



Palmetto



The sharing of
my trips to
*of *Graptopetalum bartramii**
large in a very casual yet
fortunate to accompany
*of the *Palafoxia**

Dan Austin
1943-2015

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A bequest to the Florida Native Plant Society in your will or other element of your estate plan will let you contribute to preserving Florida's native plant heritage for many years into the future. Our programs and endowment depend on your support.

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- Supporting legislation to protect our natural lands and native plants
- Awards for excellence in research, conservation, land management, and restoration

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Editors note:

The following editorial errors appeared in PALMETTO, Issue 32:1:

On page 7, figure captions did not match the arrangement of photos. The correct captions are:

Figure 7: Set of characteristic species of Florida upland glades (clockwise from upper left) green milkweed (*Asclepias viridiflora*), rosepink (*Sabatia angularis*), silver dwarf morning glory (*Evolvulus sericeus*), prairie coneflower (*Ratibida pinnata*), Boykin's milkwort (*Polygala boykinii*), and diamond flowers (*Stenaria nigricans*).

Figure 8a: (left) *Coreopsis* sp. from Jackson County glades. **Figure 8b:** (right) Barrens silky aster from Gadsden County glades.

On page 14, the last paragraph should read: "Thank you for considering our concerns. We stand ready to assist you in any way possible. Please do not hesitate to contact us if you require additional information or explanation of our position."

Call for Research Papers and Poster Presentations

The 2016 Florida Native Plant Society Annual Conference will be held May 18-22, 2016 in Daytona Beach, Florida

The Research Track of the Conference will include presented papers and a poster session on Friday, May 20, and Saturday, May 21.

Researchers are invited to submit abstracts on research related to native plants and plant communities of Florida including preservation, conservation, and restoration. Presentations are 20 minutes in length (15 minutes is provided for the presentation, followed by a 5-minute question-and-answer period).

Abstracts of not more than 200 words should be submitted via email, as an MS Word file to Paul A. Schmalzer: paul.a.schmalzer@nasa.gov

Include title, affiliation, and address. Indicate whether you will be presenting a paper or poster.



Deadline for submitting abstracts is February 1, 2016.



Palmetto

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The Palmetto

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Editorial Content

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

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To provide funds that will enable us to protect Florida's native plant heritage, please join or renew at the highest level you can afford.

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The purpose of the Florida Native Plant Society

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

Official definition of native plant:

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

Features

4 Remembering Dan Austin

Dan Austin, one of the pioneering members of the Florida Native Plant Society, was a scholar and teacher who transcended all educational norms. Although he is no longer with us, Dan's legacy will live on in the seeds of inspired thought he planted in the minds of his students, colleagues, and others.

Compiled by Winnie Said and Chris Lockhart.

8 2015 FNPS Landscape Awards Institutional Category Part 1 - Archbold Biological Station

At the Annual Conference in Tallahassee, Archbold Biological Station and the Florida International University Nature Preserve received Awards of Excellence in the Institutional Category of FNPS' Landscape Awards program. This article, the first of a series, shows how good planning and more than 14,000 plants created an award-winning, 100% native landscape at Archbold's Learning Center and Lodge, and the adjoining Expeditions Plaza.

14 What is the REAL *Zamia pumila*?

Botanists have long disagreed as to the scientific name Coontie should bear. Dr. Dan Ward delves into the history of the name *Zamia pumila* and explains why it cannot be correctly applied to any Florida native plant.

Celebrate
FLORIDA NATIVE PLANT MONTH
October 2015

Join FNPS in celebrating Florida Native Plant Month

.....
 Increase public awareness of native plants and the Florida Native Plant Society * Engage and educate people of all ages about the importance of native plants and native plant communities * Share our passion for native plants with others

Remembering

Dan Austin



Dan Austin leading a trip into the Fakahatchee Strand. Photo by Winnie Said.

“To understand Dan Austin, you have to go with him to the secret orchid garden in the Fakahatchee Swamp. It’s a little like going along to find the ruby eyes of the idol in Raiders of the Lost Ark. Dan’s part showman, part explorer, mostly enthusiast and wonderfully knowledgeable. And when you slog along past the moccasins, he manages to make you think that all that green is a lot more fascinating than rubies. And when you get to the secret garden, it really is magic - and Dan Austin is a magician!” - Maggy Hurchalla

*Article compiled by Winnie Said and Chris Lockhart
Palm Beach County Chapter, Florida Native Plant Society*

“A teacher affects eternity; he can never tell where his influence stops.” – Henry Adams

Dan Austin, one of the pioneering members of the Florida Native Plant Society (FNPS), was a scholar and teacher who transcended all educational norms. Dan passed away in Tucson, Arizona on January 20, 2015. Although he is no longer with us, his legacy will live on in the many seeds of inspired thought he planted in the minds of his students, colleagues, and others who accompanied him on his botanical journeys through the swamps and scrubs of South Florida and beyond.

