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Palmetto



Backyard Biodiversity Day • Strangers, Lovers and Tubes • Endangered Flora of the Florida Keys • Catesby's Lily

Article by Anna Pepper

FNPS Tarflower Chapter's Backyard Biodiversity Day

The Tarflower Chapter represents the Florida Native Plant Society in Orange County in Central Florida. They routinely meet at Harry P. Leu Botanical Gardens in Orlando on the first Tuesday of each month. Although face-to-face meetings were paused in the spring of 2020 due to COVID-19, outdoor field trips, drive-by plant sales, and Backyard Biodiversity Day (BBD) kept the chapter engaged during this challenging period. As of January 2021 members and guests will have the option to return to meetings or join virtually via a simultaneous broadcast. Please visit <https://tarflower.fnpschapters.org> for more information.

About Backyard Biodiversity Day

BBD became an annual event in 2015. After prior successful plant sale events, Tarflower Chapter leadership determined that a more substantial opportunity to educate the public was needed along with providing the means to incorporate native plants inside and outside private homes.

The event is routinely held at Mead Botanical Garden, a 49-acre oasis surrounded by urban development located in Winter Park, Florida. Home to gopher tortoises, it is also a popular destination for birders thanks to the wide variety of species taking refuge there. The Tarflower Chapter has been working with garden leadership to restore specific sandhill areas within the garden that were identified based on elevation, and BBD helps to fund this restoration work.

Backyard Biodiversity Day 2020

In 2020 BBD was held on Saturday, October 17, and in spite of COVID-19 this year's event was exceptional. Guests received training, met with landscape and other service providers, spoke with local elected officials and encouraged them to establish native plant-friendly policies, and purchased gardening products and plants needed to harmonize their homesteads with Central Florida ecosystems. The weather was sunny, warm, breezy and dry, and the atmosphere was filled with the sounds of Run Raquel performing live and the aromas from food trucks Irie Cuisine, The Naked Cupcake and Talisman Café.

Planning for the event began in January 2020 prior to the pandemic. The City of Winter Park, owner of Mead Botanical

Garden, received the required paperwork to establish the event date shortly after Tarflower Chapter's first planning meeting. The chapter expected many exhibitors, vendors, hike leaders and speakers from the five prior BBD events to return in 2020.

As the pandemic escalated in the spring, many former participants canceled and replacements were required. Thankfully, 34 entities and individuals comprised the 2020 slate. They included O-town Compost, Yaupon Brothers Tea, Piante Design, Orange Audubon Society, City of Orlando Office of Sustainability, and more. Visit <https://tarflower.fnpschapters.org/backyard-biodiversity-day/> for a full list of participants.

A throng of volunteers, many from the University of Central Florida (UCF) made the day the best it could be for guests and participants. Dozens of students from UCF's Burnett Honors College and VolunteerUCF helped. Additional students independent of a specific college organization also signed up to help through VolunteerMatch.org. Some volunteers handed out masks provided by the office of Orange County Commissioner Emily Bonilla to guests without them. Some circulated among guests and offered printed maps and schedules of speeches, workshops and hikes to those looking to make the most of the day. Prior to the event, some volunteers delivered handbills to nearby businesses for distribution, created event signage, and researched alternatives to bottled water for guests and volunteers. Tasks also included setup, breakdown, and providing parking directions. Two very important volunteers acted as exhibit ambassadors who made sure entities and individuals participating in the event had the assistance needed throughout the day to ensure their success. Honor Society students from University High School earned community service hours for helping out as well. They were very flexible with their assignments and even helped to pick up trash or clean tables between diners when other needs did not require their attention.

One of the most frequently visited exhibitors featured animal ambassadors. Chris Stalder, an environmental scientist for DRMP, Inc. displayed live coachwhip, corn, pine, rat and king snakes, and educated guests about the snakes. Mr. Stalder is also a herpetologist, Florida Fish and Wildlife Conservation Commission (FWC) venomous reptile and gopher tortoise

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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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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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Backyard Biodiversity Day is the Tarflower Chapter's signature annual event. The 2020 event, held at Mead Botanical Garden was a rousing success, despite the threat of COVID-19. *Article by Anna Pepper*

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Cabbage palms, with their upward-pointing, debris-catching bootjacks are uniquely suited to facilitate other plants germinating well above ground. *Article by Jono Miller*

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The islands of the Florida Keys, the closest to a tropical environment found in the continental United States, create a home for native plants that do not naturally occur on the Florida mainland, as well as a few endemics. *Article by Roger L. Hammer*

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Though widespread, Catesby's Lily is extremely sensitive to growing conditions and requires just the right combination of soil moisture, light, and fertility to prosper. *Article by Craig Huegel*

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Narrowpod sensitive pea (*Chamaecrista lineata* var. *keyensis*).
Photo by Roger L. Hammer

Stranglers, Lovers, and Tubes: Trees Cohabiting with Cabbage Palms



Figure 1: Anastomotic roots of strangler figs fuse together rather than remaining separate.

Of all the plants that grow on, up, in, and around our native cabbage palm (*Sabal palmetto*), some of the more intriguing relationships are unlikely pairings with dicotyledonous trees. Cabbage palms, with their upward-pointing, debris-catching bootjacks¹ are uniquely suited to facilitate other plants germinating well above ground.

The most common flowering plants growing epiphytically on cabbage palms are figs, and there's a rogue's gallery of invasive, non-native figs that include laurel fig (*Ficus microcarpa*), bo tree (*F. religiosa*), banyan (*F. benghalensis*), council tree (*F. altissima*), and that office stalwart, weeping fig (*F. benjamina*). These five interlopers are joined by two valuable native figs — strangler fig (*F. aurea*) and further south, wild banyan tree (*F. citrifolia*).²

All these figs depend on the same strategy — tiny wasps fertilize the small figs, birds eat the fruit and expel the seeds where they perch. Those seeds that find themselves in moist detritus accumulated in the palm bootjacks can germinate and begin their next life stage as epiphytes.

