

Volume 32: Number 4 > 2015

The Quarterly Journal of the Florida Native Plant Society



Palmetto



Sawmill Slough Preserve • Observations on Plants in Cuba • Saving Cypress

Save the Date!

Don't Miss the 36th Annual FNPS Conference

Daytona Beach Resort and Conference Center, May 19-22, 2016



We are only a short time away from the 36th annual gathering of our wonderful society, and FNPS' Volusia Chapters are looking forward to welcoming you to the Daytona Beach Resort and Conference Center in Ormond Beach.

I am a native of Volusia County and have lived in Ormond Beach most of my life. Although we lack the diversity of tropical South Florida and the floral influence of the Appalachian/piedmont ecosystems of the Panhandle, Volusia has a wide variety of natural areas to visit. From estuaries to swamps, bayheads to rivers, flatwoods to scrub, our field trip selections will let you experience the beauty that eastern Central Florida has to offer.

Florida's unique biodiversity inspired us to seek out conference speakers who would address the connection between small scale native landscaping and large tracts of land, linked together through corridors. Our Friday keynote speaker Dr. Tom Hctor is Director of the University of Florida's Center for Landscape Conservation Planning. He will be talking about legislative policy

related to protecting large tracts of land and the importance of connected greenways.

Other speakers will cover a range of important topics – the ethics of how humans impact this planet, the health of bees, tree care, environmental education, invasive plants, landscape ecology, protection of water resources, conservation of rare native plants, plants of the Everglades, and butterflies and wildflowers, to mention just a few.

Our conference committee has put together 22 field trips, which include 2 landscape tours, 3 kayak trips, 2 pontoon boat trips, 2 eco-buggy excursions, 1 truck-bed trip, and 11 hikes. We've even planned a field trip for those who want to participate in citizen science. Over the past several years, the Pawpaw Chapter has been promoting an initiative called *Citizen Scientists*, which tracks the population of *Deeringothamnus rugelii* (Rugel's pawpaw), a rare endemic plant of Volusia County. Participants on this trip will visit various sites around the county and count the number of plants seen this year.

Several workshops are planned, and one that is near and dear to my heart is

Introduction to Landscaping with Native Plants taught by Renee Stambaugh. This workshop focuses on how to begin the process of designing and installing your own native landscape. You are encouraged to bring a sketch of your landscape so that Renee can help you determine the right place for the right plant based on where you live, aesthetic goals, and the unique characteristics of your site. As someone who has worked with native landscape design and installation and as a member of the FNPS landscape awards committee, I am pleased that we can offer this workshop to attendees.

Our conference room rate is good through April 29, 2016. One room studios are \$97 per night, and larger suites are \$127 per night. The conference center is on the beach and we have negotiated free wi-fi and parking for your stay. On-site socials are planned for Thursday and Friday, and a Saturday night off-site social will be at the Daytona Beach Museum of Arts and Sciences. We look forward to seeing you at the conference.

– Don Spence, FNPS Conference Chair

From the Editor:

Our sincere apologies to author Ryan Vogel, whose name was inadvertently left off the recent article about the Florida International University (FIU) Nature Preserve (PALMETTO 32:3). Ryan has provided an update on activities at the preserve since the article was written – he says “Additional work has been done, including an extensive visitation study which found the actual average annual visitation to be an expected 30,000+ visits per year. More cypress trees have been planted in the demonstration cypress dome, making for a total of 350 trees in the installation.” If you are in the Miami area, make a point to stop by the campus for a stroll through the relaxing green space of the FIU Nature Preserve.





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The Palmetto

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Editorial Content

We welcome articles on native plant species and related conservation topics, as well as high-quality botanical illustrations and photographs. Contact the editor for guidelines, deadlines and other information.

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is to conserve, preserve, and restore the native plants and native plant communities of Florida.

Official definition of native plant:

For most purposes, the phrase Florida native plant refers to those species occurring within the state boundaries prior to European contact, according to the best available scientific and historical documentation. More specifically, it includes those species understood as indigenous, occurring in natural associations in habitats that existed prior to significant human impacts and alterations of the landscape.

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Participants of the recent FNPS trip to Cuba were able to get a glimpse of the natural tropical allures of this fabled island, off-limits to the average American for so many years.

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Cypress trees have graced our planet for more than one hundred million years, but their fates are now in jeopardy due to unsustainable harvesting for cypress mulch.

Article by Hollie Dutcher and Francis E. Putz.



ON THE COVER:

Cuba and southern Florida share the clamshell orchid (*Prosthechea cochleata*) although the Florida forms are a self-pollinating mutation. This specimen was photographed in a beautiful private botanical garden in Viñales, Cuba.
Photo by Chuck McCartney.

The Sawmill Slough Preserve

Charles Hubbuch

Since it opened in 1972, the University of North Florida (UNF) campus in Jacksonville has developed into a dense urban core of more than sixty buildings surrounded by woodlands. Much of the open area around the campus has also been developed and now harbors major roads, housing, shopping and industry. ● In 2006, UNF designated a 382-acre tract of land along the western boundary of campus as the Sawmill Slough Preserve*. Most of the preserve is wetlands with a narrow strip of longleaf pine Sandhill at one edge.



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* Slough is pronounced like "slew" not "sluff"

The preserve is largely composed of mesic flatwoods, bottomland forest, wet prairie, floodplain swamp, dome swamp, seepage stream and blackwater steam (Table 1). In addition to these natural ecosystems, it contains three retention ponds. Nearly half of this tract has well-established trails and has been used for much of UNF's history for recreation, classes and research. The rest is swamp that is difficult to access and largely undisturbed.

With the establishment of the Sawmill Slough Preserve, UNF began to develop a Management Plan to guide the maintenance of the preserve "for the highest natural levels of biodiversity in a natural condition."

In Florida, fire is a critical element in the maintenance of ecosystems like pine forests and prairies. It was immediately obvious that a prescribed burn program was needed in the preserve. Fuel loads were high and broadleaf trees were invading the pine forests. A Master Burn Plan was developed with a private contractor. For each burn, the prescription must

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Table 1: Sawmill Slough Ecosystems

Based on Florida Natural Areas Inventory (FNAI) definitions

Mesic Flatwoods

Mostly pines with a dense understory. This is an open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs.

Bottomland Forest

Closed canopy forest of mixed trees and open understory. This is low-lying flatlands that usually border streams with distinct banks, and water rarely overflows the stream channel to inundate the forest.

