# Go Native!

### what's it all about and how it works

Silver Palm Garden Club Royal Poinciana Garden Club January 23, 2019



George D. Gann
Chief Conservation Strategist
The Institute for Regional Conservation
<a href="https://www.regionalconservation.org">www.regionalconservation.org</a>



### **Acknowledgements**

- o **Carol Stankee**, for the invitation and **Cara Abbott**, for coordinating.
- O The original NFYN authors: Melissa Abdo, my parents Joyce & Donald Gann, the FISF team Steve Woodmansee & Keith Bradley, and our wildlife specialists Emily Grahl and Kirsten Hines.
- Kay Brennan (retired) from Palm Beach County Environmental Resources Management; tirelessly working on upgrading butterfly and other animal data.
- All the IRC folks, past and present, including our Program Manager and Education & Outreach Coordinator Cara Abbott.
- Our NFYN sponsor, past as present.
- Photographers, including Roger Hammer, Keith Bradley, Shirley Denton,
   James Johnson and many others.

### **Outline**

- Background on IRC, our mission and history.
- Conservation context and IRC program and the why NFYN is important.
- Natives For Your Neighborhood and how it works.
- A look forward to where NFYN is heading.



Learn More

IRC follows a different conservation model – rather than focusing on charismatic animals or plants with narrow global ranges, we seek to protect, restore and manage all biodiversity on a regional basis, and to **prevent regional extinctions of rare plants, animals and ecosystems**. This is our 35<sup>th</sup> Year!

Restoring the link between people and nature

# **IRC Program in South Florida**

Since 1995, dozens of projects in collaboration with federal, state and local agencies, non-profit organizations and educational institutions:

- Floristic and faunistic inventories, and online resources
- Endangered species surveys, mapping, demography and status surveys
- Vegetation mapping and ground truthing
- Invasive species mapping, control and monitoring
- Ecological restoration programs, including rare species reintroductions and augmentation, wildlife enhancement and prescribed fire
- Educational training and workshops, and Natives For Your Neighborhood online
- Regional ranking system used by agencies including Everglades National Park

Work on replicates at different scales, in different places, with different biota



### Some IRC Online Resources







Conservation of rare plants, animals, and ecosystems

### Floristic Inventory of the Florida Keys



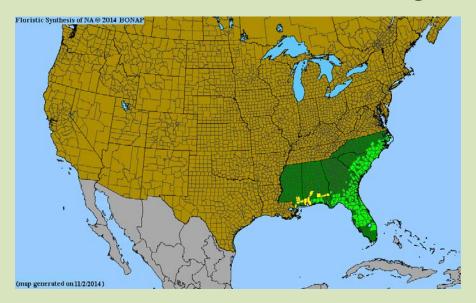




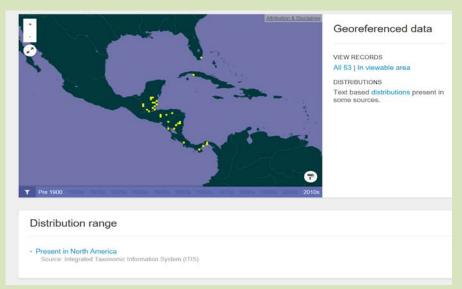




# South & North Range Limits in South Florida



Gordonia lasianthus (BONAP.org)



Oncidium ensatum (GBIF.org)

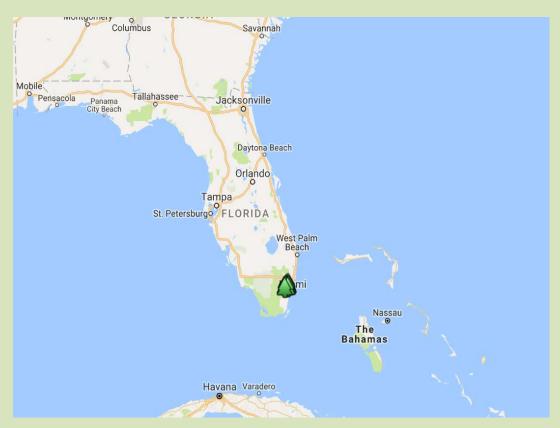


K. Bradley

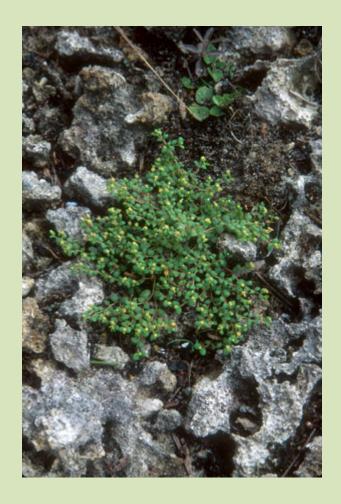


C. McCartney

# South Florida Endemics (probably >50)



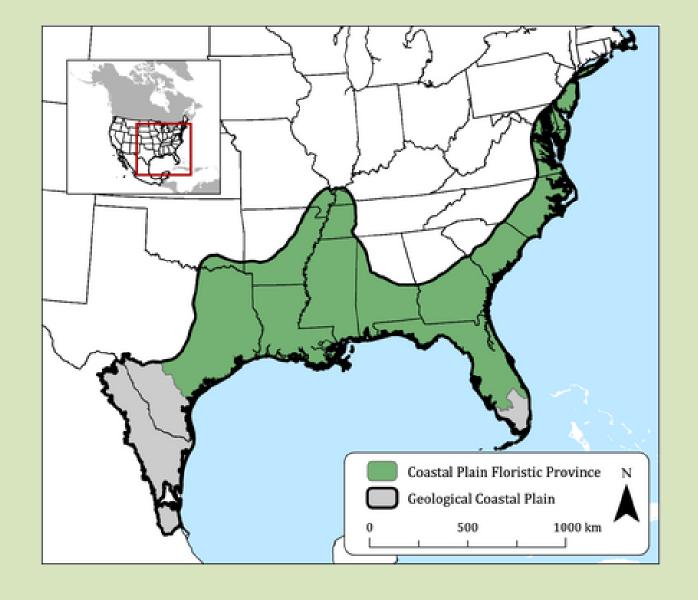
Euphorbia deltoidea subsp. deltoidea (regionalconservation.org)



# Conservation Geography of South Florida



From: Myers et al. 2000. Biodiversity Hotspots for Conservation Priorities. <u>Nature</u>. 44% of plants and 35% of vertebrate animals in 25 hotspots covering 1.4% of global land area.



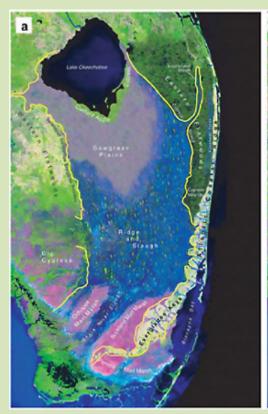
North American Coastal Plain Global Hotspot Noss et al. 2014

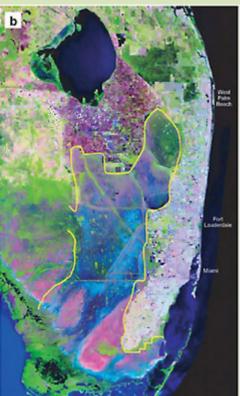


Davis, 1943



What we have to work with







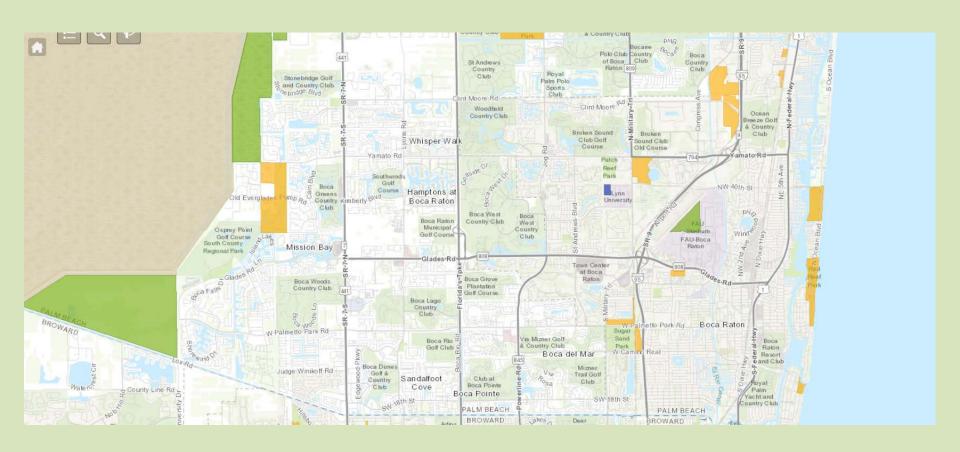
- Everglades transformation
- Coastal development & erosion
- Destruction of critical upland habitat in the interior



>50% of region in conservation; CBD 2020 Protected Areas Target = 17%. So everything should be great – but its not.