But, unlike common epiphytic ferns such as the shoe-string fern (*Vittaria lineata*) or golden polypody (*Phlebodium aureum*), these figs have aspirations of becoming trees in their



Figure 2: This sizable (20-foot girth) strangler fig at a bank on St. Armands Key, Sarasota shows no sign of impeding the palm growing within it.

own right and consequently are not content to remain aloft. Hanging on with feeder roots in the decomposing under-canopy of the palm, these figs extend different, ambitious aerial roots down towards the ground, typically creeping around the palm trunk, but sometimes hanging downward. These roots exhibit what might be called anastomotic inosculation, which is the ability of separate tissues to converge and merge, fusing together instead of remaining distinct. [Fig. 1] If you'd like to see strangler fig roots in various states of anastomotic inosculation, plan a visit to Sanibel. The road traffic is daunting, but a rented bike will enable you to pass cars while on the bike path and you'll spot dozens of strangler figs, typically our native *Ficus aurea*. Other trees exhibit less frequent propensities to self-graft and these are typically thin-barked species such as gumbo limbo, non-native crepe myrtles and Chinese elms, yet thicker-barked live oaks and invasive camphortrees (*Cinnamomum camphora*), also self-graft.

When the striving roots make contact with terrestrial soil, the fig has a new source of nourishment and growth takes off. The result can be a massive tree that towers over the palm that originally gave it sustenance. Because these plants abandon their

purely epiphytic phase of life to become rooted in the ground, they are referred to as hemiepiphytes, technically primary hemiepiphytes since they start in the trees and end up rooted in the ground. Secondary hemiepiphytes (AKA nomadic vines) start rooted in the ground and migrate up into the trees and may ultimately lose contact with the earth.³

Ficus aurea is better known in South Florida as the strangler fig, suggesting something from a lurid cover illustration of *Strange Tales*. And it is not hard to find texts⁴ or online videos⁵ predicting inevitably dire consequences, usually the death of the host palm. Popular explanations for the lethal mechanisms vary: constriction of the trunk and roots (unlikely) as well as competition for light, nutrients and water (more probable) are all invoked.

Yes, in theory, every strangler fig might conceivably overwhelm and kill its cabbage palm host, and so one might wonder, based on prolific fig production and the impressive number of seeds in each fig, why any cabbage palms remain at all. In reality there are several factors working against the figs.⁶ The first is cold — they do not do well in freezes. That limits their range to the southern half of the state and even there they can be repeatedly temperature pruned by occasional cold spells.

Another limiting factor is fire.⁷ If you drive Highway 29 from Immokalee south you'll note the palms between the highway and the canal on the left sometimes have strangler figs, while the palms beyond, on the east side of the canal, an area that burns with greater frequency, as a rule do not.

So while cabbage palms may be the most common host plant for strangler figs in Florida, the palms are no pushovers. It's true that the fig's roots frequently surround and encase the palm trunk, but cabbage palms can't really be "strangled" in some boa constrictor sense of an ever-tightening embrace that squeezes the life out of a victim or acts like a tourniquet on the tree's cambium. That's because cabbage palms don't exhibit what is known as secondary growth — cabbage palms don't have a cambium layer or need to keep expanding as the tree ages. Yes, the fig does compete somewhat with the palm for light, water, and nutrients, but the palms are remarkably persistent. [Fig. 2]

The main evidence that *Ficus aurea* doesn't spell certain death for cabbage palms is the large number of palms that continue living when overtaken by the ungrateful figs they nurtured. It is far easier to find *Ficus aurea* encircling a living palm than a fig with a cylindrical central cavity defining where a palm trunk once grew, a hollow columnar trunk or "tube tree." Imagine wrapping a candle with string dipped in plaster and then imagine the candle melting. The result would be a hollow cylinder with the solidified string representing the encircling roots of the fig. Such tube trees are relatively rare in Florida, but are more common in freeze-free tropical settings where fire is less frequent and the host tree is a dicotyledonous species that relies on its cambium layer to expand in girth and grow.

An online query in search of these curious hollow fig trees was answered by Melissa Nell, a naturalist who knew where some could be found at the Emerson Point Preserve, which is on a peninsula separating the mouth of the Manatee River from Tampa Bay and near the northern range limit of *Ficus aurea*. Melissa took me to the Portavant Temple Mound where there are plenty of palms with no figs, plenty with figs just getting started, and many with fig and palm coexisting. We inspected several pairs with both partners living and then she pointed out a distinctive tube tree where it was easy to photograph a circular patch of daylight out the top of the living cylinder. [Fig. 3] Sensing I was more interested in these hollow figs than the cohabitating pairs, Melissa suggested we drive out to the end of the point, the site of a former proposed real estate development that now features park pavilions with concrete supports that were molded to look like cabbage palm trunks.

We walked along the shore of Tampa Bay past wading fisherman and upturned sea grapes until we found another delicate tube tree. Because such hollow fig trees are relatively rare, we know that strangler figs don't inevitably lead to the demise of their palm hosts.

Several cabbage palm epiphytes grow in the decomposing palm bootjacks, additionally nourished by detritus raining down from any plants towering above the palms. I've asked several botanists the name of these dark accumulations of decomposing bootjacks and fern rhizomes and have gotten no answers. Landscapers who deal with the same phenomenon on other cultivated palms have told me they call it 'the nut'. I've taken to calling it 'dark matter'.

Epiphytic ferns are well-adapted to palm life and create a mass of rhizomes, living and dead, that persist after the fronds have fallen or rotted away. It would seem that at some point the ferns are growing as much in decomposing fern rhizomes as



Figure 3: This hollow column of anastomosed fig roots (tube tree) resulted when a former cabbage palm host died and rotted away.

decomposing palm bootjacks. In areas of high humidity where the epiphytes are less likely to dry out, the dark matter can extend six feet or more below the palm canopy. So while small plants like the golden polypodies can simply keep creeping higher, colonizing new bootjacks, the figs have a real problem because any young figs that don't get their roots down to the ground fast enough run the risk of falling out of the palm. That's because of the inevitable weight increase that accumulates as the fig ages and gains size. As the lower decomposing palm fronds rot away, the now heavier figs become increasingly susceptible to gravity, wind, and upwardly mobile raccoons. When figs can't get their roots to the ground, their trunks, branches, and leaves can end up dangling, hanging upside down from their feeder roots. A walk along the southern shore of Tampa Bay in Manatee County's Robinson Preserve reveals several of these precarious plants. [Fig. 4]



Figure 4: This strangler fig is in danger of falling from its host palm.