Wet Prairie

Mostly grasses with many wildflowers. This is an herbaceous community found on continuously wet, but not inundated, soils on somewhat flat or gentle slopes.

Floodplain Swamp

Dominated by hydrophytic trees like bald cypress and tupelo. It is flooded soil along stream channels and in low spots and oxbows within river floodplains.

Dome Swamp

Dominated by bald cypress, tupelo and slash pine. This is a shallow, forested, usually circular depression that generally presents a domed profile because smaller trees grow in the shallower waters at the outer edge.

Seepage Stream and Blackwater Steam

Perennial or intermittent seasonal water courses originating from shallow ground waters that have percolated through deep, sandy, upland soils and wetlands. Seepage streams are clear while blackwater streams are dark with tannins and dissolved organic matter.

1. A pinewoods tree frog emerging from a hiding place after a burn. 2. A typical prescribed burn. One of our contractors commented that burns are, "99% boredom, 1% panic." 3. The parasitic Indian pipe or ghost plant (*Monotropa uniflora*) is hard to find some years but abundant in others. 4. The crested yellow orchid (*Platanthera cristata*) reappears for a few years following a prescribed burn. 5. A satellite photo of the UNF campus, highlighting the campus boundary and the extent of the Sawmill Slough Preserve. 6. The flowers of the skyblue lupine are a welcome splash of color each spring.



7. Rapid recovery after a burn. 8. The preserve has a healthy population of gopher tortoises, and as in any community, disagreements occur. 9. Justin Lemmons pulling showy rattlebox, *Crotalaria spectabilis*. The seeds of this plant remain viable in the soil for years. Staff and volunteers have prevented this colony from producing seeds for four years.

account for the impact of smoke on major highways to the west and south of the preserve, and the campus to the east. Despite the challenges they present, the highways and campus are good reasons to conduct regular prescribed burns to reduce the chances of a catastrophic wildfire and the accompanying smoke. Prescribed burns at UNF primarily target pine forests, but fires are allowed to burn to swamp edges where and when it is appropriate. The preserve has some small areas of wet prairie with a high diversity of native grasses and wildflowers, and the configurations of some of these patches of prairie present challenges. In these areas, we have controlled the spread of trees with chainsaws.

Positive results of an on-going burn plan include a reduction in height of saw palmetto, opening of the canopy and an increase in the number of wildflowers in the understory. One interesting result is a minor migration of gopher tortoises to newly burned sites. They stake out territories in newly burned areas within days after the fire passes. In a short time, ferns, grasses and other plants sprout among the ashes, providing a new source of food for the tortoises. Because of the obvious benefit to gopher tortoises, we try to burn their habitats every two years. Negative effects of the burns include occasional pine bark beetle attacks in areas that had not experienced fire for many years. Also, exotic Bahia grass has spread from an old logging trail into a pine forest where the canopy has become more open. Its control will require the careful use of herbicides.

The presence of exotic pest plants presented another big concern for management. Invasive tree species like tallow trees (*Triadica sebifera*), camphor tree (*Cinnamomum camphora*) and mimosa tree (*Albizia julibrissin*) were conspicuous. Other pest plants, like climbing fern (*Lygodium japonicum*) and skunk vine (*Paederia foetida*), were discovered as we explored further. In areas adjacent to the preserve, UNF landscapes with native plant species. Nevertheless, we introduced some surprises with new native plantings. Wildflowers like *Polygala*

rugelii that are not native to our region and pest plants like cogon grass (*Imperata cylindrica*) have hitchhiked to campus with the potted native plants and bare-root cabbage palms. A large bed of native *Iris virginiana* that was planted by a contractor (now defunct) turned out to be Louisiana irises that flowered in a wide variety of colors. *Polygala rugelii* died off naturally but we pulled or herbicided the other accidental introductions. Monitoring the natural areas and control of exotic pest plants is conducted by staff and a contractor. Exotic pest plants have also been removed from campus landscape plantings. We have made good progress but it is obvious that this will be an on-going responsibility.

We determined that a biological inventory was another important component of the Management Plan. This arose, partly, from our desire to know more about the land's past. The preserve woodlands reflect the history of use for timber and turpentine collection. Former logging trails serve as hiking trails and fire breaks. Turpentine pots made by the Herty company are occasionally found even today. Stories from the early days of UNF include reports of black bears strolling through campus, panther sightings, indigo snakes and the occasional eastern diamondback rattlesnake – animals that have not been seen on campus for years. A bird list was composed by an avid amateur bird-watcher and collections of photos provided a few names. Although they are far from complete, these records help us better understand the changes that have occurred in the recent history of the region. We expect that changes to campus and its surroundings will continue. So, today's biological inventory will be an important part of the preserve's history for tomorrow's managers and researchers.

To date, over 1,000 species have been identified on campus. The species inventory includes extensive lists of plants, mammals, birds, reptiles, amphibians and fish. (See Table 2 for a list of threatened species sighted in the preserve.) Plant species alone number over 650. The list

Table 2:
Threatened, Endangered and Species of Special Concern

Plants

pine lily	<i>Lilium catesbaei</i>
blueflower butterwort	<i>Pinguicula caerulea</i>
yellowflower butterwort	<i>Pinguicula lutea</i>
white-fringed orchid	<i>Platanthera blephariglottis</i>
crested yellow orchid	<i>Platanthera cristata</i>
rose pogonia	<i>Pogonia ophioglossoides</i>
hooded pitcher plant	<i>Sarracenia minor</i>

Reptiles

American alligator	<i>Alligator mississippiensis</i>
gopher tortoise	<i>Gopherus polyphemus</i>

Birds

least tern	<i>Sterna antillarum</i>
little blue heron	<i>Egretta caerulea</i>
tricolor heron	<i>Egretta tricolor</i>
white ibis	<i>Eudocimus albus</i>
wood stork	<i>Mycteria americana</i>

Mammals

Florida mouse	<i>Podomys floridanus</i>
fox squirrel	<i>Sciurus niger</i>
panther	<i>Puma concolor</i> (old record)

of over 200 arthropods is expected to grow much larger. In addition, the list includes a few bacteria species as the result of a study of Lyme disease vectors and an algae inventory is currently underway. A bonus resulting from our inventory is the documentation of several new plant species for Duval County.

Recently, the UNF Environmental Center placed the Management Plan, the biological inventory and other information about the preserve online. This information may be viewed at <https://preserve.unf.edu/>. The purpose of this website is to share the information we have gathered and to solicit new sightings and observations from the community. We expect it to be useful to students, researchers and other visitors, too. One goal is to provide some of the biological information in the inventories in a more accessible format for the non-scientist, and an online virtual tour of the preserve is also being discussed.

