to determine an additional way to remove monitors in this area. FWC is also closely monitoring a dwindling population of Nile monitors in Palm Beach County via camera trapping to determine abundance and target management efforts on the remnants of that population.

Water monitors (*Varanus salvator*) FWC works with ECISMA partners to apply Early Detection and Rapid Response (EDRR) whenever confirmed, priority nonnative wildlife species sightings occur throughout the state. FWC has received multiple Asian water monitor (*Varanus salvator*) reports within the ECISMA footprint since July 2017. Large water monitor lizards are similar to Nile monitors in behavior and diet. Removal of these monitors takes precedence for FWC

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Bay Snook (*Petenia splendida*) Eradication (CONT FROM PAGE 9)

other nonnative fish including Black Acara, Spotted Tilapia and Walking Catfish were recovered after the treatment. No Bay Snook have been found in follow-up electrofishing or visual inspections, leading to the conclusion that the eradication effort was a success. Pinecrest Gardens has now been restocked to create a more desirable native fish community.

The successful removal of Bay Snook before they had an opportunity to escape Pinecrest Gardens could not have been accomplished without the invaluable cooperation of Pinecrest Gardens and the partnership between the FWC and USGS. These partnerships allowed for the detection and eradication of a potentially harmful nonnative species before it had the opportunity to become a problem.



Spotted tilapia (*Tilapia mariae*), Blue Mbuna, and Bay Snook removed from Pinecrest Gardens, November 2017 (Photo by: FWC).

Removing Nonnative Lizards (CONT FROM PAGE 10)



Edward Mercer holds a gravid female water monitor captured in Miami-Dade County (Photo by: FWC).

to prevent establishment of another species of *Varanus* lizard. To date, the FWC has removed three water monitors from Miami-Dade County, one of which was a small gravid female containing 14 eggs. FWC is currently closely monitoring with the intent to remove one water monitor in Monroe County and two in Broward County.

Spiny-tailed iguanas (*Ctenosaura similis*) are large, invasive, omnivorous lizards native to Central and South America. They are excellent burrowers and eat a wide variety of prey, including birds. FWC's Nonnative Fish and Wildlife Program and FWC's South Region Volunteer Coordinator have been working with volunteers to help trap and remove spiny-tailed iguanas in Broward County from areas where imperiled gopher tortoises and burrowing owls occur. From the start of the program in 2017 through June 2018, volunteers removed 65 iguanas from one location in Broward County. The volunteer program has since grown in the number of



Spiny-tailed iguana (Photo by: FWC).

volunteers and has recently added another location in Broward County. Removal efforts will continue for the foreseeable future to ensure these imperiled species continue to thrive in this urban environment.

Python Programs (FWC) - FWC continues to provide Python Patrol trainings with the goal of expanding a network of trained individuals throughout Florida who know how to identify and report sightings of Burmese pythons. This will ultimately help FWC respond quickly when priority invasive species are encountered. Python Patrol training workshops include information on Burmese pythons in Florida, rules and regulations, permits, python detection, species identification, data reporting, and safe capture techniques. Participants also receive hands-on experience catching wild Burmese pythons. Python Patrol training is for people who work or recreate outdoors, are likely to encounter pythons, and are interested in learning how to safely

and humanely capture them. Since FWC took over the Python Patrol Program in November 2013, there have been 165 trainings with over 1,800 attendees.

In April 2017, FWC implemented a Python Removal Contractor Program. FWC currently employs 27 qualified individuals as Python Removal Contractors to remove pythons from designated public lands. Contractors are compensated for their survey time with hourly pay and additional payment per python removed and submitted. This program complements the similar South Florida Water Management District Python Elimination Program. As of 1 July 2018, FWC Contractors surveyed over 1,600 hours and have removed 129 Burmese pythons (58 in 2017, 71 in 2018), including 32 viable (39 total) eggs from Big Cypress, Francis S. Taylor, Holey Land and Rotenberger Wildlife Management Areas.

In conjunction with the PRCP, FWC has also implemented an incentive-based program called the Python Pickup Program. This program aims to encourage the public to remove Burmese pythons in Florida and report removals to FWC. Burmese pythons can be removed year-round from private property with landowner permission and from various public lands listed in Executive Order (EO) 17-11 without a permit or hunting license required. Members of the public that choose to remove and kill Burmese pythons can win prizes for their efforts by submitting a photograph of the humanely killed python with the date and GPS location to FWC. Since the program's implementation, participants have removed 80 pythons from the wild.