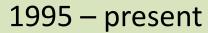


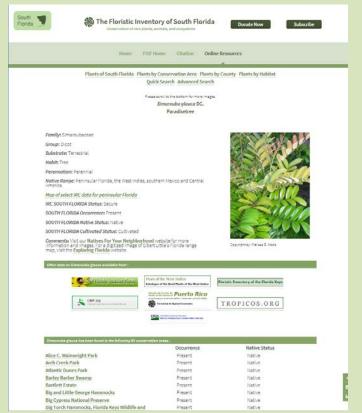
# Conservation lands along the Atlantic Coastal Strip are few and scattered

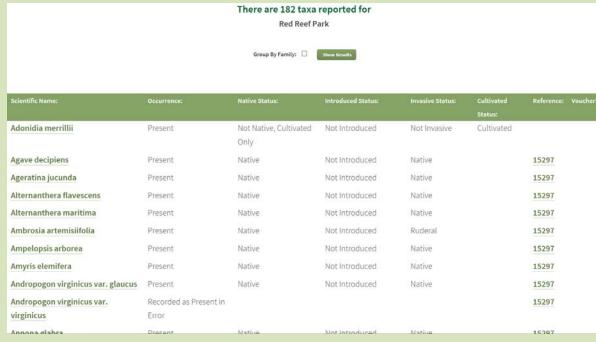


**Boca Raton** 

# The Floristic Inventory of South Florida









### **SOME QUESTIONS**

- Are very small, fragmented conservation areas important?
- How well does the current conservation system protect rare vascular plants?
- Have there been regional extirpations?

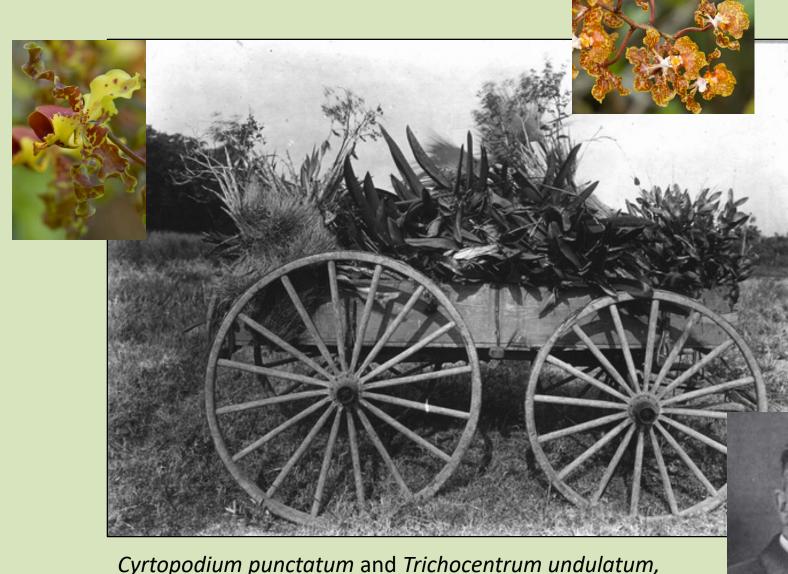
# Methods of the FISF



Botanist George Avery, c. 1970s Courtesy Sally Channon

- Comprehensive (looks at all species in region)
- Collates all available data on conservation areas (published and unpublished, FNAI data, herbarium specimens, field notebooks, personal communications)
- Uses NatureServe assessment methods at a smaller scale
- Filters for rarest species (SF1, SFH, SFX)
- Intensifies work on rarest species and conservation areas with little or no data





Cyrtopodium punctatum and Trichocentrum undulatum, et al. collected north of Flamingo in what is now Everglades National Park, April 1916, by J.K. Small and colleagues.

1990s - Contributed to original management plans for several Palm Beach County Natural Areas, including Delray Oaks, Seacrest Scrub and Jupiter Ridge.

#### PALM BEACH COUNTY'S NATURAL AREAS

#### 1. NORTH JUPITER FLATWOODS + 3377 (burth St., Jupiter / P / (100)



This 160-acre natural area preserves slash pine habitat. Other plants found sash pine habitat. Other plants found at North Aupitor Flatwoods include saw polmette, giant wild pine, St. John'swort, paragliques researching. largeflower rosegentian and pink sundew. Parking is available at Jupiter Community Park.

#### 2. JACKSON RIVERFRONT PINES



This 3-acre natural area preserves a small portion of the Loxahatchee River shoreline. Even a tiny piece of protected habitat makes a difference – osprey, great habitat makes a difference - osprey, great horned owt, and gopher tortobse have been recorded at this site.

### B & 2 A 册 第 A P 🙉

Explore endangered scrub habitat within this 120-acre natura area located in the shadow of the Jupiter Inlet Lighthouse. A boardwalk leads to a covered observation deck overlooking a mangrove wetland restoration area.







DELAWARE SCRUB + 47 N Delowers Blod. Inch.

#### 8 & 4 A A B = A P 🐽



A twenty-minute walk takes visitors through a pine flatwoods forest, over a cypress swamp, across desert-like scrub habitat, and ends at a mangrove overlook. Wildlife observed on the 16-acre site includes

#### 5. LIMESTONE CREEK + 6570 (burth St., Jupiter 8 4 8 A 8 6 8 6 A P ...



This 52-acre natural area protects remnants of Umestone Creek

- a "blackwater" tributary of
the Loxahatchee River. Wetland restoration along the C-18 Canal provides habitat for wading birds, manatees, and schools of fish.

#### O. CYPRESS CREEK + 10035 Indicatown Rd., Jupiter

A two-mile stretch of NENA's Historic Jupiter - Indiantown Trail passes through the western half of this 2,041-acre natural area. The multi-use trail allows hikers, bikers, and equestrians ess to several wetland overlooks and shade shelters. Additional hiking and equestrian trails are located in the eastern portion of the natural area







#### 7. PINE GLADES



A wetland wonderland, the 6,651-acre Pine Glades Natural Area attracts colorful wading birds including roseate spoonbill, great blue heron, little blue heron, and white this, Restoration projects within the natural area restored water levels and removed Invasivo nonnativo

Wetlands are found throughout this 138-acre natural area. During the rainy season (June - November) up to three feet of water fill the depression marshes. The water disappears during the winter and spring, leaving behind muddy circles on



### 9. JUPITER RIDGE • 1805. U.S. Highwy I, Japiter



Jupiter Ridge preserves 270 acres of scrub - one of Florida's rarest habitats. Walk ancient sand dunes covered with sand pine trees and pricklypear cactus. The western edge of the natural area meets the Atlantic Intracoastal Waterway where red mangroves

#### 10. LOXAHATCHEE SLOUGH . Poin Book Gardens

#### 5 7 5 0 R R A B E E E B B P 🙉 🎕



The 12,841-acre Loxahatchee Slough is the county's largest natural area. Cypress domes dot the landscape and depression marshes fill with water during the summer and fall. Whitetailed deer, bobcats, and baid eagles are just a few of the animals found here. A five-mile

stretch of NENA's Bluegill Trail passes through Loxahatchee Stretch of NEVA's abuegin and passes introde. South allowing hikers, bicyclists, and equestrions a grand view of the natural area. Fishing permitted from the banks of the C1B Canal. Parking, cance launch, observation tower, and restrooms are available at Sandhill Crane Access park— 8175 PGA Blvd. in Palm Beach Gardens.

#### 11. HUNGRYLAND SLOUGH 1 to the second of the second



A portion of the Florida Trail Association's Ocean-to-Lake Hiking Trail travels through this 2,967-acre natural area. Much of Hungryland Slough is underwater during the rainy season (June - November). The best time to travel the trail is in winter and

#### 12. SWEETBAY + 12560 Aviation Blvd., Palm Boach Gardens

# 8 & A & 🖹 🖺 D P 縫 🙉

This 1,094-acre natural area is adjacent to the North County Airport located off of the Bee Line Hwy. (S.R. 710), one mile west of birds, including snowy egret, black-crowned night-heron, and the endangered wood stork.

### 13. JUNO DUNES - 14200 S. U.S. Hwy. 1 (occur/front/tred) 14500 S. U.S. Hwy. 1 (west tred), Juno Booch

### 6 K A # 2 R 2 B A P M 🔏 🧆

Visitors to the 569-acre Juno Dunes Natural Area can travel from the Atlantic Ocean to the Atlantic Intracoastal Waterway The ocean-front tract has a great view of the surrounding area alop an ancient sand dune. The west tract has several miles of trails and floating docks to allow boaters access to the site. Restrooms available at Loggerhead Park.





#### 14. FRENCHMAN'S FOREST + 1920 Property Ferre Rd, PR Gerlens 8 M M M M D P 🗯 🧆



The wet, low-lying areas of this 172-acre natural area contain giant leather fern and cypress. The drier ridges are home to slash pine and saw palmetto. More than 5,000 red mangrove seedlings were planted around the tidal pond overlook to restore wetland habitat. Animats observed on the site include great horned owl, red-bellied woodpecker, and eastern gray squirrel.



Natural areas may be temperarily dosed for environmental activities. Check the Department's web site for current information regarding natural area accessibility and public hadities.

#### 15. LAKE PARK SCRUB + Ido Pol-



Creat Florida Steding Stell

The 55-acre Lake Park Scrub Natural Area preserves scrub habitat, one of Florida's most endangered ecosystems. It is estimated that less than 2% of Palm Beach County's historic scrub remains. The natural area is an important refueling stop for migrating birds in the spring and fall.