The Sawmill Slough itself flows for over two miles through the preserve from the northern boundary of campus to the southern boundary. Its source is largely storm water drainage from upstream roads, subdivisions and parking lots. Initial tests show small levels of petrochemicals in the water at its entry on the north side, but very low levels at the water's exit on the south side. This helps demonstrate the value of a natural area in reducing pollution in our waterways. It also indicates that the petrochemicals are not overwhelming the natural system at this time. One reason to record this information is to provide a water quality benchmark for future managers and researchers.

Managing the preserve and the campus landscape is the responsibility of the UNF Grounds staff. Having a strong link

between the natural and landscaped areas is valuable. Understanding the need to remove exotic pest plants from the campus and planting with natives along the preserve boundaries are an important part of this interaction. It is also valuable to have University staff participate in the maintenance of the trails in the preserve. They are on-site and can respond quickly to the occasional tree fall that blocks a trail. The Grounds crew has the responsibility for trimming vegetation back from the trails and mowing where necessary. They assist with pest plant control and participate in various aspects of prescribed burns. In many ways, managing a forest fragment like the preserve is similar to managing a garden. Both require continual maintenance to keep them in good condition.

Naturally, Biology Department faculty and students make use of the preserve. Art students and others visit the preserve for inspiration, and many people walk the trails for exercise or as an escape from their routine responsibilities. Student surveys show that UNF students from all disciplines consider the campus natural areas to be one of their favorite aspects of the campus. Summer camps and visitors from outside the campus community use the trails frequently, too. If you wish to visit UNF's Sawmill Slough Preserve and walk the trails, the following website provides more information. <https://www.unf.edu/recreation/ecoadventure/Trails.aspx>



10. Much of the preserve is composed of wetlands, like this cypress swamp.

References

<http://fnai.org/naturalcommguide.cfm>

About the Author

Charles Hubbuch is responsible for the natural areas and cultivated landscape at the University of North Florida. He is an avid gardener and naturalist. See more about him at his website, *Gardening in the Coastal Southeast*. (southeastgarden.com).

Across the Florida Straits: Observations on Plants in Cuba

Article and photos
by Chuck McCartney



1. A white peacock butterfly (*Anartia jatrophae guantanamo*) nectars on Spanish needles (*Bidens alba*) at Cuba's Cienfuegos Botanical Garden. This is the same race that occurs in South Florida, according to butterfly expert Marc Minno.

2. The palm-dotted Viñales Valley of Cuba's westernmost Pinar Del Rio Province is justifiably famous for its distinctive steep limestone mountains called *mogotes*.

Having grown up in subtropical Florida south of Miami, I have been fascinated by our distinctive flora ever since I became aware of what a native plant is. And as I learned more after joining the original Native Plant Workshop (a Dade-based precursor group to the Florida Native Plant Society) in the 1970s, it became clear that Cuba was most probably the source of many of our subtropical plants and I longed to visit there. However, that seemed impossible, considering the vast political differences between the United States and the regime of Cuba's Fidel Castro. So, when I learned that the Florida Native Plant Society was co-sponsoring a trip to the island, I leapt at the chance to go. Finally, I could see firsthand the source of so many of South Florida's native plants among the approximately 6,500 species of vascular plants found in Cuba.

Although it was promoted as a botanical tour, the mid-November 2015 trip to Cuba arranged by the Florida Keys-based TREE Institute and co-sponsored by the FNPS didn't quite live up to that billing. Nevertheless, those of us who consider ourselves amateur botanists still managed to get a glimpse of the natural tropical allures of this fabled island that had been off-limits to the average American for so many years.

We were lucky to have a very capable Cuban botanist, the knowledgeable Raul Verdecia, along on the tour as our plant expert, although access to him was limited because of the overly large size of the group (34 people – far too many for this kind of tour).

Still, the central and western parts of the country that we saw were beautiful, with medium-size wooded mountain ranges (3,000-4,000 feet) and broad valleys filled with fields and pastures and gallery forests along streams, plus rocky coastlines, many of which reminded me of the Florida Keys. These coastal areas included many familiar species, such as sea grape (*Coccoloba uvifera*), bay cedar (*Suriana maritima*), and railroad vine (*Ipomoea pes-caprae* subsp. *brasiliensis*).

My overriding memory of this largest island of the Greater Antilles, though, is palms. So many palms. Of so many kinds, some known to me, most of them not. Approximately 90





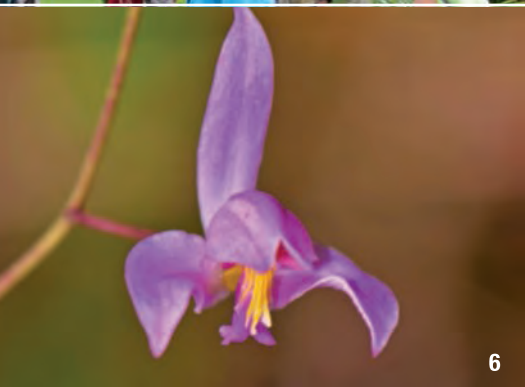
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palm species and subspecies in 14 or 15 genera (depending on the taxonomist you consult) are listed for Cuba. It's estimated that more than 80 percent of those palms are endemic to the island, as is nearly half of the rest of the country's flora. As in Florida, non-native palms are grown there, too.

We saw species of genera familiar to South Floridians, such as *Roystonea* (the royal palms), *Sabal* (related to our state tree, the cabbage palm), and *Thrinax* (the thatch palms). And we saw paurotis palms (*Acoelorrhaphe wrightii*), the same species found in the southern end of the Sunshine State.

There were also rare and unusual palms, such as the Cuban endemic *Copernicia brittonorum*, which we saw up close when we visited the countryside home of farmer Luis Vera Colina, who cleared a patch of forest next to his modest house but thoughtfully left these rare specimens standing. The species epithet honors Nathaniel Lord Britton, co-founder and first director of the New York Botanical Garden from 1895 to 1929, and his wife, Gertrude. The pair did a lot of botanical exploration in Cuba as well as the Bahamas in the early 20th Century, and several plant species of the region bear their name.

Then there was the slightly comical belly palm (*Colpothrinax wrightii*), with a prominent swelling in the middle of its trunk, making it look like a potbellied man, a pregnant woman or – to my way of thinking – a snake that had swallowed a rat and was digesting it. The species epithet *wrightii* shows up on a number of Cuban plants. It honors Charles Wright, 1811-1885, who was a famous botanical collector in Cuba and elsewhere.