Occasionally the figs actually fall out of their host tree. And along the boardwalk of Audubon's Corkscrew Swamp Sanctuary in Collier County, one can see a native fig that blew out of a cypress tree (and survived).

Because the bootjacks catch seeds from other tree species, a variety of unlikely "strangler" trees have been found wrapped around cabbage palms. In addition to the figs, the invasive umbrella tree (*Schefflera actinophylla*) and native *Clusia* can be found growing in cabbage palms. The most common native non-fig 'stranglers' seem to be live oaks, but I've found a strangler slash pine on Camino Real Street in Sarasota and a strangler magnolia at Bok Tower Gardens.

[Fig. 5] Such stranglers occur when seeds from trees that normally germinate in the ground, fall in the leaf base of a cabbage palm, germinate, and somehow get their roots to the ground. Obviously, the odds of this happening are increased the closer the germinating seed is to the ground to start with.

The most famous example of a "strangler oak" is a testimony to American modesty and euphemism because this is a big live oak with a cabbage palm growing out of it, and it has been dubbed the 'Love Tree' or 'Kissing Tree'. Found at 6 Cordova Street in St. Augustine, the love tree became a tourist destination



Figure 5: Exposed roots of a "strangler magnolia" photographed at Bok Tower Gardens.

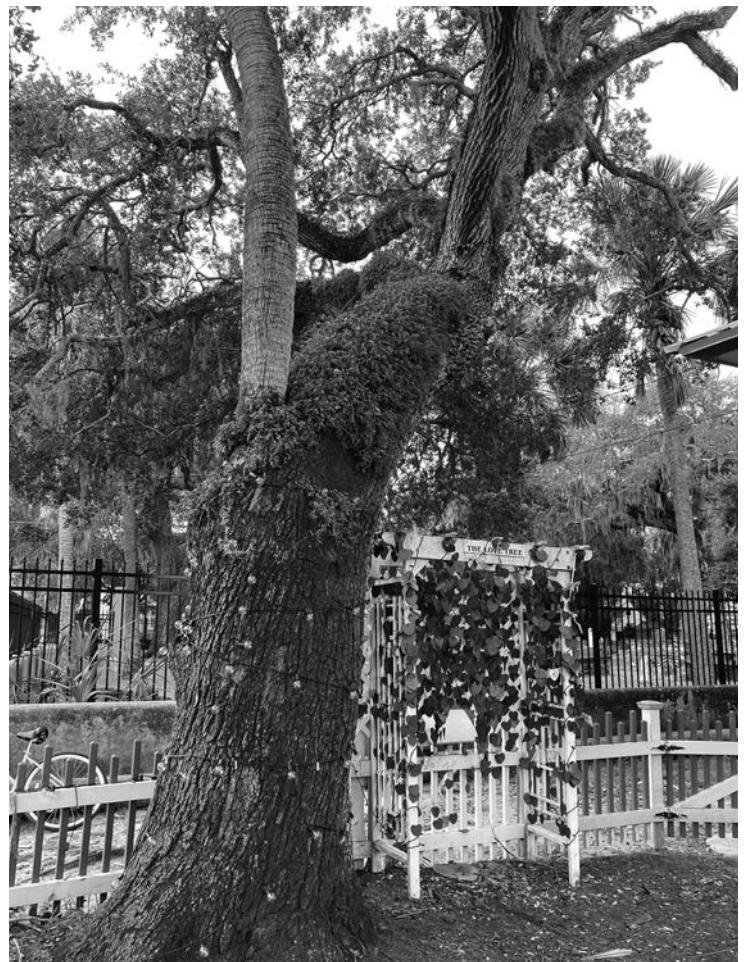


Figure 6: The dramatic St. Augustine tourist destination: the love tree at 6 Cordoba.

complete with legends and an admonition that kissing under the tree promises sustaining love. [Fig. 6] It is tempting to assume a palm seed germinated in a hollow oak and grew up through it. But close examination reveals where the oak woundwood⁸ grew around the palm and fused. [Fig. 7] It is impossible to determine if the acorn germinated in a bootjack, or simply right next to the palm — both alternatives are possible. I believe it is wrong to



Figure 7: Close-up of the Cordoba love tree showing where woundwood has encircled the palm and grown together.

infer that massive oaks several feet in diameter must surely pre-date the scrawny palms they embrace. It is not too hard to find examples of live oaks engulfing nearby cabbage palms. This unlikely oak/palm ‘love tree’ relationship can be attributed to the cabbage palm’s ability to thrive immediately adjacent to other trees and live oaks’ impressive ability to produce woundwood, which predisposes them to grow around and engulf adjacent objects.

For some unknown reason, St. Augustine appears to be the love tree capital. Other examples can be found on Bridge Street

in front of the playground, at the southwest end of Dumas at St. Francis, and on the Ameris Bank property on North Ponce de Leon Boulevard. My wife, Julie, discovered another one in a vacant lot at 160 Marine Street. There’s rumored to be one on the grounds of the Mission of *Nombre de Dios*, but the site is now off-limits due to a recent archaeological find. Sharp-eyed naturalists throughout the range of cabbage palms have spotted others — two accessible dramatic examples are found on North Riverside Drive (south of Rio Vista) in Edgewater, and in Old Fort Park in New Smyrna Beach.

Since oaks can germinate on palms and reach maturity, the allure of reciprocity demands we ask if palms can germinate on or in oaks and survive? It’s easy to find small palms that have germinated in the detritus that builds up in the crotches of oaks and there was a young palm growing in the ‘Old Senator’ in the Howard Johnson parking lot at 137 San Marco, St. Augustine, but someone cut it out.

Consequently, I try to remain open to the scenario that a cabbage palm could somehow germinate inside a hollow live oak to create an alternative form of love tree. One candidate was discovered on the north shore of Upper Myakka Lake by my environmentalist friend, Jon Thaxton. Jon has been exploring this isolated area for two decades and keeps tabs on many of the oaks, recounting their past and speculating about their future. These massive trees are growing on a sandy ridge parallel to the lake shore and as we walked we ruminated about what happened centuries ago to create this elevated oak seedbed. He is slowly amassing his own time-lapse understanding of how the hammock changes.