Che Hoore Ed. 30%

#### 16. WINDING WATERS + West Prin Beech

Roughly half of this 548-acre natural area was cleared for agricultural purposes. The impacted area was restored to shallow-water and deep-water marshes. Birdlife is abundant on this site. Bald eagle, anhinga, green heron, belted kingfisher, and loggerhead shrike are just a few of the birds observed at Winding Waters Natural Area.





The 1,737-acre Pond Cypress Natural Area is home to towering cypress trees covered in airplants such as the giant wild pine. Many areas of the site are underwate during much of the year.

#### 18. ACREAGE PINES . 6405 With Ave. II., Loochetchee 医热力细囊节中 🧀

Acreage Pines Natural Area preserves 124 acres of wetlands and pine lands boardwalk allows visitors an opportunity to watch drogonflies, herons, and ogrets hunt for food in the wetlands. A hiking trail, what the adjacent to Acreage Community Park. A ng trail winds through slash pines and saw palmettos. Keep an eye out for the acrobatic displays of common

#### 19. ROYAL PALM BEACH PINES + Red frim Beech



Wetlands cover more than 40% of this 772-acre site. The natural area attracts many birds, including bald eagle, red-shouldered hawk, and Florida sandhill crane. Other animals sighted include bobcat, southern cricket frog, and eastern box turtle.

#### 20. SOUTH COVE . Flegler Drive, West Pelm Booth 占益左續 M P

Visitors can stroll down a 556-foot boardwalk that extends to one of three mangrove islands within the Lake Worth Lagoon. Six acres of restored wetlands support local fisheries, wading birds. manatees, and sea turities. Motored parking available along Flagler Drive.

#### 21. SNOOK ISLANDS + MH follow M Job West B M B M M B M A P



This 118-acre wetland restoration project created 11 acres of mangroves and 2 acres of syster reets within the Lake Worth Lagoon. Public use facilities include a boardwalk, kayak launch, and floating dock. Restrooms available at Bryant Park.



This 33-acre natural area was part of the now-closed A. G. Holley State Hospital property. The site contains Florida scrub and scrubby flatwoods habitats. Sand pine and saw palmetto are found throughout, along with Florida rosemary, powder-puff lichen,

#### 23. FAST CONSERVATION AREA



Located in the Agricultural Reserve, this 196-acre site is comprised of six separate pieces of land that were once mined and used for tree nurseries. A in the mined section. Cypress strands are scattered throughout the East

### もま# C M P





The 39-acre High Ridge Scrub Natural Area protects plants and animals that live in scrub habitat. Many of these species are protected, including the gopher tortoise. Other animals observed on the site include gulf fritillary butterfly, cicada, yellow garden spider, and American kestrel.

#### 25. HYPOLUXO SCRUB . 150 Hypoluxo Rd., Hypoluxo 医利维巴氏的 P

visitors a bird's-eye view of the 98-acre natural area. A pedestrian entrance off of Overlook Rd. allows for easy ac to the center of the site. The dry scrub is home to Florida rosemary, sand live oak, hog plum, six-lined race coachwhip, and brown thrasher

#### 20. ROSEMARY SCRUB + 2901 N. Secrest Blvd. Routon Book

### もが紹**用**P



One of our smallest natural areas, the 14-acre Rosemary Scrub is named for a plant related to a familiar cooking herb - the Florida rosemary. Other plants found on the site include netted pawpaw, cabbage palm, nodding pinweed, and several species of native

#### 27. OCEAN RIDGE . Coning St. Ocean Bidge

#### 5.4 = 5.5 组织 6.4





The Ocean Ridge Natural Area is accessible by boat, bicycle and on foot. Red, black, and white mangrove trees dominate the landscape. These trees play an important role in the life cycle of many animal species, including wading birds, fish,

#### 28. SEACREST SCRUB • 3000 S. Seconst Blind., Boymon Boach



The 54-acre Seacrest Scrub Natural Area is a green island of wilderness in the middle of an urban landscape. It is home to the protected gopher toricise. Other animals observed on the site include American redstart, green

### B 新羅墨西 P 縫



#### 30. YAMATO SCRUB + 701 (lint Hoore Mr. Bora Reton 医复数细胞 P



forida scrub habitat covers 63% of Yamato Scrub. Plants found in this 217acre site include sand pine, tarflower, and skyblue lupine. A 10-acre basin marsh located in the northern portion of the natural area contains maldencane sawgrass, and sand cordgrass. More than three miles of traits are available for hiking. Bridges across canals and a tunnel underneath Clint Moore Rd.



Access to this 79-acre natural area is through the Boca Raton Spanish River Library parking lot. A 12-foot-wide multiuse trail winds along Blue Lake - property once owned by the IBM Corporation. An eight-acre wetland restoration project inside the natural area

provides natural for exprey, mottled duck, black-necked stilt, great blue heron, and white ibis. The natural area is named for a common dragonfly found throughout the woodlands.

# Testimony to Florida Rare Plant Advisory Council 1996 listings





80 Species To Be Added to Florida's Endangered Species List

### **Online Since 2001**





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 $\frac{\text{Plants of South Florida} \cdot \text{Plants by Conservation Area} \cdot \frac{\text{Plants by County} \cdot \text{Plants by Habitat}}{\text{Quick Search} \cdot \text{Advanced Search}}$ 

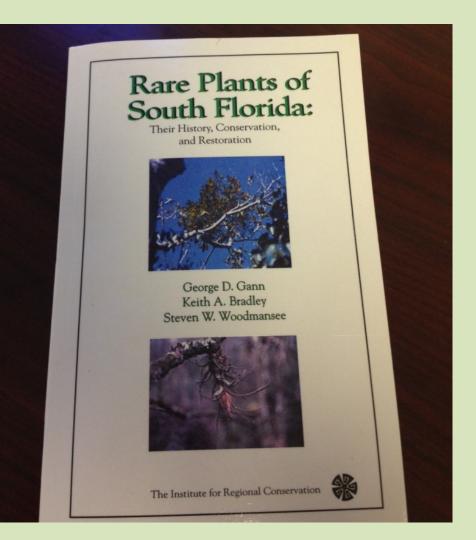
There are 425 conservation areas in South Florida

#### Filter Conservation Areas

String Search:				
	Search	Clear		

Conservation Areas:	Counties:
A.D. 'Doug' Barnes Park	Miami-Dade County
Alice C. Wainwright Park	Miami-Dade County
Allapattah Flats Wildlife Management Area	Martin County
Alligator Creek Preserve	Charlotte County
Amberjack Slough	Charlotte County
Andrew Dodge Memorial Pineland	Miami-Dade County
Arch Creek Addition	Miami-Dade County
Arch Creek Park	Miami-Dade County
Arthur R. Marshall Loxahatchee National Wildlife Refuge	Palm Beach County
Atlantic Dunes Park	Palm Beach County

# 2002



### Rare Plants of South Florida published

- About 1,435 native plant taxa in South Florida.
- About 1/4 either critically imperiled or possibly extirpated (<u>the super rare</u>). Only 1/4 was thought to be secure. About 8% were reported as possibly extirpated.
- The importance of both large and small conservation areas were documented.
- Patterns of rarity were explored (Pteridophytes, epiphytes, tropical plants)

### **Acknowledgments**

We would like to thank the many individuals and organizations that have contributed to this project over the last seven years. We especially are grateful for the support of The Institute for Regional Conservation's board members Robert Heinzman and Jena Matzen, who have contributed to the project since its inception. Kellie Westervelt has provided continuous encouragement and assistance with the administration and funding of the project. Doria Gordon provided key guidance in the early design phases.

The backbone of this project, the Floristic Inventory of South Florida, was made possible by a generous, unencumbered donation from the Steve Arrowsmith Fund. Additional funding for specific elements of the inventory, and for database development, was received from the South Florida Water Management District, U.S. Fish and Wildlife Service, National Fish and Wildlife Foundation, and Florida Department of Environmental Protection. A recent agreement with Fairchild Tropical Garden has allowed IRC to assist the Garden with its rare plant program while conducting research essential to our own project. The preparation and publishing of this manual was made possible by a grant from the Elizabeth Ordway Dunn Foundation.

Many others have contributed in important ways. Most especially, we would like to thank those who contributed time and resources to help us conduct floristic inventories and rare plant surveys on conservation lands: Janice Duquesnel, J.B. Miller, R. "Bobby" Hattaway, Jim Duquesnel, Mike Owen, Elizabeth Golden, Sally Braem, Renate Skinner, and Erik Johnson of the Florida Park Service; Sandra Vardaman of Martin County; Joy Klein of MiamiDade County, Roger Clark, Rob Irving, and Rick Joyce of Lee County; Mike Bodle, Amy Ferriter, and Dan Thayer of the South Florida Water Management District; Tony Pernas, Toby Obenauer, and Matt Patterson of the National Park Service; Tom Wilmers, Brian Lockwood, and Dawn Jennings of the U.S. Fish and Wildlife Service; Robert Guerra of the Florida Fish and Wildlife Conservation Commission; Dena Garvue, Cynthia Lane, Meghan Fellows, and Jennifer Possley of Fairchild Tropical Garden; Juan Fernandez of the City of Miami; Dick Workman of Coastplan, Inc; Misty Nabers of Gasparilla Island Conservation and Improvement Association; and Dee Serage of Sanibel-Captiva Conservation Foundation.