Pinar del Rio, the beautiful westernmost province of Cuba, with its distinctive *mogotes*, those karst limestone mountains with precipitous cliff sides, is often pictured in tourist photographs of the island, and justifiably so. Clinging to the steep sides of the *mogotes*, we saw *Thrinax radiata* (known to us as the Florida thatch palm) and the endemic

3. Members of the FNPS tour group inspect a specimen of the Cuban endemic palm *Copernicia brittonorum* at the home of farmer Luis Vera Colina, who cleared a patch of forest next to his house – but left this rare specimen.

4. The unique mid-trunk swelling accounts for the common name of the Cuban belly palm (*Colpothrinax wrightii*). This specimen is planted in front of the Hotel Pinar Del Rio.

5. In Florida, bitterbush (*Picramnia pentandra*) is found only in a small area of Miami-Dade County. In the second-growth forest of Cuba's Zapata Swamp in Matanzas province, it is frequently encountered as an understory shrub/tree.

6. The only orchid seen in flower in the wild during the trip was the terrestrial *Bletia purpurea*, a species also widespread in southern Florida. This specimen grew along La Serfina Trail above Rancho Curujey.

7. Gumbo limbo (*Bursera simaruba*), with its flaky copper-colored bark, is familiar to South Floridians. This specimen grew in a second-growth forest in the Zapata Swamp of Cuba's Matanzas province.

8. A *Stigmaphyllon* species in the family Malpighiaceae shows flowers pollinated by oil-collecting bees. Orchids in the genus *Tolumnia* mimic these flowers to lure pollinators, and several species of this Antillean orchid group occur in Cuba.

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Goussia princeps (locally called *Palma de Sierra*). The only drawback to appreciating them is that we could only observe them from an irritatingly distant vantage.

The National Botanic Garden of Cuba outside Havana, begun in 1968 and opened to the public in 1984, is famous for its palm collection, but we got to enjoy very little of it due to time constraints. We were allowed only an hour or so at the 1,483-acre (600-hectare) garden on our way to the airport for our return flight to Miami, when we easily could have spent a half a day or more there.

This was a consistent drawback of the trip. The tour organizers tried to cram so many points of interest into the limited time available that we often didn't get to savor the really interesting botanical sites we visited. The National Botanic Garden experience was especially frustrating for plant lovers. We saw most of the palms and other plantings only from the windows of our large, Chinese-made tour bus as we drove rather quickly through the garden. This was like going to Fairchild Tropical Botanic Garden and not being allowed to walk among the plantings.

Although the National Botanic Garden was given short shrift, we got to spend a little more time at the 232-acre (94-hectare) Cienfuegos Botanical Garden on the afternoon of our arrival in Cuba, including a hike through the plantings at this former Harvard University tropical research station.

Two other smaller botanical gardens also offered a chance to see many tropical plants, some native, some exotic. One was the small family-maintained site in the Pinar del Rio town of Viñales that was started by a pair of sisters named Carmen and Caridad. The other was adjacent to the elegant restaurant Divino in the Havana suburb of San Francisco de Paula. The latter garden and nursery included a shade house and plantings of interesting botanical specimens and plants that provided some of the food served at the restaurant.

One place where we did get to spend time observing plants more closely was the Zapata Swamp in the province of Matanzas near the infamous Bay of Pigs. We spent parts of two days (one for plants, one for

birds) in this area, which had a rocky limestone substrate covered with second-growth forest – but practically no swamp in the area we visited. This spot reminded me of the hammocks in the northern Florida Keys. Dominant canopy trees included species familiar to us in subtropical South Florida, such as wild tamarind (*Lysiloma latisiliquum*) and gumbo limbo (*Bursera simaruba*). Understory shrubs included shiny-leaf wild coffee (*Psychotria nervosa*) and bitterbush (*Picramnia pentandra*). The latter species is rare in Miami-Dade County, found almost exclusively in remnants of the old Brickell Hammock that once covered vast areas south of the Miami River along Biscayne Bay and now is reduced to a few postage-stamp-sized parcels.

A smaller shrub at that site that is familiar to many South Floridians is *Turnera ulmifolia*. This tropical American species has succeeded in naturalizing as a “benign exotic” in our area. Its large, bright yellow flowers resemble big versions of our pretty native herb *Piriqueta cistoides* subsp. *caroliniana*, to which it is related. Common names for the *Turnera* include yellow alder and tropical buttercup (although it's not related to true buttercups in the Ranunculaceae). More intriguing is another common name for this species, ramgoat dashalong. While I was photographing a flower of this species, Horace Thompson, a member of our tour group who is originally from Jamaica and now lives in Florida, walked up and I called the plant by that name. His eyes lit up in recognition of a plant name from his home island. Supposedly, the name comes from the fact that male goats are said to get “frisky” when they have fed on the leaves of this species.

Another interesting shrub in this area was the *Jacquinia aculeata*. With its narrow, sharp-pointed leaves and bright orange fruits, it doesn't look much like our joewood (*Jacquinia keyensis*) of the Florida Keys. The species epithet of this Cuban endemic, *aculeata*, refers to those sharp-pointed leaves, as does one of the local common names of this plant, *Espuela de Caballero*, which loosely translates as “cowboy's spurs.”

This area also produced a sighting of a small calabash tree (*Crescentia cujete*), with its fist-sized fruit hanging directly off the trunk. When dried, these gourd-like fruits are used to make the maracas so often heard as a rhythm instrument in Latin American music.

The previously mentioned Pinar del Rio was a real botanical treasure trove. It was there that we saw distinctive pine-oak forests made up of Caribbean pine (*Pinus caribaea*) and a silvery-leaved oak related to our southern U.S. live oak group and variously called *Quercus cubana* or *Q. oleoides* var. *sagrana*. In these hills, we also saw roads lined with our familiar cocoplum (*Chrysobalanus icaco*) that Raul Verdecia said were used as firebreaks to protect the pine plantations. Our informative lead guide for the trip, Renier Rodriguez, told us that the very name of the province translated as “the pine plantation by the river.”

The province is also known for the fine tobacco grown for Cuba's world-famous cigars. Near Viñales, we hiked through fields of that crop, plus staple food crops of malanga and cassava, to visit a farmer who demonstrated the art of hand-rolling cigars. On this hike, we also got a close-up look at one of the distinctive tobacco-drying barns of the region, with their steeply pointed palm-thatched roofs.