In tribute to Dan, we compiled information from various sources to tell the story of his life's work, and how he influenced us. For background we lead off with an adapted version of FNPS past president Ray Miller's interview with Dan, previously published in the Spring 2000 issue of *Palmetto*. Next, we get a glimpse of Dan's life in “retirement” kindly provided by his colleagues at the Arizona-Sonora Desert Museum. Finally, to complete the picture, we chose excerpts of personal memories of Dan from a video created in his honor.

Interview by Ray Miller, Palm Beach Chapter FNPS

Daniel F. Austin, Ph.D., was born May 18, 1943, in Paducah, Kentucky. He went to high school in Paducah and went on to study LAMIACEAE (mints) at Murray State University in western Kentucky, where he obtained a B.A. degree, and met his wife, Sandy.

When asked how he became interested in environmental issues, Dan said he was like many of us – Peter Pans who never grew up. We have retained a fascination about things around us that people who grow up seem to lose.

While at Murray State University, he attended a seminar given by Dr. Walter Lewis, a botanist from Washington University in St. Louis, Missouri. After the seminar, Dan had the opportunity to talk with the botanist, and was encouraged by him to apply to graduate school at Washington University. Dan applied for the graduate program, where he received both his M.S. and Ph.D.

As an undergraduate, Dan was interested in wildlife biology, but a longer interest of his surfaced as his graduate and doctorate course of study progressed – ethnobotany, the study of human uses of plants. He selected this discipline partly from his long-time irritation with people who, when shown a particular plant species would ask him, “what good is it anyway?” Dan got into his specialty interest, CONVULVULACEAE (morning-glories), primarily due to his major professor at Washington University. Dan has become a world-renowned expert on CONVULVULACEAE of the American tropics. He constantly receives specimens from around the world, which are unpacked and sorted by his free labor pool (undergraduate assistants).

Upon receiving his doctorate in 1970, Dan and his wife Sandy, also a botanist, relocated to South Florida and he took a position as Assistant Professor at Florida Atlantic University.

Before FNPS was organized, Dan had attempted unsuccessfully to start a plant society in South Florida. As FNPS was getting off the ground,



Above, from top: Dan Austin in the Baboquivari Mountains, hiking through Brown Canyon – *Salix gooddingii* can be seen nearby; Dan with a barrel cactus, *Ferocactus wislizenii*. Photos by Tom Vize.

Continued on page 6

he was a strong supporter and member. Also, Dan was one of three individuals who started the Palm Beach Chapter of FNPS. The other two individuals were his wife, Sandy, and Sara Davis.

When asked why he had joined FNPS, he stated that for a long time he'd been promoting people's interest in plants (that ethnobotany thing again) and trying to get those with similar interests to come together, much like the Audubon Society. However, he hoped they would focus on a bigger picture: plant communities. Such an organization would create another concerned voice for the environment and would allow an exchange of information.

When he arrived in South Florida, very little printed information about plants and their communities was available. The notes by John Kunkel Small (from his early, brief travels through South Florida) were it, essentially. However, Dan knew that other local individuals, mostly non-professionals, had a wealth of information and observations to share. Dan wanted to tap into this source by bringing these people together.

When Dan was asked about his thoughts on the future of FNPS, he said that things can always be improved. However, he is very pleased with the direction that the organization is going and feels it has become a positive voice in the state. Dan's word of wisdom for FNPS members is "Don't be afraid to ask questions. Ask everybody and anybody, call up the professors to seek your answers. Also, become involved."

Dan has received accolades from his peers over the years, including numerous nominations for Distinguished Teacher Awards and certificates of appreciation from county and local governments. In 1993, he received the FNPS Green Palmetto Award for Science and Education. He received a second Green Palmetto in 1995 for outstanding contributions.

Dan has written or collaborated on several books. They include *The Florida of John Kunkel Small*, *Pine Rockland Plant Guide*, a series of plant identification guides for coastal hammocks, coastal dunes, scrub communities; and a guide for pine flatwoods. He has published a tremendous number of scientific papers – so many, his *Curriculum Vitae* resembles a book in its length.

In 1985, Dan and Dr. Grace Iverson produced a document entitled *Inventory of Native Ecosystems in Palm Beach County* which identified and described some of the critical remaining natural areas in Palm Beach County. This document was instrumental in providing justification for passage of the \$100 million bond referendum in 1992. Through the referendum, Palm Beach County has purchased over 22,000 acres of environmentally sensitive land.