Our colleagues in the field, Roger Hammer and Chuck McCartney, have continued to botanize with us and make important contributions to the project, including sharing their vast knowledge of the flora of South Florida. Tiffany Troxler Gann assisted with the fieldwork and the collection of herbarium specimens. We would also like to thank the numerous land managers throughout South Florida for allowing us access to the region's conservation areas, providing in-kind contributions such as off-road transportation, and for sharing their data and knowledge with us. In particular, we would like to thank Dick Roberts for providing us with important feedback on plants at Jonathan Dickinson State Park and Steve Farnsworth and Frank Griffiths for their assistance concerning conservation areas in Palm Beach County.

We must acknowledge the support of the staff of many herbaria, without whose support this project would not have been possible. Fairchild Tropical Garden provided us almost unlimited access to their herbarium and library, and we especially thank Lynka Woodbury for her assistance. Fairchild Keeper of the Herbarium, Gerald "Stinger" Guala, used our data to produce a searchable database of plants in conservation areas for the Internet, which was a precursor to the Floristic Inventory of South Florida Database that is now available at www.regionalconservation.org. Mary Collins provided us with much needed information on the Garden's accessioned plants. We wish to thank the staff of The Institute for Systematic Botany at the University of South Florida, in particular Richard Wunderlin and Bruce Hansen, for providing us with access to the herbarium, as well as for a continuous exchange of information on the flora of South Florida. Dan Austin at Florida Atlantic University provided us with access to the FAU herbarium and much needed information on the flora of South Florida. We also would like to thank Kent Perkins from the University of Florida, Loran Anderson from Florida State University, Rusty Russell from the Smithsonian Institution, Jackie Kallunki and Sarah Hunkins from the New York Botanical Garden, Sharon Yelton and Emily Wood from Harvard University, and the staff of numerous other herbaria who provided us with access, label data, and other information. Maika Hoffmann assisted with data collection at the New York Botanical Garden and Alíce Warren-Bradley assisted us at the Smithsonian Institution.

Joyce and Donald Gann, Roger Hammer, and Tiffany Troxler Gann all provided major reviews of this manual. Robert Heinzman, Kellie Westervelt, Doria Gordon, Alíce Warren-Bradley, Andy Clewell, Linda Chafin, and Dena Garvue reviewed select sections. Chuck McCartney and Don Keller reviewed the Orchidaceae accounts, David Hall and Gerald "Stinger" Guala reviewed the Poaceae accounts, Dan Austin reviewed the Cuscuta accounts, and Don Keller and Gil Nelson reviewed the pteridophyte accounts. Ann Williams and Janice Duquesnel reviewed the species accounts of plants from the Florida Keys.

We also would like to thank the eleven land managers who attended a peer review workshop in March, 2001, at Fairchild Tropical Garden: Roger Clark, Janice Duquesnel, Frank Griffiths, Brenda Hahr, Roger Hammer, Brian Lockwood, Joe Maguire, Mike Owen, Matt Patterson, Tony Pernas, and Kellie Westervelt. The feedback received at that workshop was extremely useful in completing this manual, and we thank Fairchild Tropical Garden as an institution, and Dena Garvue and Cynthia Lane as colleagues, for their support for this event. Anne Statham of the University of Wisconsin, Parkside, organized the workshop evaluation, assisted by her husband Mike Zupan.

While we have received tremendous support for the Floristic Inventory of South Florida and this manual, the content and recommendations are entirely our responsibility. We realize there may be errors and omissions, and we can only hope that the readers will bring these to our attention so that we can amend the manual in future editions.

## Subsequent Collaborations and Work

### Management and Monitoring of Miami-Dade County Fragments



### MIAMI-DADE COUNTY NATURAL AREAS MANAGEMENT PLAN

Miami-Dade County Natural Areas Management Working Group

Department of Environmental Resources Management (DERM)
Technical Report Number 2004-1











Year 11 report: Biological monitoring for plant conservation in Miami-Dade County natural areas

> Report to Miami-Dade County for (1-year extension of) Resolution #R-808-07 September 2013

FAIRCHILD TROPICAL BOTANIC GARDEN

# **Volunteers Needed** for Pine Rockland **Restoration Event** on Saturday, March 4 from 9 am—12 pm

- Join IRC on Mar 4, 2017, during National Invasive Species Awareness Week (<a href="https://www.nisaw.org">https://www.nisaw.org</a>) to help restore a beautiful, private pine rockland in Homestead, Florida.
- There will be activities for all skill levels; such as but not limited to: tree and brush cutting, invasive species control, plantings, nature/recreation trails maintenance.
  - A short tour of the pine rockland will occur by homeowners, so arrive on time.
- Come prepared: Closed toe shoes required, long pants/ sleeves, hat, sunglasses, and sunscreen are recommended. Volunteers should bring a reusable water bottle as we will provide drinking water and light snacks.
- All participants are required to sign a release form prior to participation. Volunteers under the age of 18
  must have parental signature.
- RSVP to Maha Nusrat (mnusrat@regionalconservation.org or 305-505-9192) for the address of the event and additional information.



### IRC Awarded Grant From the City of Miami Beach.

Nednesday, May 31, 2017

IRC is excited to announce that we have been awarded a \$5,000 Environmental and Sustainability Grant from the City of Miami Beach to promote envistewardship through a Beach Restoration program. We plan on using volunteers to help us remove invasive plant species and replace them with plant Miami's dune ecosystem. IRC has a long history of restoring Miami Beach and we are thrilled to continue that work this year.

Stay tuned throughout the next year to find out how you can participate in our volunteer days!



# Restoration of Degraded Ecosystems





## 2003-2008, Long Pine Key, Everglades National Park

- 31 species studied, 21 thought to be present, and 10 thought to be possibly extirpated.
- One terrestrial orchid species (*Ponthieva brittoniae*) was rediscovered.
- 79 long-term monitoring plots and 24 monitoring transects were installed.
- 596 rare plant stations with coordinates were recorded.
- 12 species were identified as candidates for augmentation or reintroduction.
- Trials were initiated with 9 species in collaboration with Marie Selby Botanical Garden, FTBG, Miami-Dade county and others.

#### Rare Plant Monitoring and Restoration on Long Pine Key, Everglades National Park

FINAL REPORT, YEAR 5 Cooperative Agreement #H5284-03-0044

George D. Gann, Kirsten N. Hines, Sonali Saha and Keith A. Bradley

March 12th, 2009



Submitted by
The Institute for Regional Conservation
22601 5.W. 152 Avenue, Miami, Florida 33170
George D. Gann, Executive Director

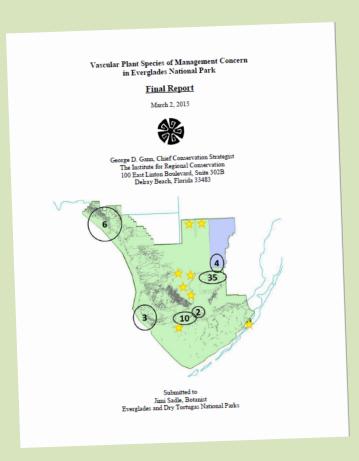


Submitted to
Jimi L. Sadle
Contracting Officer Technical Representative
Everglades National Park
40001 State Road 9336
Homestead, Florida 33034



Rare plants are "COMMON" on Long Pine Key

# Rare Plants of Everglades National Park - 2015





Washington Post, March 2015

59 "Species of Management Concern" Studied



56% of SOMC's occur in hardwood hammocks, 25% in pine rocklands, 15% in coastal woodlands





Florida bristle fern (*Didymoglossum* punctatum subsp. floridanum) studies prior to federal listing.







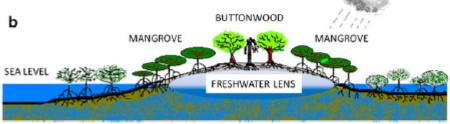
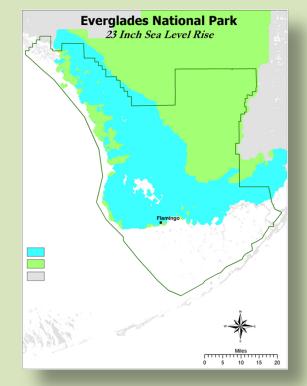
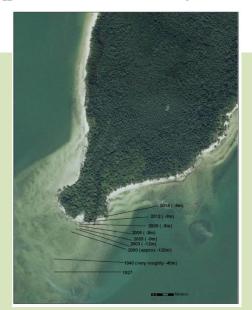


Fig. 1 a Sketch of a coastal hammock on an elevated rise flanked by buttonwood forests at intermediate elevations and mangrove forests at sea level. Also shown are the vadose zone (with water drops), freshwater lens (where shading indicates increasing brackishness towards the bottom of lens), and seawater. Bottom sketch b shows a rise in sea level that decreases the volume available to hold freshwater (shrinking of the freshwater lens), with consequent mortality of coastal hammocks and the migration of buttonwoods and mangroves along with the decrease in the freshwater lens. Elevation exaggerated in illustration to indicate water pools







Friends of the Gifford Arboretum October Meeting

# "Everglades Restoration and Rare Plants

-Including a Critical Element of Biodiversity"

By George Gann



Wednesday, October 5th, 2016 at 7:00 pm in Cox Science Center, Room 166 at UM

George Gann has devoted his life to understanding Florida's native plants and to teaching others of their importance. He is founder and Chair of The Institute for Regional Conservation, and this will be a great educational opportunity to better understand why rare native plants are important, and why they should be part of Everglades restoration planning.