The farmer's little country home sat near the base of a *mogote*, where we got our closest look at some of the plants that hold on for dear life on that steep terrain, including the tall endemic *Bombacopsis cubensis* with its characteristic swollen trunk. Locally called *Ceibón*, it formerly was placed in the silk-cotton family Bombacaceae, which has now, somewhat inexplicably, been lumped into the Malvaceae, the family of hibiscuses.

Other plants on the *mogotes* include cycads and bromeliads. We saw many bromeliad species at numerous places on the tour. Many of these were in the genus *Tillandsia* similar to the ones we know in much of the Florida peninsula.

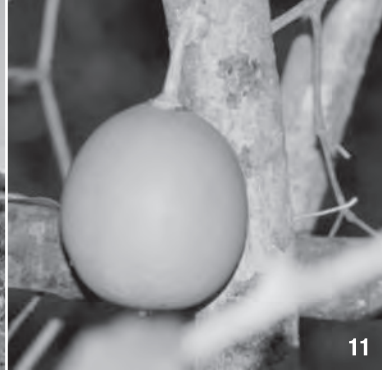
In Viñales, growing in a resident's yard, Raul Verdecia pointed out a tall, spindly tree with its few long, pinnate leaves all clustered at the top, making it look from a



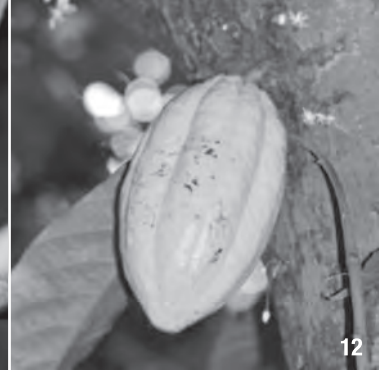
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distance like a palm or a tree fern. He said it was a plant of the *mogotes*, a rare Cuban endemic called *Spathelia brittonii* in the family Rutaceae (the citrus family).

During our trip, the Morning Glory family (Convolvulaceae) was well-represented. In the Zapata region of Matanzas province, we got a good look at pretty white-flowered *Turbina corymbosa* (sometimes called Christmas vine in English), a species also found sparingly in southern Florida. Raul, our botanical guide, says honey made by bees visiting the flowers of this species is highly prized in some of the more eastern provinces of Cuba. In Viñales, we got an up-close look at a smaller pink-flowered morning glory, *Ipomoea tiliacea*, that somewhat resembles our *I. cordatotriloba* in Florida. Like the *Turbina*, it was often viewed along roadsides from the windows of our bus as we sped by.

For me as an orchid lover, this trip was a disappointment. Florida shares 63 of Cuba's more than 300 orchid species, and the island may well have been the seed source of all but one of those. (Only *Calopogon tuberosus*, the grass pink orchid, came the other direction, from North America south across the Florida Straits to Cuba.) However, on this trip, there were very few orchids in evidence, especially in the few wild places we visited.

The first orchid we saw in the wild was in Parque Natural El Cubano outside the city of Cienfuegos in south-central Cuba, which was our port of entry for the tour. It was the ground-growing African-centered *Oeceoclades maculata*, which also has now naturalized thoroughly in the southern half of the Florida peninsula. This orchid has long, mottled green leaves that resemble some species of *Sansevieria*. As in Florida, the old bloom stems were filled with ripening seed capsules, so I'm sure the Cuban plants

are also self-pollinating.

During our hike in the second-growth Zapata forest of Matanzas, we came across a few vine-like plants of a leafy *Vanilla* species, including one with a short inflorescence filled with succulent seed capsules. It resembled *Vanilla phaeantha* of the Fakahatchee Strand in Southwest Florida, but without flowers, it was impossible to assign the plants to a species, although this orchid also is known to occur in Cuba.

The first – and only – blooming native Cuban orchid we finally saw in the wild was the pretty pink-flowered *Bletia purpurea*. This terrestrial species is also native to the Everglades and Big Cypress.

In gardens and at various tourist attractions, we saw flowering plants of *Prosthechea cochleata* (clamshell orchid) and a few plants of little green-flowered *Epidendrum rigidum* in bloom. These are also native to southern Florida. At a few sites, we saw cultivated plants of the shared species *Prosthechea boothiana* (dollar orchid) and *Epidendrum nocturnum* (night-fragrant Epidendrum) and what appeared to be *Cyrtopodium punctatum* (cowhorn orchid) and *Trichocentrum undulatum* (mule's ear orchid). There were no flowers, though, to verify identification.

There were also numerous plants of some of the various *Encyclia* species (a few in fruit) for which Cuba is justifiably famous, but without flowers, it was impossible to determine the species. These are related to our native *Encyclia tampensis*, whose presence in Cuba has never been verified.

The famous Soroa Orchid Garden was a bit of a disappointment. The hilly setting is beautiful, but the facility seems to have fallen on hard times. Most of the orchids we saw in our rather quick tour of the place – especially the ones in flower – were Asian

9. *Ipomoea tiliacea* is a morning glory species frequently encountered in Cuba, like this specimen growing the Viñales Valley.

10. Unique palm-thatched tobacco drying barns sit amid fields of malanga, cassava, sugarcane and other crops in the Viñales Valley. Besides its attractive *mogotes*, the area is renowned for the quality of its tobacco, used to make Cuba's world-famous cigars.

11. The gourd-like trunk-borne fruits of the calabash (*Crescentia cujete*) like this one in the Zapata Swamp forest are used to make the maracas so familiar as rhythm instruments in much Latin American music.

12. A large cacao pod matures on the trunk of a *Theobroma cacao* tree in the Botanical Garden of Sisters Carmen & Caridad in Viñales. The seeds inside the pod are the source of our beloved chocolate.

13. The morning glory relative *Turbina corymbosa* (sometimes called Christmas Vine in English) is occasionally seen in southern Florida, but it was frequently encountered by the group in central and western Cuba.

14. *Morinda royoc*, shared by Florida and Cuba, is called mouse's pineapple or cheese plant because of its fruits, like this one seen in the Zapata Swamp forest.