Dan has also been involved in the Society of Economic Botany for a number of years. He is currently on the journal's editorial board as the Book Review Editor. In the past, he has coerced some of his graduate students (myself included) to do book reviews for the journal.

He has been involved with the Florida Exotic Pest Plant Council (FLEPPC) since around 1991 and proudly wears the

moniker of caretaker of the FLEPPC Pest Plant List, which is reviewed and updated every two years. In 1999, he received the Outstanding Member Award for his work on developing and maintaining the pest plant list.

When asked to cite some accomplishments that FNPS should be proud of, he notes *The Palmetto*, to which he has been a frequent contributor. He considers it an outstanding communication between the membership.

Dan has a number of other interests, but he mainly likes to visit different places and get out in the field. He also frequents different libraries to look up rare books or visits other herbaria to study their collections of plants. Staying in Everglades City and hiking around the Fakahatchee Strand is a holiday for him. In fact, the Fakahatchee Strand and Big Cypress area are his favorite places in South Florida and he has taken many students and others on hikes into these areas. Outside Florida, he likes to visit and do research in the mountainous regions of southern Arizona. He hopes to retire in this area of Arizona in the next five to six years. He likes its openness and smaller population. He has fond memories of a year-long sabbatical that he and Sandy took to southern Arizona, where they camped out over a hundred nights.

Dan feels that the biggest threat to our natural areas are people, and he fears that encroachment to the edges of these areas will increase as the population increases. He hopes that FNPS can help change peoples' view of plants. Dan feels that most people in First World countries think of plants as furniture. This concept is a result of too many people concentrated in urban areas. Plants are living things and deserving of the same consideration as other creatures.

Note: A pdf of the Palmetto article can be found at: http://www.fnps.org/assets/pdf/palmetto/miller_ray_dan_austin_and_interview_vol_20_no_1_spring_2000.pdf

Tributes to Dan Austin

Dan Austin in Arizona

Dan and Sandy moved to Arizona where he became an Arizona-Sonora Desert Museum (ASDM) Research Associate. Thanks to the following contributions from his ASDM colleagues, we have a good idea of what he was up to during his "retirement".

Dan had a wealth of knowledge of Sonoran Desert natural history and, in particular, he was often called upon by museum staff for his botanical expertise. He worked tirelessly to expand the museum's digital library and, just in the past three years, Dan had single-handedly grown the digital library by more than 5,000 images. His passion and energy were both amazing!

He was a prodigious researcher and author. Over the years he published more than 35 book chapters and books, 100 journal papers, and 60 popular articles, plus numerous book reviews and abstracts. He was also a research associate of the Drylands Institute, Department of Plant Sciences at the University of Arizona,

Department of Biological Sciences at Florida International University, Fairchild Tropical Garden, and Florida Atlantic University. Not one to let grass grow under his feet, he was also a technical advisor of The Nature Conservancy (Office of Endangered Species), Florida and Caribbean Region Wildflower Society, CESI Landscape Science Advisory Committee (USGS), South Florida Ecosystem Recovery Strategy Team (USFWS), Recovery Team Member for *Cereus eriophorus* (USFWS), Sweetpotato Crop Germplasm Committee (USDA), and for the Florida Natural Areas Inventory (FNAI). One of his most recent and spectacular accomplishments came in 2010 when he published *Baboquivari Mountain Plants*, an encyclopedic work describing the flora of this unique mountain range as well as its human history. One of his favorite areas was Brown Canyon in the Baboquivari Mountains to which he often led museum staff, sharing both his passion for the flora and his love of this extraordinary place.

As manager of the ASDM digital library, I knew Dan for only the past three years, but I feel very fortunate to have known him at all!

– Kim Franklin, Ph.D., Conservation Research Scientist, Arizona-Sonora Desert Museum

Dan showed his dedication to the understanding of botanical distribution with the inquiry from private landowners as to the presence of a proposed species for the Threatened and Endangered list on their property. With that, in conjunction with USFWS and USFS, he led and participated in many trips to the sky islands of southeastern Arizona to document the range of *Graptopetalum bartramii* (Bartram stonecrop). The sharing of his ethnobotanical knowledge in a very casual yet thorough manner was a highlight for any who were fortunate to accompany Dan in the field. Dan and Sandy were at home in the shadow of the Baboquivari and Sierrita Mountains south of Tucson with their wildlife-friendly landscape, guests, their mothers, and the quietness of the Sonoran Desert region.