### Don't miss our other upcoming events:

November 2<sup>nd</sup> 2016: Barbara McAdam of Miami-Dade's UF/IFAS/Extension Service will present Gardening on a Mission: Water Conservation and Saving the 39 Imperiled Butterflies of South Florida. 7 pm Cox Science Center Room 166

October 19<sup>th</sup> 2016: Music in the Arboretum with performance by Leslie Miller 6pm in the Gifford Arboretum

October 27th 2016; Arboretum walking tour- "The Sacred and Magical Trees of the Arboretum" with Dr. John Cozza and

# Rare Plants of the Everglades

Of the 808 native species, **397 species** are ranked as regionally rare or possibly extirpated in South Florida by IRC.

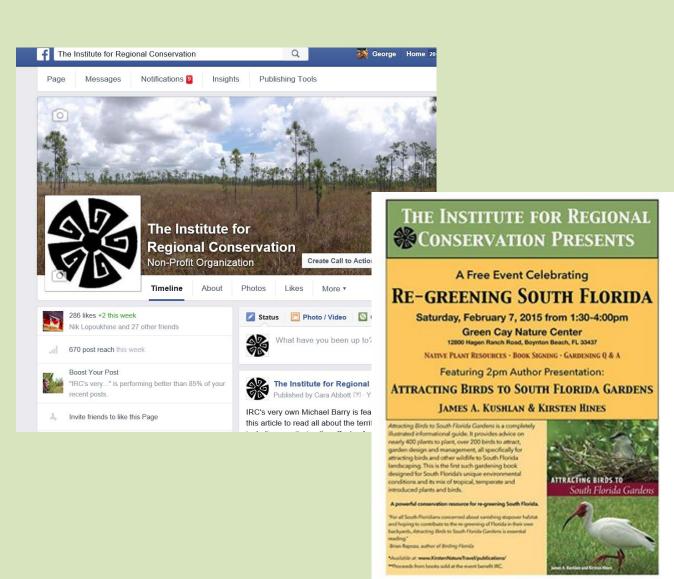
> Or just under half of the known Everglades flora.

About 19% of the Everglades flora is listed by the State of Florida.





# **Education & Outreach**





Cara Abbott, Coordinator

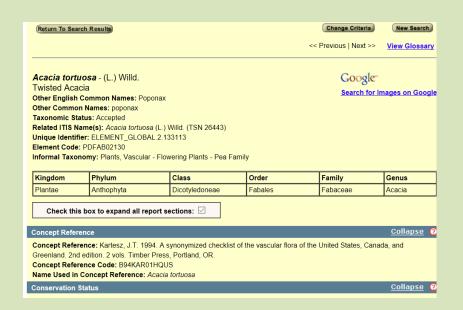
Thelypteris sancta Discovered 2006

# Some Contributions to Big Data



Peperomia glabella Rediscovered 2003

- Species missed
- New discoveries
- Extirpations and rediscoveries
- Discrepancies between assessment scales
- Local taxonomic concepts
- National and global assessments





INTERNATIONAL STANDARDS FOR THE PRACTICE OF ECOLOGICAL RESTORATION - INCLUDING PRINCIPLES AND KEY CONCEPTS

FIRST EDITION: December 2016

Tein McDonald, George D. Gann, Justin Jonson, Kingsley W. Dixon



George Gann (IRC, SER)
Tein McDonald (Society
for Ecological Restoration
Australasia, Australia)









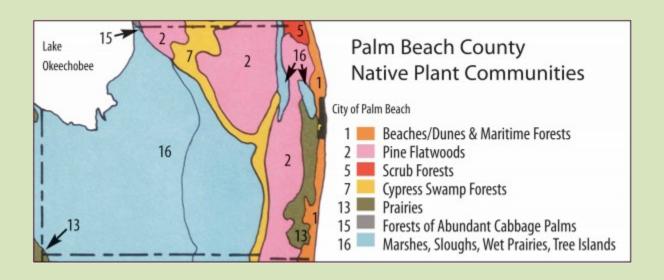






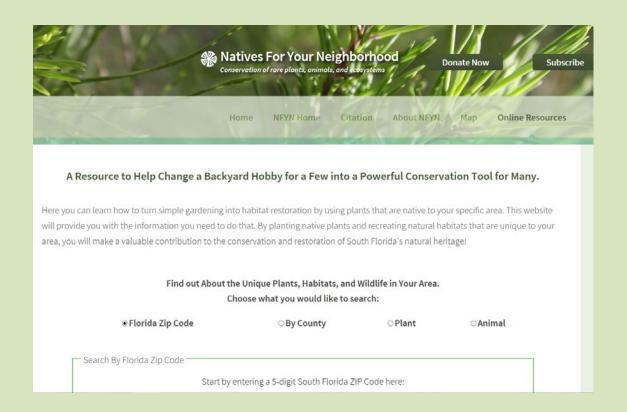
### **How Can We:**

Improve our sense of place?
Increase success of native plantings?
Connect conservation areas?



About 775 species of native plants have been recorded in Palm Beach County, a little more than one half of the South Florida total and one quarter of the Florida total. Some of those are now extirpated, that is, regionally extinct. As individuals we can play a role in conserving what remains and restoring some of what has been lost.

# What We Can Do:





Increase plant and animal habitat and connectivity throughout the urban and suburban matrix

- Through use of native plants within their historical ranges
- Gardening for wildlife

# What is a Native Plant?

- Simply put, a plant that historically grows in a specific region
- We call something a native if it's natural range includes southern Florida, i.e. here without modern human involvement
- Its not always easy to figure out, so there are a few species that we are just not sure about

Sea oats (*Uniola paniculata*) – iconic species of Florida beaches, and beaches of the eastern US, Caribbean, and Mexico.



# Other Benefits of Landscaping with Natives

- Save water and energy
- Reduce chemical contamination
- Prevent invasive species from spreading
- Create beautiful gardens!

American beautyberry (Callicarpa americana) – native nearly throughout Florida in a wide variety of habitats.





Native plants can be used almost anywhere – at residences and office complexes, in parks, butterfly gardens and even in street medians.

And by increasing, improving and connecting existing protected areas.



About NFYN

Online Resources

### A Resource to Help Change a Backyard Hobby for a Few into a Powerful Conservation Tool for Many.

Here you can learn how to turn simple gardening into habitat restoration by using plants that are native to your specific area. This website will provide you with the information you need to do that. By planting native plants and recreating natural habitats that are unique to your area, you will make a valuable contribution to the conservation and restoration of South Florida's natural heritage!

### Find out About the Unique Plants, Habitats, and Wildlife in Your Area. Choose what you would like to search:

	OBy County	OPlant	○ <b>A</b> nimal
— Carab Bu Flasida 7ia Cada			
Search By Florida Zip Code	Start by entering a 5-digit South Florida ZIP Code here:		
	Find		

If you would like to learn more about native plants and the importance of conserving them, or how to use this website, see the topics at right.

### Map

Originally designed for South Florida (counties from Lake Okeechobee southward), NFYN is now moving north with the aspiration of serving all of the state of Florida by 2020. Where complete, a list of the cultivated native plants that commonly occur throughout that each county will be provided. If you'd like to obtain information specific to your home or project site, please enter the 5-digit ZIP code of your area on the NFYN Home Page.



# **How Does It Work?**

County Lists – Ecological generalist with broad ranges (95% rule)

ZIP Code Lists – Ecological generalists + generalists within local habitats

Habitat Lists – Generalists + habitat specialists within historical range within ZIP Code







West Indian mahogany

# **NOT NATIVE HERE!**



Southern magnolia





### Zip Code 33432 search for Native Plants, Habitats and Wildlife

This is a large zip code in eastern Boca Raton in Palm Beach County, mostly east of the El Rio Canal to the Atlantic Ocean and south of Glades Road. Link to map. Information on strictly coastal plants can be found by viewing coastal habitat data for this zip code area (beach dune, coastal strand, coastal interdunal swale, maritime hammock, coastal berm, tidal swamp). If your project is near salt water, please check the salt water and salt wind tolerances of the plants you select.

### **Native Plants**

• Click below to obtain a list of native plants that are recommended for 33432, and to see photos and learn more about them.

Whether you are just beginning a new native plant project, or will be introducing native plants into an existing garden, this is the place to find out which native plants are right for your specific area.

Get your plant list for 33432!

Advance search for plants

### **Habitats**

To take gardening with natives a step further, you can learn about the plant and animal habitats that are native to your area. Here you can also learn more about native habitats and ecosystems, and get a list of plants native to this habitat that are recommended for your zip code.

Read more about restoring native habitats in our <u>Frequently Asked Questions section</u>, and learn how you can attract wildlife such as birds and butterflies to your yard.

Get your list of habitats for 33432!

### Wildlife

• Click the button below to learn about the wildlife that may be expected in your area and what native plants can be planted and habitats created to attract them.

Get your wildlife list for 33432!

- You can try your hand at ecological restoration in your yard or project site by recreating a native habitat.
- · Click below to view a list of some native habitats for 33432.