Mostly we walked silently, pausing to pick up litter, or to rescue fallen orchids or bromeliads to get them up off the ground, that they might produce another generation of seeds. Jon navigated through a combination of memory and intuition. Most of the walk was not on any trail and Jon took pains to avoid walking through spider webs — not because he doesn’t like spiders, but because he does. We walked past recumbent “gator-back” saw palmettos forty feet long, now in decline — Jon remembers when they were healthy. After about two miles we came to the pair. Jon said nothing to tip me off, but I spotted it from a distance and stopped. The context was fascinating. Just a few feet away were what appeared to be two sibling palms of roughly the same height and conformation. The palm emerged from the oak above our heads, so I contrived a means to affix my iPhone to my walking stick and took a number of photos, none of which explicitly ruled out the possibility that this palm might have germinated inside the oak. For instance, there were no signs of any sutures where the two sides of an enfolding oak met, and we could see many adventitious palm roots cascading over the oak bark, which lent the appearance of the palm originating in

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Endangered Flora of the Florida Keys

Article and photographs by Roger L. Hammer



Photos: This page: Key tree cactus (*Pilosocereus robinii*).

Facing page: first row, top to bottom: semaphore cactus (*Consolea corallicola*); Grisebach's dwarf morning-glory (*Evolvulus grisebachii*); mahogany mistletoe (*Phoradendron rubrum*).

Second row, top to bottom: wedge sandmat (*Euphorbia deltoidea* subsp. *serpyllum*); Marsh's Dutchman's pipe (*Aristolochia pentandra*).



The Florida Keys are unlike any other part of Florida for a variety of reasons, including Key West's annual Halloween Fantasy Fest where paint is allowed to be women's clothing, and there is the Duval Street Drag Race where race cars are replaced with drag queens who run merrily along in their high heels to a cheering crowd, plus there's even a clothing-optional bar in Key West. The Florida Keys are, it is said, where the weird turn professional.

But, besides the weirdness, the islands that make up the Florida Keys are the closest to a tropical environment than any other region in the continental United States, sharing USDA Hardiness Zone 11 with the Bahamas. Indeed, the only place in the United States where you can find purely Caribbean basin tropical hardwood forests, with an absence of temperate trees, is in the Florida Keys. There are a number of native plants in the Keys that do not naturally occur anywhere on the Florida mainland, and a few are endemic to the Florida Keys, being found nowhere else on Earth. It is also the only place where Lilliputian, endangered Key deer roam the pine rocklands and residential communities of Big Pine Key, and where rocky pinelands are void of saw palmetto (*Serenoa repens*), and more closely resemble Bahamian pinelands than those in mainland Miami-Dade County, where saw palmetto dominates the understory.

Native trees, shrubs, and other plants of tropical origin in the flora of South Florida all arrived here by three natural means. Many coastal species in the Bahamas and Caribbean simply use ocean currents to carry their fruits, seeds, or propagules to other suitable shorelines. Examples are baybean (*Canavalia rosea*), railroad vine (*Ipomoea pes-caprae*), red mangrove (*Rhizophora mangle*), manchineel (*Hippomane mancinella*), and gray nickerbean (*Guilandina bonduc*). Tropical storms and hurricanes also deliver seeds of tropical plants to South Florida, including West Indian mahogany (*Swietenia mahagoni*), Jamaican dogwood (*Piscidia piscipula*), and mangrove rubbervine (*Rhabdadenia biflora*), as well as many ferns, bromeliads, orchids, and members of the Asteraceae.

However, the vast majority of the plants of tropical origin in the flora of Florida arrived here in the bellies of migratory birds. Look at the fruits of tropical trees and woody shrubs in our flora and you will find that most all of them produce small fruits eaten by migratory songbirds that make their annual flight from the Caribbean, Bahamas, and even Mexico on their way to Florida in springtime. According to floristic surveys, the hammock trees in southern Miami-Dade County are 85% tropical, and the understory in pine rocklands is 66% tropical. Hammock trees in the Florida Keys are 100% tropical species with the exception of a few live oaks (*Quercus virginiana*) in North Key Largo. The pine rockland understory on Big Pine Key is overwhelmingly dominated by tropical species, with a single overstory tree, the slash pine (*Pinus elliottii*) that ranges into the southeastern U.S.

The Upper Florida Keys harbors one of the rarest and most critically imperiled plants in Florida—the Greater Antillean

tree cactus tentatively identified as *Pilosocereus millspaughii*. It is known solely from a single population on North Key Largo adjacent to and managed by John Pennekamp Coral Reef State Park, where it was first discovered by botanist Joe O'Brien in 1992. At that time, it was identified as *Pilosocereus bahamensis*, but then a revision of tropical American cacti lumped it under synonymy with the widespread *Pilosocereus polygonus*. Now, in a 2019 paper by botanist Alan Franck, et al, (Phytotaxa 411; pp. 129-182) it is *P. millspaughii* from the Bahamas and Cuba. To add to the confusion, taxonomists at the Royal Botanic Gardens, Kew, place *P. millspaughii* under synonymy with *P. royenii*, believed to be endemic to Puerto Rico and the U.S. Virgin Islands. It is similar to, but clearly not, *Pilosocereus robinii* from the Middle and Lower Florida Keys. Recent hurricanes have nearly destroyed the population and it is in danger of extirpation. There are collections in cultivation at Fairchild Tropical Botanic Garden in Coral Gables as well as John Pennekamp Coral Reef State Park, and Jennifer Possley of Fairchild Tropical Botanic Garden reports that there are 167 seeds being stored at the National Seed Laboratory in Colorado. Stems of this species reach 16' tall or more with greenish white flowers that have dense, woolly hairs at the base, and there may be sporadic patches of woolly hairs on the stems.