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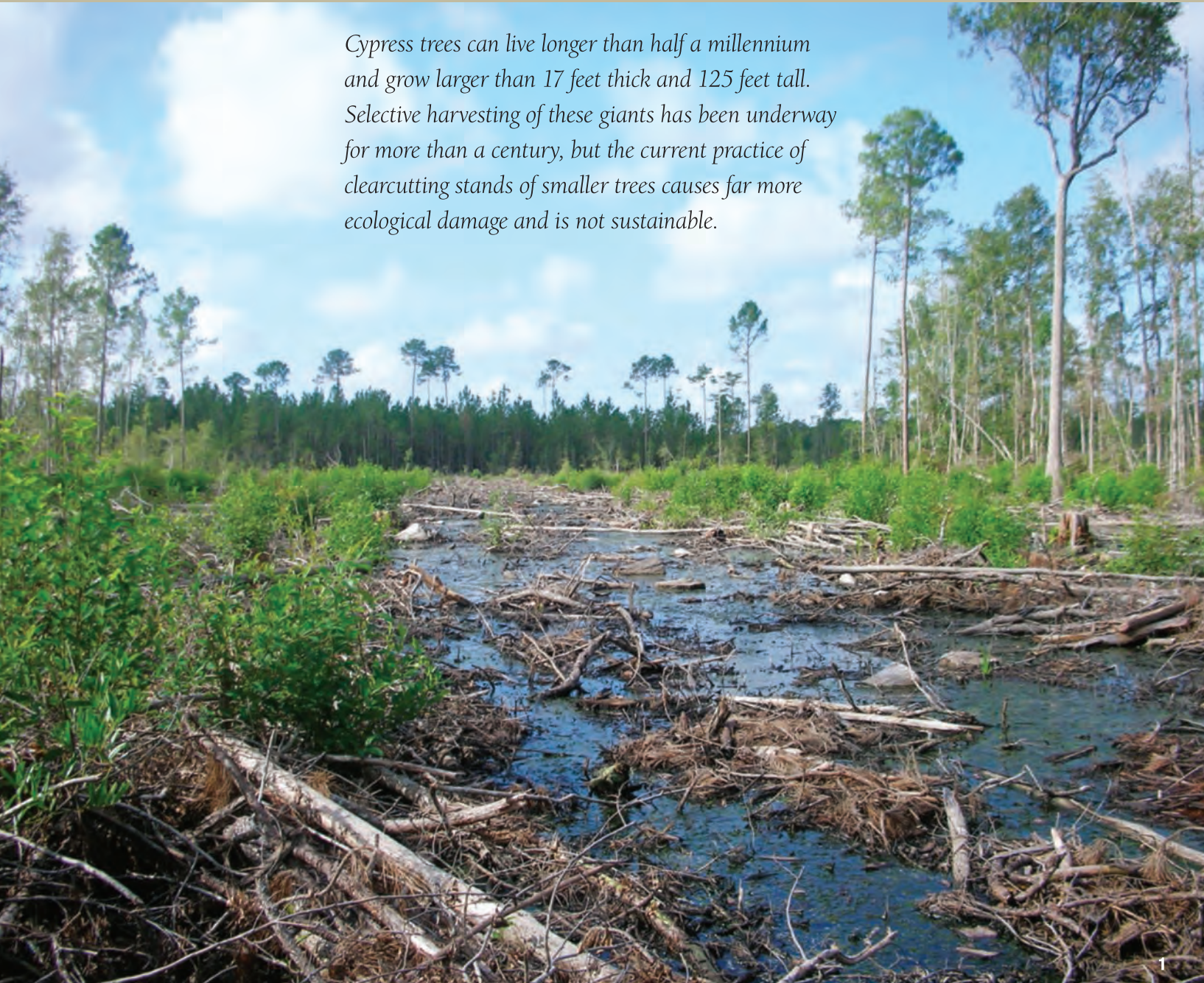
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SAVING CYPRESS

By Hollie Dutcher and Francis E. Putz

Cypress trees can live longer than half a millennium and grow larger than 17 feet thick and 125 feet tall. Selective harvesting of these giants has been underway for more than a century, but the current practice of clearcutting stands of smaller trees causes far more ecological damage and is not sustainable.



1. Aftermath of bottom logging, Alachua County. Photo by Amy Washuta.

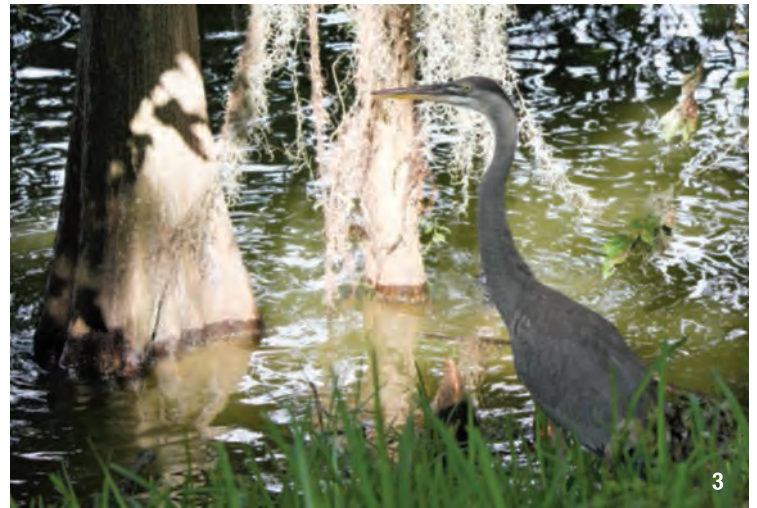
Cypress trees and the swamps they dominate figure prominently among the iconic images of the South. Among their many environmental virtues, those lovely swamps are important for surface water storage, groundwater filtration and aquifer recharge, storm surge protection of coastal areas, and as habitat for a variety of organisms including endangered species such as Kirkland's warblers, Florida panthers, and wood storks.

Cypress has been around for a long time; trees very much like ours evolved back in the Mesozoic, when they shared the planet with dinosaurs. Modern cypress trees can live longer than half a millennium and grow to more than 17 feet thick and 125 feet tall. Selectively harvesting these giants has been underway for more than a century but the current practice is to clearcut stands of smaller trees, which causes far more ecological damage and is in no way sustainable. This article's message is that in the absence of a law against cutting cypress trees before their

prime to grind them up to make horticultural mulch, concerned citizens need to act – and we suggest one particular action that might help save cypress.