	Trees
Acer rubrum	Red maple
Annona glabra	Pond-apple
Bursera simaruba	Gumbo-limbo
Celtis laevigata △	Sugarberry, Southern Hackberry
Chrysophyllum oliviforme ■	Satinleaf
Coccoloba diversifolia	Pigeonplum, Tietongue
Diospyros virginiana ▲	Persimmon, Common persimmon
Eugenia axillaris	White stopper
Ficus aurea	Strangler fig, Golden fig
llex cassine	Dahoon holly, Dahoon
Magnolia virginiana ■	Sweet-bay
Morus rubra ≜	Red mulberry
Myrcianthes fragrans ■	Twinberry, Simpson's stopper
Nectandra coriacea ▲	Lancewood
Persea palustris 🛕	Swamp bay
Pinus elliottii var. densa ■	South Florida slash pine
Quercus chapmanii 🛕	Chapman's oak
Quercus geminata ▲	Sand live oak
Quercus laurifolia	Laurel oak, Diamond oak
Quercus myrtifolia 🛕	Myrtle oak
Quercus virginiana	Virginia live oak
Sabal palmetto	Cabbage palm
Salix caroliniana 🛕	Coastal Plain willow
Sideroxylon foetidissimum ▲	Wild mastic, False mastic

Please scroll to the bottom for more images.

Red maple

Acer rubrum

Aceraceae

General Landscape Uses: An excellent accent tree in wet or mucky soils or along the edges of ponds and lakes. With proper moisture and soils, it can be used as a street tree, in swales, and in commercial and residential landscapes.

Ecological Restoration Notes: An important canopy or subcanopy tree in a wide variety of freshwater forested wetlands.

Availability: Widely cultivated.

Description: Medium to large erect tree with a narrowly cylindrical to broadly rounded crown and ascending branches arising from tall well-developed trunks. Trunks to 2 feet in diameter, but vasually smaller in South Florida. Temperate deciduous; the thin leaves are palmately 3- to 5-lobed, green above, whitish-green below, 2-6 inches long, 2-4 inches wide. Bark gray, smooth when young, becoming roughened with numerous ridges.

Dimensions: Typically 30-60 feet in height in South Florida; to 107 feet in Florida. Taller than broad.

Growth Rate: Fast to moderate.

Range: Eastern and central North America west to Texas and south to Broward, Miami-Dade and Collier counties and the Monroe County mainland. In Miami-Dade County, it is known only from the eastern edge of the Big Cypress Swamp. It is relatively common throughout its range. For a digitized image of Elbert Little's Florida range map, visit the Exploring Florida website.

Map of select IRC data from peninsular Florida.

Habitats: Freshwater swamps.

Soils: Wet to moist, poorly-drained to seasonally inundated organic freshwater soils, with a humusy top layer.

Nutritional Requirements: High; requires rich organic soils for optimal growth.

Salt Water Tolerance: Low; does not tolerate flooding by salt or brackish water.

Salt Wind Tolerance: Low; salt wind may burn the leaves.

Drought Tolerance: Low; requires moist to wet soils and is intolerant of long periods of drought.

Light Requirements: Light shade to full sun. Young plants grow best in light shade.

Flower Color: Red.

Flower Characteristics: Semi-showy dense flowering clusters, borne before new leaf growth is initiated. Dioecious or polygamous, with male and female flowers on different plants, or plants bear both male and bisexual flowers.

Flowering Season: Typically winter to early spring; in South Florida almost always fully flowering by early January.

Fruit: Bright red, 2-winged fruit (samara), 1" or less long, in clusters; semi-showy to showy. Winter to spring; in South Florida fruits may ripen by January.

Wildlife and Ecology: Provides significant food and cover for birds and other wildlife.

Horticultural Notes: Easily gn weeks. Seedlings are easily tra

Comments: An excellent tree to Numerous cultivars are known from farther north. The wood i





Copyright by: Keith A. Bradley









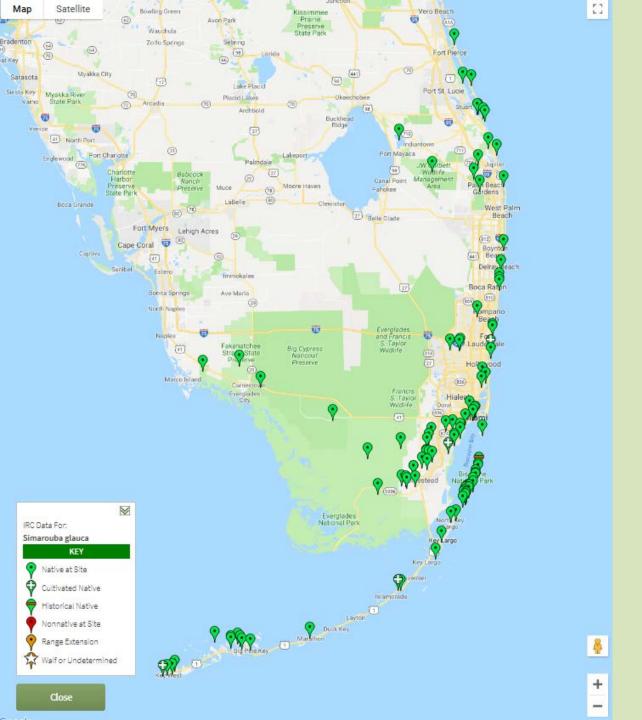


Copyright by: George D. Gann



Copyright by: Shirley Denton





# Paradise tree in Southern Florida



### Habitats

Habitats in Zip Code 33432

To take gardening with natives a step further, you can learn about the native plant habitats that are appropriate for your area. You can then choose a habitat, and view a list of plants for that specific habitat. This way, you can try your hand at restoring a native plant habitat in your yard or project site. Habitat lists also include some hard to grow natives and natives with narrow habitat requirements, such as strictly coastal species, that may not be included on your main zip code list.

Bayhead		
	Learn More	Plant List
Beach Dune		
	Learn More	Plant List
Coastal Berm		
	Learn More	Plant List Plant List
Coastal Interdunal Swale		
	Learn More	Plant List
Coastal Strand		
	Learn More	Plant List
Freshwater Tidal Swamp		
	Learn More	Plant List
Maritime Hammock		
	Learn More	Plant List
Mesic Flatwoods		
	Learn More	Plant List

# Plant list for Beach Dune

Scientific Name	Common Name
Shrubs and Woody Groundcovers	
Ernodea littoralis 🛕	Beach-creeper, Golden-creeper, Coughbush
Iva imbricata △	Beach-elder, Seacoast marshelder
Opuntia humifusa ▲	Pricklypear
Scaevola plumieri ▲	Inkberry, Beachberry, Gullfeed
Tournefortia gnaphalodes ▲	Sea-lavender, Sea-rosemary
Yucca aloifolia ≜	Spanish-bayonet, Aloe yucca
Herbs	
nerus	
Alternanthera flavescens	Yellow joyweed
Alternanthera maritima 🛕	Seaside joyweed
Ambrosia hispida △	Beach ragweed, Coastal ragweed
Crotalaria pumila	Low rattlebox
Crotalaria rotundifolia	Rabbitbells
Croton glandulosus var. floridanus ▲	Florida vente conmigo
Croton punctatus	Beach-tea, Gulf croton
Helianthus debilis subsp. debilis ■	East Coast dune sunflower
Hymenocallis latifolia	Mangrove spiderlily, Perfumed spiderlily
Oenothera humifusa	Seaside evening-primrose
Okenia hypogaea ≜	Beach-peanut, Burrowing four-o'clock
Panicum amarum Δ	Beachgrass, Bitter panicgrass
Paspalum vaginatum ▲	Seashore paspalum

Advanced Sea	rch for Plants
Zip Code:	33432
Name (common or scientific):	
Light Preference:	Light Shade V
Soil:	Moist
Form:	
Drought Tolerance:	
Fruit:	$\overline{}$
Wildlife Attractant:	Yes
Flowers Significant:	
Sea	rch



St. Andrew's-cross – *Hypericum hypericoides* 



Tarflower – Befaria racemosa



American beautyberry – Callicarpa americana



White stopper – Eugenia axillaris

PRINTER FRIENDLY VERSION

Please scroll to the bottom for more images.

### Julia Heliconian

Dryas iulia

Nymphalidae

### **Description:**

Medium-sized butterfly with a wingspan up to 3-5/8 inches. The male is bright orange-brown with several small black spots near the tips of the forewing and a narrow black border on the outer edge of the hindwing. The female is a duller orange-brown, with a black band across the forewing and more black markings. The underside of the hindwing in both sexes has a pale band through the center. The caterpillar has an orange head with black patches and two black horns on top. The body is usually brown or black with white patches and many long, black, needlelike spines arranged in rows. Some populations have white bodies with dark markings. The chrysalis is brown with a few silver markings.



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### Range:

South Florida and southern Texas; West Indies, Mexico, Central America and South America; strays to the north in the summer as far as Nebraska and coastal areas of Georgia and South Carolina.

### Distribution and Abundance in Florida:

Locally common all year in South Florida; common all year in the Keys. Caterpillars are present all year.

### Habitat(s):

Hammock edges, pinelands and open, disturbed sites.