Also found in the Upper Florida Keys is the endangered Marsh's Dutchman's pipe (*Aristolochia pentandra*), a vining species found on Elliott Key (Miami-Dade County) and in a Broward County coastal park. It was named *Aristolochia marshii* in 1937 to honor botanist Charles Dwight Marsh (1855–1932), but was later deemed to be conspecific with *Aristolochia pentandra*, described in 1760. I once paddled my kayak eight miles across Biscayne Bay from Convoy Point to Elliott Key, just to look for this species. After arriving at Elliott Key Harbor, I hiked over to the east side of the island to scout the coastal vegetation between the ocean and the tropical hardwood forest that dominates the island. *A. pentandra* serves as larval food for the Polydamas swallowtail, and while exploring the coastal vegetation, I saw three Polydamas swallowtails. Two of them flew off into the hammock, but the third one scouted the low vegetation, then hovered over one spot and began laying eggs. I hurried over and there was *A. pentandra*, complete with butterfly eggs. The short-lived and somewhat ill-scented flowers attract small flies as pollinators. There are ongoing efforts to re-establish it into the Deering Estate, a Miami-Dade County park located along the western shore of Biscayne Bay, where it was reported by botanist John Kunkel Small in the early 1920s.

One other rare species in the Upper Keys is the endemic, federally-endangered semaphore cactus (*Consolea corallicola*), which is threatened by sea level rise, hurricanes, the inability to produce seeds, and an introduced moth, *Cactoblastis cactorum*, with larvae that kill cacti. The flowers are functionally male, so it only reproduces asexually from segments that fall to the ground (Vivian Negron-Ortiz, PhD, pers. comm.). Wild populations only

exist on a few islands within Biscayne National Park (Upper Keys; Miami-Dade County) and in a Nature Conservancy preserve near Big Pine Key in the Lower Florida Keys (Monroe County). It is being cultivated in at least a half-dozen other preserves in the Florida Keys. The plant can reach 5' tall or more, with long, downward-pointing, sharp spines covering the trunk. The oblong stem segments (cladophylls) are armed with shorter, but wickedly-sharp, spines. The red flowers are about 5/8" wide. A semaphore is described as a system of sending messages, often aboard military ships, by holding the arms, two flags, or poles in certain positions according to an alphabetic code. The name relates to this cactus because the pads are held in a single plane, like outstretched arms.

The state-listed endangered mahogany mistletoe (*Phoradendron rubrum*) is a parasite on large specimens of West Indian mahogany (*Swietenia mahagoni*) in the Upper Florida Keys, and is known in Florida only from Elliott Key in Biscayne National Park and on North Key Largo. Look for it in winter, when mahogany trees are leafless, or nearly so, which makes the plant much easier to detect. If you don't mind cheating, there is a West Indian mahogany in the Florida Keys planting within Fairchild Tropical Botanic Garden in Coral Gables, and mahogany mistletoe was purposely introduced on this tree.

To find and photograph other rare Florida Keys wildflowers, drive down to Big Pine Key and hike around in the pine rocklands and surrounding habitats within the Key Deer National Wildlife Refuge.

A good place to look for the state-listed endangered wedge sandmat (*Euphorbia deltoidea* subsp. *serpyllum*) on Big Pine Key is in pockets of soil surrounded by exposed limestone. Wedge sandmat has small, 1/4" deltoid-shaped, gray-green leaves with 1/16" yellowish flowers. Two other endemic *Euphorbia deltoidea* subspecies occur in Florida, and these are the federal endangered subsp. *deltoidea*, which occurs solely in remnant pine rockland preserves of southern Miami-Dade County between SW 72 Street and SW 264 Street east of Everglades National Park, and the state-listed endangered subsp. *pinetorum*, found in pine rocklands of southern Miami-Dade County south of the range of subsp. *deltoidea* and west to Long Pine Key in Everglades National Park. *Euphorbia deltoidea* subsp. *serpyllum* is endemic to the pine rocklands of Big Pine Key and threatened by extinction from sea level rise.

Soil pockets in the exposed limestone is also where you will find the state-listed endangered and critically imperiled Grisebach's dwarf morning-glory (*Evolvulus grisebachii*). The leaves and low-spreading stems are covered with long, shaggy hairs, and the white flowers are about 3/8" wide. It was named to honor German botanist and phytogeographer, August Heinrich Rudolf Grisebach (1814–1879). It is only known from Big Pine Key and the Caribbean.

By hiking around in the pine rocklands of Big Pine Key it will be easy to find plants of the endangered, endemic



Narrowpod sensitive pea (*Chamaecrista lineata* var. *keyensis*).

Chamaecrista lineata var. *keyensis*, with its cheery, bright yellow flowers. Plants are typically 12"–18" tall and the leaves serve as larval food for cloudless sulphur, gray hairstreak, and Ceraunus blue butterflies. It occurs on Big Pine Key and Cudjoe Key but was historically present on Little Pine Key, No Name Key, and Sugarloaf Key.

Long Key, the Matecumbe Keys, and Big Pine Key harbor populations of the endangered Key tree cactus (*Pilosocereus robinii*), which can grow to 12' tall or more in hammocks. When stems fall during storms, the lateral branches may take root and grow into unbranched stems. White, garlic-scented flowers open late in the afternoon, or at night, and close soon after sunrise. The flowers are about 2" wide and are visited by nocturnal beetles. Its range extends into Cuba.

So, you are officially invited to visit the Florida Keys and admire some of Florida's rare and unique island flora. If you get hot and thirsty during your trip, you can head to Key West and drink a beer or two naked in the Garden of Eden Bar at 224 Duval Street. However, let me forewarn you, unlike the Keys wildflowers, it is not a pretty sight!

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About the Author

Roger L. Hammer is an award-winning professional naturalist, author, botanist and photographer. His most recent book is *Complete Guide to Florida Wildflowers*. Find him online at www.rogerhammer.com.

Catesby's Lily (*Lilium catesbaei*)

Article by Craig Huegel

Catesby's lily (*Lilium catesbaei*), also known as the pine lily, is the most widely distributed member of this genus in Florida. Found nearly statewide in moist pinelands and open savannas and prairies, Catesby's lily is listed as a state-threatened species. Though widespread, it is extremely sensitive to growing conditions and requires just the right combination of soil moisture, light, and fertility to prosper. Catesby's lily occurs in similar habitats in much of the Southeastern Coastal Plain—from Louisiana to Virginia—but is only listed as threatened in Florida.