Even if cypress trees have graced our planet for more than one hundred million years, their fates are now in jeopardy while the species retains many mysteries. For example, why do cypress trees lose their leaves, or rather, leaf-bearing branches, even where winters are mild? And is the secret to cypress tree longevity and swamp dominance the fact that the fierce winds that topple other tree species pass through the sparse crowns of cypress trees without doing damage? But how do trees with so little foliage sustain such rapid growth rates? Cypress is unique in a number of other ways, most prominently in its production of knees, those upward protuberances from surface roots that can grow to more than six feet tall. Knee heights indicate average flood depths, which suggests that they play a role in oxygen

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2. Protected cypress trees in the Corkscrew Swamp Sanctuary. 3. Cypress swamps create refuges for birds like this great blue heron (Lake Hancock, Lakeland). 4. Cypress swamps function as habitat for turtles, alligators and other reptiles (Circle B Bar Reserve, Lakeland). 5. Old growth cypress with knees (Lake Hancock, Lakeland). Photos by Hollie Dutcher.



6. Ecosystem conversion from cypress swamp to water lilies and shrubs along a logging mat swath. Photo by Amy Washuta.

supply to the roots, a presumed function captured in the technical name for knees, pneumatophores. Surprisingly, the only research of which we are aware on cypress knee gas exchange was inconclusive, so the jury is still out about their function. That the knees are a retained trait that once served to protect cypress trees from herbivory by giant web-footed dinosaurs is an intriguing but not yet testable hypothesis.

Cypress wood is famously resistant to decay, which made it a valuable source of lumber for fences, shingles, shakes, and various other products. Unfortunately, it can also be ground into mulch, but that product is no better than the alternatives produced from pine bark or masticated melaleuca, an exotic invasive species with which Floridians need to grapple.

Before settlers swarmed into our region barely a cypress tree generation ago, old-growth cypress swamps covered more than 27 million acres in Florida alone. As railroads and roads penetrated, the demand for cypress lumber caused the largest and best trees to be harvested, but some cypress trees were always left standing. That selective depletion changed toward the end of the 20th Century when the market for cypress mulch increased and the demand could no longer be supplied by sawmill offcuts.

In response to market demand for cypress mulch and in the absence of regulatory constraints, loggers in the 1970s started to enter cypress swamps with heavy equipment to clearcut mulch logs. Driving heavy machinery through swamps flattens the ground, which virtually precludes cypress seedling

establishment. To concentrate the surface damage, “mat logging” was introduced in 1990. Mat loggers use small logs to construct corduroy roads over which heavy machines with long grapple arms traverse swamps. A recent University of Florida (UF) masters theses by Amy Washuta reported that mat logging, like the “bottom logging” technique it replaced, still levels microtopography except where it greatly deepens water levels in the mat lines. It remains unclear whether mat logging is more environmentally benign than bottom logging, but other recent research suggests that it is not. In her 2010 UF masters thesis, Nicole Ricci reported that only 10-41% of cut stumps resprout, which is insufficient to maintain cypress dominance. Cypress clearcutters therefore leave behind transformed ecosystems vulnerable to invasion by species other than cypress and by growth forms other than trees. For example, in the deep water of former mat logging swaths, water lilies flourish where trees used to grow. In other words, clearcuts cause ecosystem conversion, from cypress swamp forests to shrub and herb-dominated marshes. This conversion is obviously bad for all cypress-dependent species, and swamp recovery is unlikely in our lifetimes. We note with chagrin that this destruction is legal and in accordance with the State of Florida’s Silvicultural Best Management Practices (BMPs).

Over the past few decades, many attempts have been made to stop cypress clearcutting for landscape mulch. Chapters of the Florida Native Plant Society and many other environmental groups (e.g., the Save Our Cypress Campaign, the Sierra Club, Waterkeeper Alliance, and the Gulf Restoration Network) have all tried. Despite numerous demonstrations, dozens of newspaper articles, hundreds of phone calls to the major “big box” stores (i.e., Lowe’s, Home Depot, and Walmart), and petitions signed by thousands of concerned citizens, cypress mulch sales and unsustainable clearcuts continue. Reportedly, in response to pressure from environmentally concerned consumers, Walmart stores in Louisiana stopped selling locally sourced cypress mulch but others continue to do so. Clearly, to save cypress, consumers need to stop buying its mulched trunks and merchants need to respect the sustainability pledges that they signed.

While lobbying efforts, phone calls, petitions, and consumer education about this issue remain important, perhaps it is time for a new tactic that hits the merchants that sell cypress mulch where it hurts, right in their profit margins. Imagine if shoppers each filled a cart with several bags of cypress mulch, pushed that cart to the far end of the store, and abandoned it?

While lobbying efforts, phone calls, petitions, and consumer education about this issue remain important, perhaps it is time for a new tactic that hits the merchants that sell cypress mulch where it hurts, right in their profit margins. Imagine if shoppers each filled a cart with several bags of cypress mulch, pushed that cart to the far end of the store, and abandoned it?



7. Logo from a successful campaign by the Healthy Gulf organization in Louisiana.



8. Abandoned shopping cart full of cypress mulch. Photograph by Hollie Dutcher.

Those who feel confrontational might push that cart to a checkout counter, ask an employee for a guarantee of sustainability, apologize when such a guarantee is not forthcoming, and then abandon the cart. Either way, an employee would then have to restock the items, which takes time and provides more chances for the bags to be rendered unmarketable. Big box stores monitor

worker productivity to the minute and profit margins to the penny. Now assume that sale of a \$2.00 bag of cypress mulch yields a profit of \$0.20. A worker earning \$20.00/hour (salary plus benefits) would have to restock each bag in less than 36 seconds for the store to financially break even on a product that should not be sold in the first place. Perhaps after a few hundred episodes of shelf restocking coupled with a coordinated flurry of explanatory e-mails and letters, collective action will grab manager attention. In response to lost profits, big box stores will stop selling cypress mulch, for which they might receive some good press.

Even if you do not choose to participate in an activist approach to saving cypress, in the face of substantial and incontrovertible evidence of the unsustainability of cypress swamp clearcutting for landscape mulch, please do something to save these iconic ecosystems.

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Hollie Dutcher is pursuing an undergraduate degree in environmental science at the University of Florida. Her research interests include wildlife ecology and conservation biology. She plans to continue her education and research in ecology.

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Across the Florida Straits (continued from page 11)

exotics, things like *Spathoglottis plicata* (which has naturalized in Cuba and is beginning to naturalize in Florida because of its use in landscape plantings) and *Arundina graminifolia* (the tall bamboo orchid, which has naturalized in Hawaii and may be doing so in Cuba). There were also vandaceous orchids such as *Acampe longifolia*, a *Renanthera* species, *Vanda* intergeneric hybrids, the terete-leaved hybrid *Papilionanthe* (formerly *Vanda*) Miss Joaquim, and *Phalaenopsis* hybrids.