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### Comments:

Some people may develop a rash after handling caterpillars. For more information, visit the Florida Museum of Natural History's Florida Wildflowers & Butterflies website and Butterflies and Moths of North America.

### Corkystem passionflower Passiflora suberosa Passifloraceae

General Landscape Uses: Informal groundcover or low-climbing vine.

**Availability:** Native plant nurseries. Available in Sanibel at the **Sanibel Captiva Conservation Foundation** (239-472-2329), in Parrish at **Sweet Bay Nursery, LLC** (941-776-0501), and in Boynton Beach at **Native Choice Nursery** (561-756-4370).

**Description:** Low climbing herbaceous vine with extremely variable leaves.

Dimensions: N/A; a vine with stems to 2 feet or more in length. Sometimes spreading horizontally and forming large open or dense patches.

Growth Rate: Fast.

Range: Monroe County Keys north to Duval, Lake and Dixie counties; West Indies, Texas, Mexico, Central America and South

Map of select IRC data from peninsular Florida.

Habitats: Moist forests and pinelands.

Soils: Moist, well-drained sandy or limestone soils, with or without humusy top layer.

Nutritional Requirements: Moderate to low; it prefers soils with organic content, but will still grow reasonably well in nutrient

Salt Water Tolerance: Low; does not tolerate long-term flooding by salt or brackish water.

Salt Wind Tolerance: High; can tolerate moderate amounts of salt wind without injury.

Drought Tolerance: High; does not require any supplemental water once established.

Light Requirements: Light shade to full sun.

Flower Color: Greenish to yellowish.

Flower Characteristics: Semi-showy but small. Petals are absent.

Flowering Season: All year.

Fruit: Purple-black globose berry. Edible.

Wildlife and Ecology: Larval host plant for gulf fritillary (Agraulis vanillae), julia (Dryas iulia) and zebra longwing (Heliconius

**Horticultural Notes:** Can be grown from seed. Smash mature fruit on paper towel or place in blender with water and grind just enough to break up the berries; strain and place on paper towel. When dry, scrape seed onto surface of soil. Do not cover. Place containter in light shade.

**Comments:** One of the best larval host plants for butterflies.



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### Find Native Plants!

### Acknowledgements and past sponsors Become a sponsor!

### **Emergent Sponsors:**







### Canopy Sponsors:













# wildlife interactions



Copyright by: Susan Trammell



Copyright by: James Johnson, 2014 In habitat, Hillsboro Pineland Natural Area, Broward County, Florida



Copyright by: Shirley Denton

### Scrub

Old dune with deep fine sand substrate; xeric; temperate or subtropical; occasional or rare fire (20 - 80 years); sand pine and/or scrub oaks and/or rosemary and lichens.

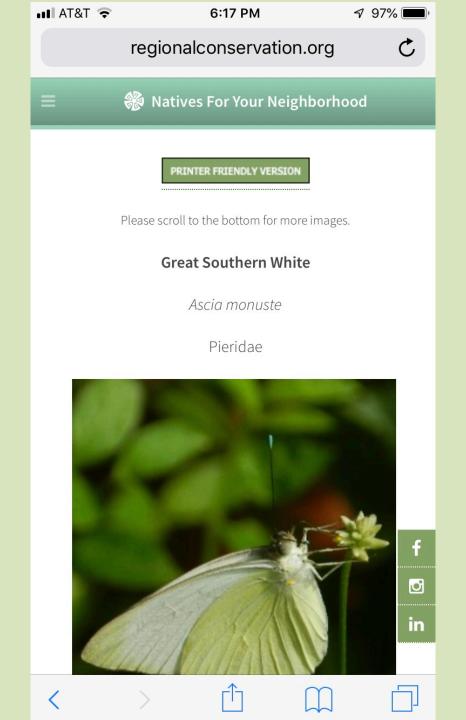
# Plants found in the Scrub habitat, in zip code 33444

Common Name

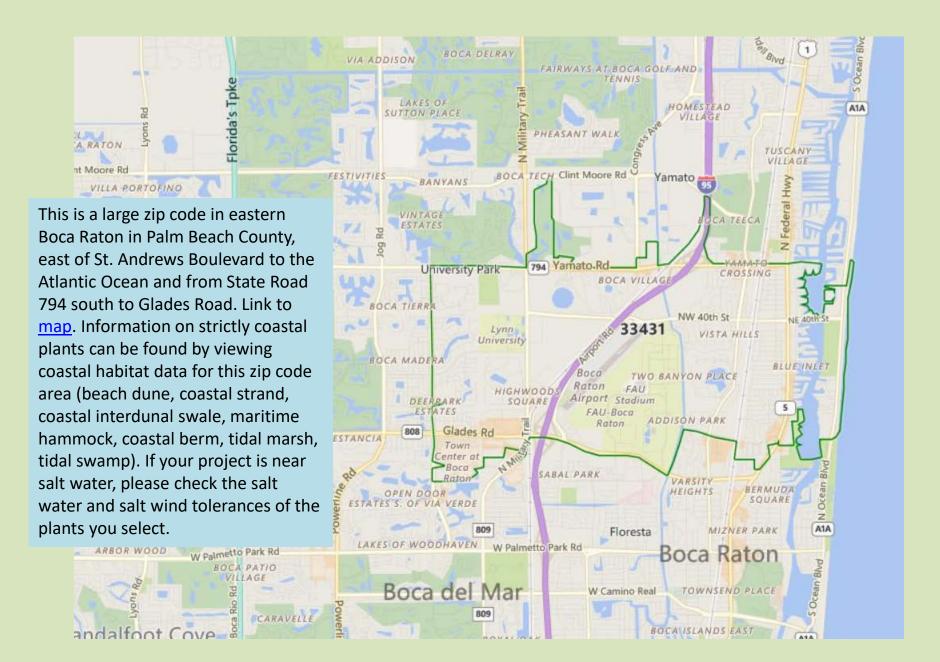
**Scientific Name** 

Sort By:

Widely cultivated	
Cultivated at native plant nurseries	
Common Name	Scientific Name
Ball-moss	Tillandsia recurvata
Cabbage palm	Sabal palmetto
Candyweed, Showy milkwort	Polygala violacea
Chapman's goldenrod 🛆	Solidago odora var. chapmanii
Chapman's oak 🛆	Quercus chapmanii
Coastalplain staggerbush 🛆	Lyonia fruticosa
Common pawpaw, Netted pawpaw 🛆	Asimina reticulata
Densetuft hairsedge	Bulbostylis ciliatifolia
Feay's palafox 🛆	Palafoxia feayi
Florida rosemary, Sand heath	Ceratiola ericoides
Forked bluecurls 🛆	Trichostema dichotomum
Giant wild-pine, Giant airplant	Tillandsia utriculata
Gopher-apple $igtriangle$	Licania michauxii
Hairy dawnflower	Stylisma villosa
Hog-plum, Tallowwood 🛆	Ximenia americana
Largeflower false-rosemary 🛆	Conradina grandiflora
Largeflower jointweed 🛆	Polygonella robusta
Myrtle oak 🛆	Quercus myrtifolia
Narrowleaf silkgrass 🛆	Pityopsis graminifolia
Dartridge per A	Chamacerista fassiculata



# A Coastal Quirk



### Past Major Sponsors: \$5000 and up

South Florida Water Management District

**Broward County** 

The Elizabeth Ordway Dunn Foundation

The Florida Native Plant Society

Partners for Fish and Wildlife Program - The U.S. Fish and Wildlife Service









### Past Supporting Sponsors

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The Florida Native Plant Society, Dade Chapter

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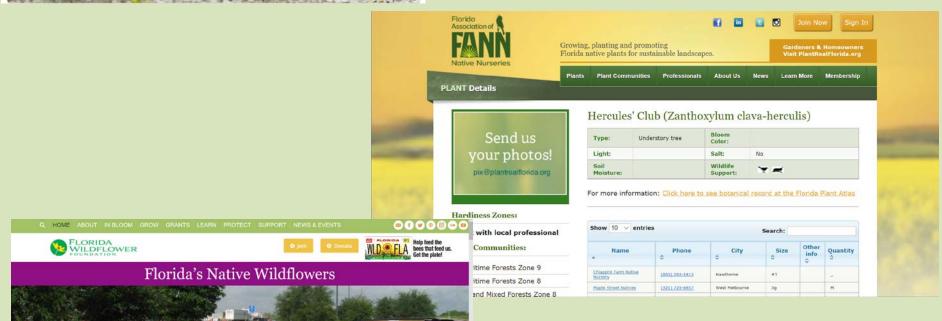
yours today!