It is resident to open habitats that routinely become wet to saturated during the summer rainy season. In the pine flatwoods where I have studied them for many years, they are found in the lower pockets that remain moister than the norm. In wet flatwoods and prairies, such as Kissimmee Prairie Preserve State Park, they are more uniformly distributed. Catesby's lilies also require high light levels to prosper. Areas that become overgrown due to lack of regular fire soon lose their lily population. Plants may linger as bulbs beneath the soil surface for years, but may not even produce leaves while they wait for things to open up. Plants quickly respond to fire; both because it reduces competition from neighboring plants (especially the woody ones) and because it provides a shot of fertilizer in the ash. Areas that have recently been burned often have significantly larger populations of blooming lilies.

Like other lilies, Catesby's lily loses its leaves in late fall and produces new ones in early spring. Before blooming, a dense rosette of linear, pointed leaves arises around the bulb; each leaf is about 2-3 inches long. The flower stalk eventually emerges from this rosette in



This painting of Catesby's lily was created by FNPS member Kara Driscoll by building up glazes of acrylic color in layers. Kara calls the lily "an incredible burst of color" with "bright red and yellow flowers hovering in the air over a sea of green." Kara donated her artwork as a fundraiser for FNPS, and the lily appears on apparel that can be purchased on the FNPS website. Visit <https://www.fnps.org>, click on "Join/Support" and then "FNPS Merchandise."

early summer and elongates throughout the next 3 months or so. By early September, it reaches its mature height of about 2-3 feet.

Individual plants rarely produce more than 1 flower, but these are spectacular. The blooms vary in color from yellow (a fairly rare color) to almost red, but most are a brilliant orange with darker spots near the base of each petal. The amount of spotting is also extremely variable. Each flower is 3-4 inches across and remains open for about a week. They attract a variety of pollinators, but seem to be pollinated mostly by large swallowtail butterflies—especially Palamedes and spicebush swallowtails.

Pollinated flowers produced elliptical seed capsules about 2 months later. Each produces hundreds of papery seeds, designed to blow away a short distance from the parent plant. Few

seeds eventually grow into new lilies and it takes several years before they reach maturity and produce flowers. Plants are also generated by the bulbs. Like other lilies, mature bulbs produce "bulblets" off the side and these can produce new plants as well.

Though beautiful, Catesby's lily is not easy to grow in the landscape or easy to propagate from seed. For this reason, it is rarely offered for sale by commercial nurseries in Florida or elsewhere. I have had success growing it in my landscape by planting it in large landscape pots set inside a large saucer. The pots allow me to regulate the potting soil and light, and the large saucer maintains the moisture. During the summer when rains are more predictable, the saucer stays full and the soil in the pot remains nearly saturated. Under these conditions, my lilies have fared very well. I have never had this type of success planting the bulbs directly into my landscape.

Hopefully, this species will become more widely propagated and put into the hands of gardeners capable of growing it. Catesby's lily is one of my favorite Florida wildflowers and I get a thrill each year when they come into bloom. Take a hike through a wet flatwood or prairie in late September-October and look for them.

About the Author

Craig N. Huegel is owner and operator of Hawthorn Hill Native Wildflowers. He teaches biology at St. Petersburg College, and is the author of *Native Florida Plants for Shady Landscapes*, *Native Wildflowers and Other Ground Covers for Florida Landscapes*, and *Native Plant Landscaping for Florida Wildlife*. His most recent book is *The Nature of Plants: An Introduction to How Plants Work*, published by the University Press of Florida.

Craig blogs about native plant topics at <http://hawthornhill-wildflowers.blogspot.com>. This article originally appeared on his blog at <http://hawthornhillwildflowers.blogspot.com/2011/08/catesbys-pine-lily-lilium-catesbaei.html>.

FNPS Tarflower Chapter's Backyard Biodiversity Day

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licensee, and a beekeeper. A sweet feature to his exhibit were local honey products from his beekeeping.

Tarflower members organized the plant sale. The carefully planned inventory from Green Isle Gardens was just right because sales were brisk and many species sold out. Over 1,000 plants went home with guests looking to include natives in their garden and landscape plans.

Hopefully plans for the 2021 event will not require social distancing and masks. In spite of that challenge in 2020, Tarflower Chapter welcomed over 1,200 guests during the 6-hour event, a significant increase over typical turnouts of approximately 500 people.