For more information on the various FWC python programs, please visit <http://myfwc.com/python>.

National Invasive Species Awareness Week (NISAW) 2018



Group of students, ECISMA partners, and volunteers who took part in the Pine Jog work day (Left). Collecting and removing rosary pea seeds in the field (right). (Photos by: SFWMD).

Work Day at Pine Jog Elementary School

by LeRoy Rodgers, South Florida Water Management District

On March 1st 2018, Everglades CISMA partners joined forces with Florida Atlantic University's Pine Jog Environmental Education Center (PJEC), for one of two invasive plant removal efforts in recognition of NISAW.

The first of two events took place at Pine Jog Elementary School, which shares a campus with a 135-acre natural area composed of pine flatwoods, upland hammocks, and freshwater wetlands. The campus is a perfect setting for hands-on environmental education to young students in West Palm Beach.

Like all South Florida natural areas, invasive species are a continual stewardship challenge. Kristi Moyer, Facilities and Land Management Coordinator & Pine Jog Fellowship Instructor at PJEC, has worked for years to establish maintenance

control of several aggressive invasive plants including melaleuca, shoebottom Ardisia, rosary pea, earleaf Acacia, and more. Over the years, Kristi and her FAU colleagues have incorporated their invasive plant management efforts into the program's environmental science curriculum.

On the morning of the NISAW event, members of ECISMA conducted control efforts for various invasive plant species in an area with limited treatment history. Since the site was formerly a homestead of plant enthusiasts, a diversity of naturalized exotic plants have taken hold, until now. The crew swept the area, chemically treating a medley of weeds including rosary pea, Caesar's weed, Brazilian pepper, umbrella tree, mango, Swiss cheese plant, and earleaf Acacia.

After lunch, Kristi Moyer facilitated a classroom learning activity with 28 fifth graders. The students first lent their ears for a presentation about invasive species then took to the field for a group discovery of selected species. After reporting their findings to the larger group, Kristi, several PJEC staff members, the ECISMA crew and all the students hiked back into the field to collect rosary pea seeds from infestations slated for herbicide treatments (students were closely monitored and repeatedly reminded that the seeds should not be eaten). Many other random weeds were hand-pulled along the way.

Special thanks to Ellen Allen, Christen Mason, Ryan Brown (SFWMD) and Bill Thomas (USFWS) for providing supplies, hard labor, and sharing their knowledge with the Pine Jog students.

National Invasive Species Awareness Week (NISAW) 2018



Young catclaw vine with tuber. Notice the limestone rock characteristic of the rockland hammock habitat (Photo by: Gloria Antia).



Licaria triandra sapling with characteristic coloration of new growth (Photo by: Gloria Antia).



Licaria saplings in the foreground with catclaw vine climbing a false mastic in the background (Photo by: Gloria Antia).

De“claw”ing Rare Plant Habitat in Miami

by James Lange, Fairchild Tropical Botanic Garden

A team of volunteers brought their work gloves and enthusiasm to Simpson Park in Miami on March 1st, 2018, during National Invasive Species Awareness Week as another local-scale invasive species removal effort. The Park is one of the last remnants of the historic Brickell Hammock in urban Miami-Dade.

This green jewel within a concrete metropolis hosts a rockland hammock home to several rare species of trees, including some of the largest mainland specimens of Redberry stopper (*Eugenia confusa*) and Bahama Strongbark (*Bourreria succulenta*), as well as Florida's only wild population of Gulf Licaria (*Licaria*

triandra). Additionally, the state-listed liana and pokeweed relative, Hoopvine (*Trichostigma octandrum*) is in abundance.

This natural remnant also harbors a flourishing community of invasive plants. One of the targets of the workday was hand removal of catclaw vine (*Dolichandra unguis-cati*) in an area containing hundreds of young Gulf Licaria trees. Named for the unique appearance of its tendrils, the catclaw vine roots into the soil and smothers native saplings in a dense, suffocating mat until it finds a tree to climb from which it can produce copious amounts of wind-dispersed seeds.

In this sensitive Licaria habitat, particular attention had to be paid to removing the catclaw tubers without damaging nearby plants. This of course is complicated by the jagged limestone bedrock characteristic of the habitat that prevents easy access to the spuds.