the Foundation, Learn more,

Florida's native flowering plants. Get

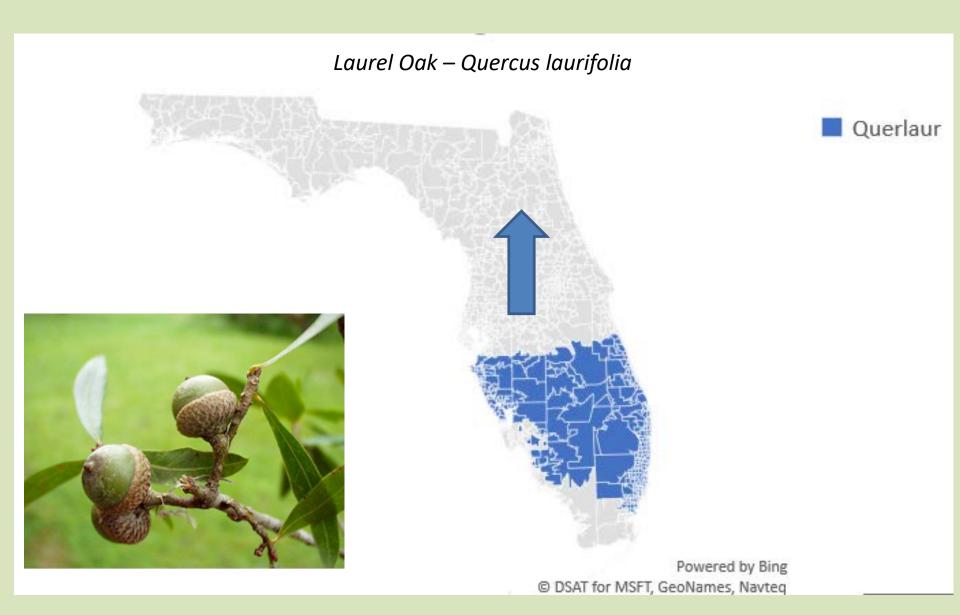
When you purchase or renew the plate, \$15 is given to

# **Building Statewide Partnerships**



More links to other resources

# **Mapping Zip Codes to North**







More and better butterfly info and a special thanks to Kay Brennan.



A Rain Garden is a planted area of your yard where rain water collects. Instead of running off of a driveway or other hard, impervious surface and in to a storm drain or canal unfiltered, rain water collected in a rain garden has time to absorb into the ground, assisted by the root systems of the plants.

Benefits include reducing stormwater flooding, improving water quality, increasing infiltration into the aquifer, and attracting wildlife benefits when native plants are used.

(image source: The Nature Conservancy)

Learn more about your local water resources, using rain gardens to manage stormwater and attract wildlife, and the benefits of rain barrels in the presentation below.

The Institute for Regional Conservation created a list of rain garden plants for Hollywood residents. Find more native plants using their tool Natives for Your Neighborhood.

Wondering where to find those native plants? The Broward Native Plant Society, Coontie Chapter, have created a list of local nurseries that sell native plants.

# Water Conservation: Rain Barrels and Native Plants A joint workshop between the City of Hollywood and the City of Hallandale



### **Rain Barrels**

Nationally, 30% of residential water use is outdoors. In Florida that average can be as much as 50% primarily for landscape irrigation. That water must be extracted from our aquifer, treated, and distributed to our homes all of which uses energy.

Save water, energy and money by installing a rain barrel on your home.

In addition to the aforementioned savings, rain barrels also help with stormwater



### **Native Plants for Rain Gardens**

Plants that need constantly moist or flooded soil

	Trees	
_	Annona glabra	Pond-apple
	Taxodium distichum	Bald cypress
		Shrubs
	Cephalanthus occidentalis	Common buttonbush
	Magnolia virginiana	Sweet-bay
		Groudcovers
	Acrostichum danaeifolium	Giant leather fern
	Blechnum serrulatum	Swamp fern, Toothed midsorus fern
	Canna flaccida	Golden canna, Bandana-of-the-everglades
	Crinum americanum	Swamp-lily, Seven-sisters, String-lily
	Osmunda regalis var. spectabilis	Royal fern
	Pontederia cordata	Pickerelweed
	Sagittaria lancifolia	Bulltongue arrowhead, lance-leaved arrowhead
	Spartina bakeri	Sand cordgrass
	Thalia geniculata	Alligatorflag, Fireflag

Plants that can survive in periodically flooded soil

	Trees
Acer rubrum	Red maple
ilex cassine	Dahoon holly, Dahoon
Morus rubra	Red mulberry
Quercus laurifolia	Laurel cak, Diamond oak
Sabal palmetto	Cabbage palm
	Shrubs
Chrysobalanus icaco	Coco-plum
Myrica cerifera	Wax myrtle, Southern Bayberry
Myrsine cubana	Myrsine, Colicwood
	Groudcovers
Bacopa monnier	1 Water hyssop, Herb-of-grace
Coreopsis leavenworthii	Leavenworth's tickseed
Eragrostis elliottu	Elliott's love grass
Oplismenus hirtelius subsp. setarius	: Woodsgrass, Basketgrass
Phyla nodifiora	Frogfruit, Turkey tangle fogfruit, Capeweed
Tripsacum dactyloides	Eastern gamagrass, Fakahatchee grass

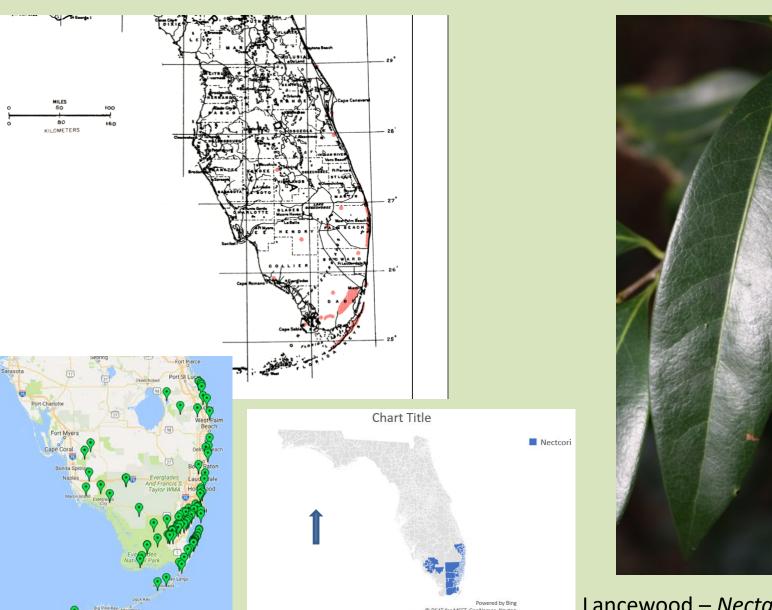
Find more information about these and other native plants that belong in YOUR neighborhood by visiting www.regionalconservation.org and using the tool Natives for Your Neighborhood.

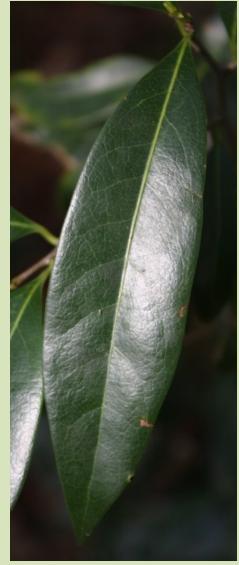






# **Planning for Climate Change and Sea Level Rise**





Lancewood – Nectandra coriacea

# Trees

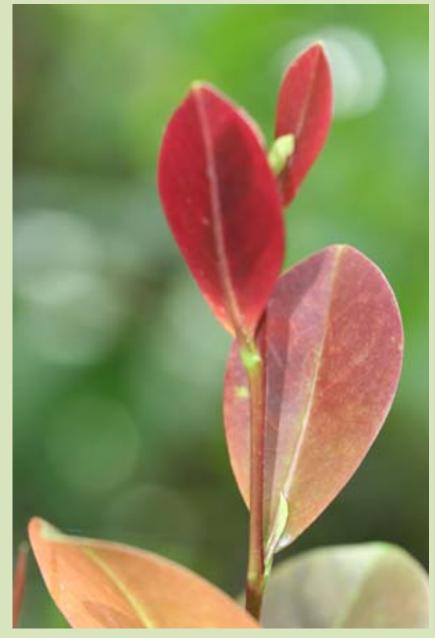


Gumbo-limbo (Bursera simaruba)



Sweet-bay (Magnolia virginiana)

# **Shrubs**



Coco-plum (Chrysobalanus icaco)



Marlberry (Ardisia escallonioides)

# **Herbaceous Groundcovers**



Eastern gamagrass (Tripsacum dactyloides)



Giant leatherfern (Acrostichum danaeifolium)

# **Herbaceous Wildflowers**



Tickseed (Coreopsis leavenworthii)

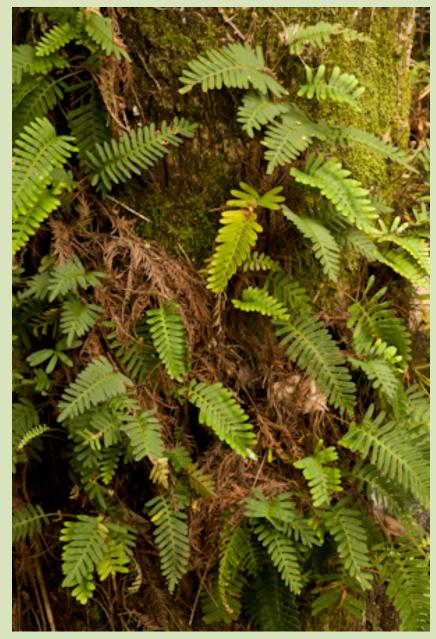


Swamp-lily (Crinum americanum)

# **Herbaceous Epiphytes**



Cardinal airplant (Tillandsia fasciculata)



Resurrection fern (Pleopeltis polypodioides)



# Thanks!