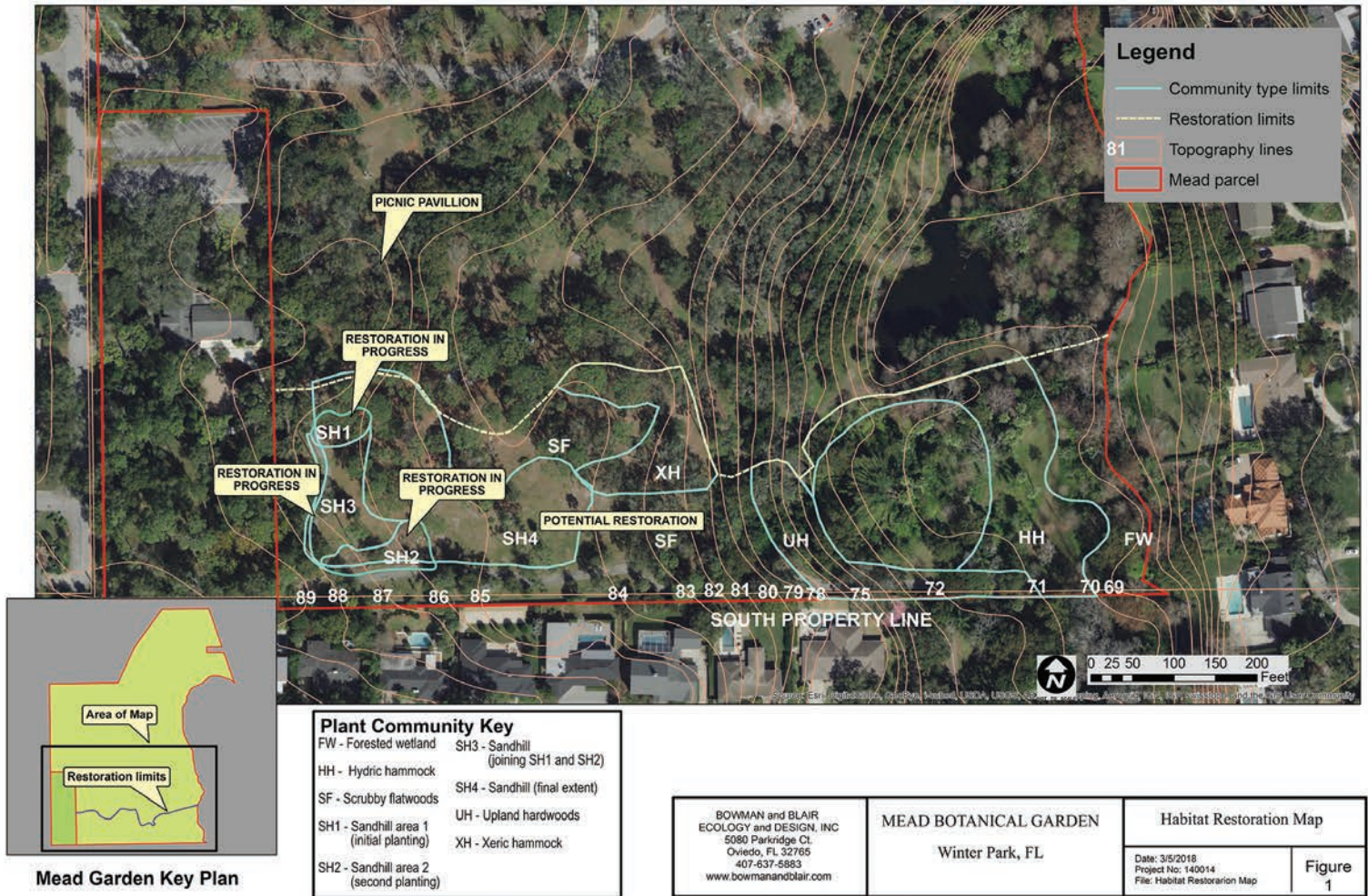
Questionnaires sent to participants via SurveyMonkey requesting post-event feedback included many positive responses such as: “Super organized; great vendors; liked the

way the tents/booths were spaced around to allow visitors to wander in the garden; loved that it was a family-friendly educational event.” Based on this feedback, we hope to welcome many 2020 participants back next year.

Generous sponsors helped offset the cost of the event. Bowman & Blair, E-Sciences, and Orange Audubon Society contributed significantly. Guests who attended select workshops or speaker talks had the opportunity to win a \$25 Ethos Vegan Restaurant gift card if their number was drawn. These and several smaller supporters helped Tarflower raise nearly \$3,500 at BBD for ongoing sandhill restoration efforts at the garden.

Sandhill Restoration at Mead Botanical Garden

The areas of Mead Botanical Garden selected for restoration work can be seen in the garden plan below and are labeled



The Mead Garden Plan. Restoration work concentrates on sandhill areas (SH) 1, 2 and 3.

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Left to right. Top row: Students from UCF's Burnett Honors College and VolunteerUCF gather in the shade for photos. Students volunteered their time to support exhibitors, set up and clean up. Photos by Anna Pepper. **Bottom row:** DRMP environmental scientist, Chris Stalder, displays a collection of live snakes at an educational tent. Photo by Rachel Peters. Mike Duffy, Casper Roberts and Natalie Dahl pose in front of a collection of signs for sold-out plants after a successful native plant sale. Photo by Jim Erwin.

Sandhill (SH) 1, 2 and 3. For perspective, SH3 is approximately 5,000 square feet.

Wekiwa Springs State Park serves as a reference for planting plans. Planting in the sandhill began in October 2014 with *Liatris* spp., dotted horsemint (*Monarda punctata*) and wiregrass (*Aristida stricta*). These initial plantings were followed by the installation of *Yucca* spp., lopsided Indian grass (*Sorghastrum secundum*), largeflower false rosemary (*Conradina grandiflora*), milkweed (*Asclepias tuberosa*), winged sumac (*Rhus copallinum*), gopher apple (*Geobalanus oblongifolius*), turkey oak (*Quercus laevis*), and common persimmon (*Diospyros virginiana*). Rescued plants like Florida greeneyes (*Berlandiera subacaulis*) and sandhill wireweed (*Polygonum nesomii*) were also planted. Efforts to protect dwarf pawpaw (*Asimina pygmaea*) and to re-establish tarflower (*Bejaria racemosa*), the chapter's namesake, are part of the restoration plans as well.

Member volunteers water plants by hand until they become established. Catherine Bowman, Mead Garden Committee Chair, coordinates work plans with the City of Winter Park to ensure landscapers do not mow over new plantings. In 2017, Tarflower had to fight invasive cogongrass (*Imperata cylindrica*) and torpedograss (*Panicum repens*) with herbicide to preserve the existing work. Future plans include a controlled burn once the grasses become fully established, with late March to early April being the best time of year to burn.

About the Author

Anna Pepper is the Tarflower Chapter Secretary and was Director of BBD in 2020. She has a Bachelor of Science degree in civil engineering from the University of Central Florida (UCF) and a Master of Arts in biology from Miami University. Her employment opportunities required her to live in California, Colorado, Texas, Pennsylvania and Florida. Exposure to such a wide array of ecosystems inspired her to learn more about them so she could help protect them. As an officer of UCF's Engineers Without Borders chapter, she worked on water solutions for the town of Belle-Anse in Haiti. Anna volunteers routinely for the City of Winter Park at Mead Garden.

Stranglers, Lovers, and Tubes

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the crotch of the tree. [Fig. 8] Despite the tantalizing possibility that this pair defied the usual courtship pattern, Jon is inclined to believe the palm predated the oak, in no small part because of the nearby presumptive palm siblings. A definitive answer will have to wait until the oak dies. Since the oak is clearly in decline, it may not be long. Jon will keep me posted.

The ability of cabbage palms to thrive alongside other trees and the unique architecture of their bootjacks, combined with special proclivities of figs and live oaks results in some of the more intriguing plant partnerships found in Florida.



Figure 8: This cabbage palm growing in Myakka River State Park is a possible candidate for being a palm that somehow germinated inside an oak.