Volunteers tackled the challenge of hand removal as best they could to help restore this natural preserve. By the end of the day, several garbage bags were filled with catclaw vine. This will be an ongoing effort, but for now the only wild population of Gulf Licaria in the U.S. lives to fight another day. Special thanks to National Park staff who assisted with this effort.

Friends of Everglades CISMA, Inc.

Updates and Events

by Haley Hanson, President of Friends of ECISMA, Inc.

Our Goal

The primary goal of Friends of Everglades CISMA, Inc. (FOE) is to raise funds to support Everglades CISMA. We are registered as a 501(c) (3) and donations to FOE, Inc. are tax deductible. This status allows our funds to be used as a more immediate and flexible source of funding to support projects that may require a quick response time. Rapidly responding to new invasions and managing current invasive species threats are the best tools we have in the ongoing battle to protect the greater Everglades ecosystem.

What's New?

We would like to thank Shea Bruscia for her dedication and service as president of FOE. With her help, we have been able to fund many projects and host great events. She has stepped down, and Haley Hanson was appointed as President of FOE by the Board of Directors. Haley is a graduate student at the University of South Florida writing her dissertation on vertebrate range expansions, and also works for the UF/IFAS Florida Master Naturalist Program. She hopes to bring her outreach and event coordination experience to FOE to increase community involvement and awareness of the ECISMA mission.

Get Involved

To raise additional funds this year, we are planning to host our annual Fun Run/Walk Against Invasives 5K at Shark Valley in Everglades National Park on February 23, 2019. This event will kick off National Invasive Species Awareness Week, and we hope to bring together experienced runners, nature enthusiasts, and everyone in between. Bring your running shoes and we will provide light refreshments, and of course, a whole lot of enthusiasm. Keep an eye out for registration information on the [ECISMA Facebook page](#).

If running just isn't your thing, you can join us out at a local brewery. We are collaborating with [Invasive Species Brewing](#) in Fort Lauderdale to produce a brew just for FOE supporters. We will be joined by a few special guests talking about, and in some cases, doing some live demonstrations of invasive species. We hope you'll find many like-minded folks to engage in some meaningful discussions and enjoy some good beer. Event information will be released soon!

As we have done in the past, FOE is providing all the food and drink for the 2018 Everglades Invasive Species Summit and Social, which will be held at Long Key Nature Center in Broward County on July 17th and 18th.

Make a Donation

If you'd like to donate to support Everglades CISMA invasive species management efforts in the Everglades Ecosystem, head to <https://www.friendsofecisma.org/donate/>

You can also support us on Amazon Smile (smile.amazon.com) by choosing Friends of Everglades CISMA Inc. under "charities"!



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<https://twitter.com/ECISMA>

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[http://bit.ly/ECISMAFB](https://bit.ly/ECISMAFB)



Agency/Organization Abbreviations

DOI - Department of Interior
 ECISMA - Everglades Cooperative Invasive Species Management Area
 EDDMapS - Early Detection and Distribution Mapping System
 EDRR - Early Detection and Rapid Response
 EEL (Miami-Dade County) - Environmentally Endangered Lands
 FDACS- Florida Department of Agriculture and Consumer Services
 FLEPPC - Florida Exotic Pest Plant Council
 FWC - Florida Fish and Wildlife Conservation Commission
 NPS - National Park Service
 PJEC - Pine Jog Environmental Education Center
 SFWMD - South Florida Water Management District
 UF - University of Florida
 USDA - U.S. Department of Agriculture
 USFWS - U.S. Fish and Wildlife Service
 USGS - U.S. Geological Survey



Everglades Cooperative Invasive Species Management Area

ECISMA was created to formalize cooperation among land management agencies to improve the effectiveness of exotic species control by sharing information, innovation and technology across borders through a memorandum of understanding with the ultimate goal of helping to ensure the success of the Comprehensive Everglades Restoration Plan.

ECISMA contact information:

Tony Pernas
 U.S. National Park Service
 Big Cypress National Preserve
 33100 Tamiami Trail East
 Ochopee, FL 34141
 (239) 695-1111
 Tony_Pernas@nps.gov

Dennis J. Giardina
 Florida Fish & Wildlife Conservation Commission
 298 Sabal Palm Road
 Naples, FL 34114
 (239) 229-5403
 Dennis.Giardina@myfwc.com

www.evergladescisma.org

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 Justin Dalaba, UF