Early in our tour, in Cienfuegos province when we stopped to look at the rare *Copernicia brittonorum* palms, we saw flowering plants of a vining subshrub that has a small association with a few of Cuba's orchids. This was a member of the genus *Stigmaphyllon* with bright yellow flowers. The plant is in the family Malpighiaceae, many members of which are pollinated by oil-collecting bees. A few miniature orchids of the Antilles in the genus *Tolumnia* (formerly called the "equitant oncidiums") produce flowers that mimic *Stigmaphyllon* flowers to lure pollinators to visit in the hope of gathering the needed oils. But the orchid offers no reward. Instead, if it's lucky, the orchid gets pollinated in the process. One such yellow-flowered *Tolumnia* in Cuba is *T. guibertiana* of central and western Cuba. The somewhat similar yellow-flowered *T. lemoniana* also is found throughout the country. Florida also has a native *Tolumnia*, the highly endangered *T. bahamensis*, but it has white flowers.

Cuba is not immune to the problem of invasive exotics that also plagues Florida. Of course, there are the usual suspects: *Melaleuca quinquefolia*, Australian pines (*Casuarina* species) and Brazilian pepper (*Schinus terebinthifolius*). But one of the biggest culprits is an *Acacia* relative named *Dichrostachys cinerea* and locally known as *Marabu*. It fills acres and acres of disturbed land such as pastures and fallow farm fields. Raul says it is very difficult – and very expensive – to bring under control. We should hope that this species does not become established in Florida, although it's already been vouchered for Polk and Lake counties in Central Florida and in South Florida in Palm Beach and Miami-Dade counties as well as the Florida Keys, according to the University of South Florida's online *Atlas of Florida Vascular Plants*.

Cuba also has some surprising invasive exotics, among them African tulip tree (*Spathodea campanulata*) and purple allamanda/Madagascar rubbervine (*Cryptostegia madagascariensis*).

Oddly, Cuba's national flower is also an exotic. *Hedychium coronarium* of the ginger family is native to tropical Asia. Cubans call it *Mariposa*, which means "butterfly," because the fragrant flowers resemble pure white butterflies. Florida has the same situation – our state flower, the orange blossom, is also non-native.

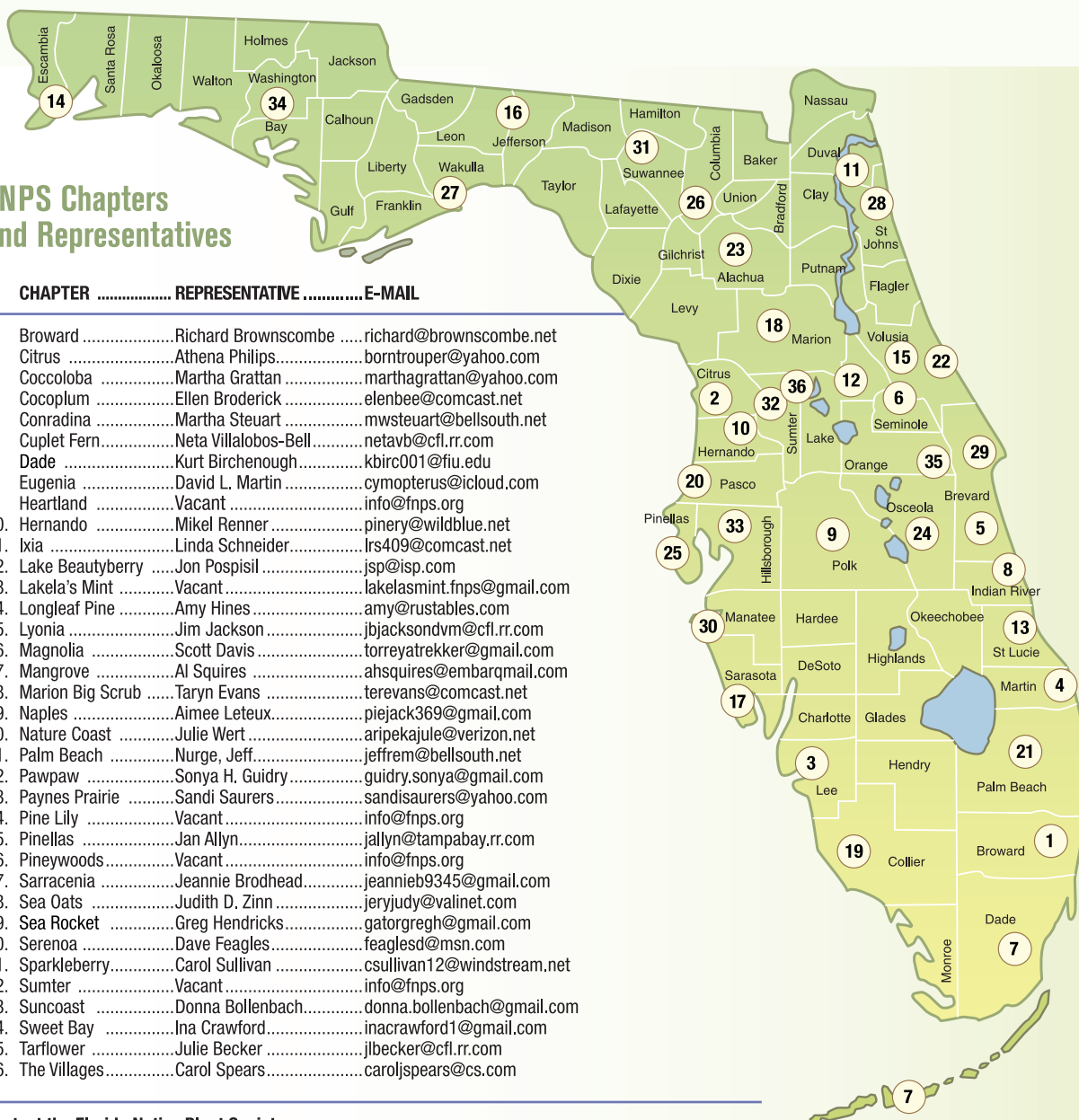
About the author

Chuck McCartney is a fourth-generation South Floridian and a longtime member of the Florida Native Plant Society. His special interest is the wild orchids of his native South Florida and the Southern Appalachians, and he often speaks on these subjects to orchid societies, native plant groups, garden clubs and natural history organizations.



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