Notes

1. Cabbage palm bootjacks are the forked "Y"-shaped leaf bases of the cabbage palm frond. They are named for their resemblance to manufactured bootjacks, which facilitate the removal of boots. Bootjacks are marcescent — they remain on the tree for an indefinite period of time after they die.
2. "*Ficus aurea* and *Ficus citrifolia* are both outstanding Florida native trees to attract a wide variety of birds, especially cedar waxwings, not to mention that their leaves serve as larval food for the ruddy daggerwing butterfly and several species of moths." Roger Hammer, responding to Sam Van Leer, Facebook posting, Florida Flora and Ecosystematics. December 2, 2017.
3. Zotz, Gerhard. "Hemiepiphyte: A Confusing Term and its History." *Annals of Botany* 111, no. 6 (June 2013): 1015–20.
4. "This tree wraps around and grows up a host tree, eventually engulfing and killing the host." Center for Aquatic and Invasive Plants | University of Florida, IFAS. "*Ficus Aurea* Strangler Fig." <https://plants.ifas.ufl.edu/plant-directory/ficus-aurea/>.
5. EatYourBackyard. "The Dreaded STRANGLER FIG - A Palm Tree Killer or Not?," May 17, 2016. <https://www.youtube.com/watch?v=JRIsuqFcQI8>.
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8. "...woundwood is the tissue that seals larger wounds in trees and returns the function to the stem." Luley, Christopher J. "Biology and Assessment of Callus and Woundwood," Continuing Education Unit, International Society of Arboriculture. n.d., 10. https://www.treerot.com/wp-content/uploads/2016/04/Arborist-News-Callus-and-woundwood_Luley.pdf

About the Author

An attendee at the first FNPS annual meeting, Jono Miller is a former Director of the Environmental Studies Program at New College of Florida and has just written *The Palmetto Book: Histories and Mysteries of the Cabbage Palm*, which will be available from the University Press of Florida starting in mid-March. It contains two dozen essays dealing with both the natural and cultural history of our state tree, and this article consists of bonus material not included in the book. If you have interesting examples of, or stories about, cabbage palms, he'd love to hear about them by email cabbagepalm@gmail.com. Or post your observations and view more photos of love trees and stranglers at <https://palmettobook.blog>.

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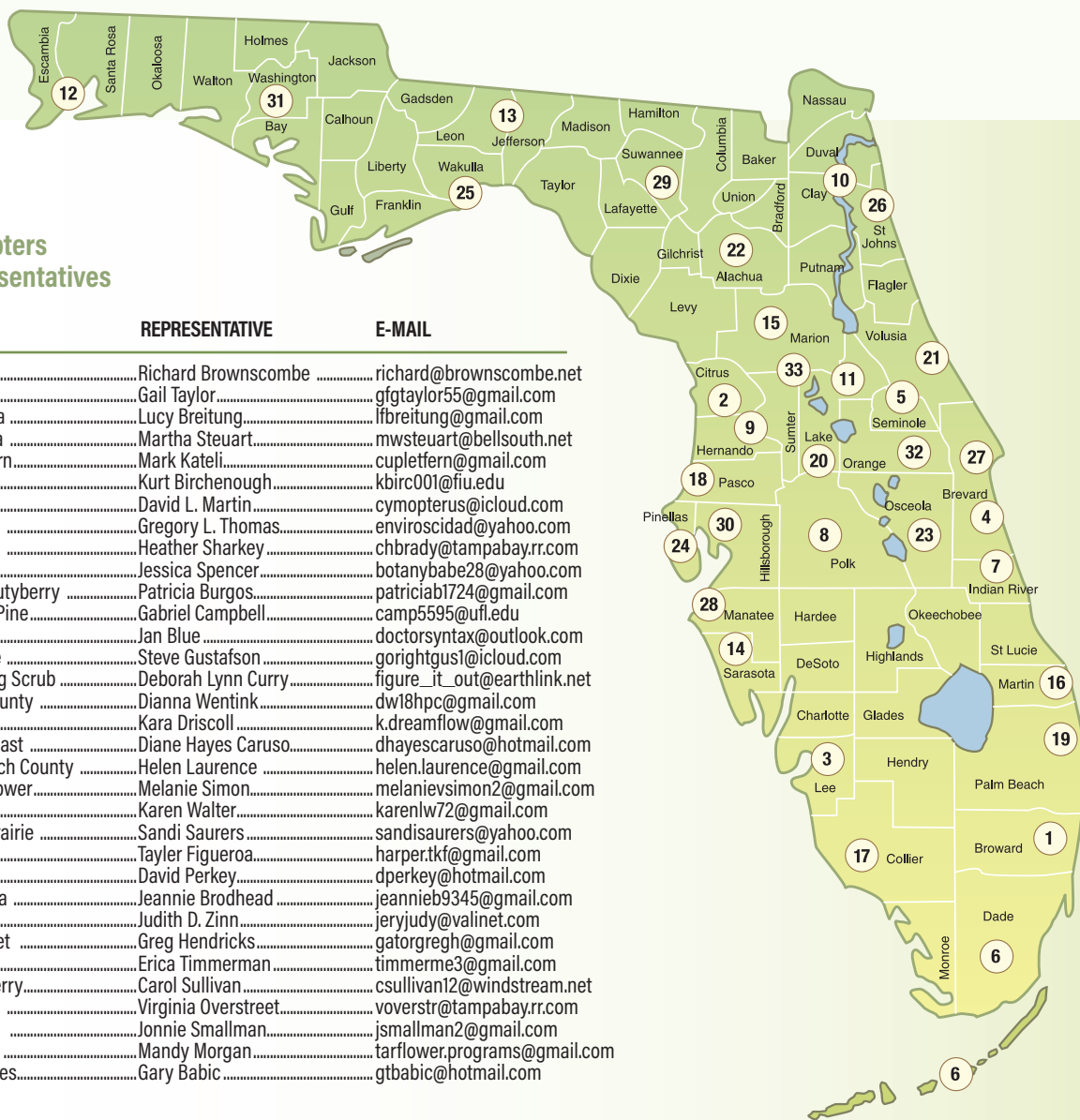


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