– George Montgomery, Curator, Botany at Arizona-Sonora Desert Museum

How do we remember Dan?

In 2001 one of Dan's former graduate students, Chris Lockhart, created a retirement video. She captured comments from a couple dozen people at various conferences and workshops that spring, among them members of FNPS, FLEPPC and Plant Biologists of South Florida. They were asked to share some of their memorable field experiences, what they'll miss most, and "If you were to give Dan a scientific name, what would it be?" The excerpts below reflect those special memories and how Dan impressed his students and colleagues.

Walter Taylor, Emeritus Professor, University of Central Florida, author – "You know you and I graduated from Murray State College in Kentucky and had the same instructors. It's

amazing how we both ended up in Florida teaching in the same university system. Your little exclamation mark at the end of each identification still exists; and that's your character. I thought that was pretty cool and later used the "!" myself. Those that lacked the exclamation mark, you would set me straight."

Phil Busey, Agronomy Consulting, Inc. – "When I came here from Arizona, having met Dan at Missouri Botanical Garden in 1970, he struck me as a kind, considerate, and gentle person. But he also can be very forceful. If there was a scientific name associated with Dan, I think it would be something about the solidarity with plants. I know how hard he's worked to try to preserve the scrub habitat at Florida Atlantic University in Boca Raton. I think his influence extends equally throughout the botanical community."

Pat Welch, Florida Atlantic University Pine Jog Environmental Education Center, retired – "There are 3 things we are going to remember about you: 1. The Environmentally Sensitive Lands Inventory and mapping for the county that you did – that was an important piece of work – thanks! 2. Your developing some excellent professionals in our field with the graduate program – those contributions will go on for a long, long time. 3. Thanks for taking a subject like botany and making it fun and interesting. We're going to miss you and good luck."

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Dan Austin in his element – the Fakahatchee Strand. Photo by Winnie Said.

2015 LANDSCAPE AWARDS

INSTITUTIONAL CATEGORY - PART I

ARCHBOLD BIOLOGICAL STATION



The Florida Native Plant Society Landscape Awards Program

The use of native plants in restorative and traditional landscapes is recognized through the annual FNPS Landscape Awards program. To qualify for consideration, landscapes must contain a minimum of 75% Florida native plant species and be free of any plants listed as Category I and II invasives by the Florida Exotic Pest Plant Council (FLEPPC). Other criteria for receiving an award include the fulfillment of specific goals, creation or maintenance of species diversity, on-site preservation of existing native plants, relationships to local native plant communities, creative solutions to significant obstacles, and the existence of an educational component that benefits those visiting the landscape.

This year, at the FNPS Annual Conference in Tallahassee, Florida, Archbold Biological Station and the Florida International University Nature Preserve were granted Awards of Excellence in the Institutional Category. We honor both of these institutions for their commitment to Florida's native plants.

Archbold Biological Station: Pre-existing conditions and on-site preservation of existing native plants

Archbold Biological Station, a not-for-profit established in 1941, is dedicated to research, conservation, and education (www.archbold-station.org) and is listed as a National Natural Landmark by the U.S. Department of Interior.

The 2.79-acre project site at the Archbold Learning Center and Lodge and the adjacent 0.69-acre Archbold Expeditions Plaza parking area are located within the 12-acre campus of Archbold Biological Station, itself embedded within an 8,840-acre nature preserve.

The project site was deliberately restricted to land that was cleared before 1930, to avoid any impacts on the surrounding globally imperiled Florida scrub habitat, or on its many rare plants and animals (including 19 federally listed species). In 2010, the site was cleared of concrete and asphalt parking, dumpsters, an old tennis court, an abandoned grove, and a stand of non-native bamboo.

Four existing patches of native plants were retained, including a 0.217-acre area of mixed trees and shrubs, which was prescribe-burned. These palmettos and trees screen the buildings, creating continuous native landscaping views along the Main Drive entrance. Twenty oaks, pines, and palms were

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Figure 1: Native landscaping at Archbold Biological Station’s Learning Center and Lodge fulfills goals for natural beauty, conservation, sustainability, and learning opportunities.

Figure 2: Rain gardens in the Archbold Expeditions Plaza act as seasonal wetlands, holding the first flush of stormwater from surrounding parking and incorporating a winding path and signage for Archbold’s historic “Walk Through Time”.

Figure 3: A floristically diverse landscape, inspired by native dry prairie, has been planted on higher elevations.

saved, but 3 laurel oaks and 2 mature pines were harvested, and their wood was used for furniture and displays.

Native landscaping design concepts, goals, and species diversity

To achieve 100% native landscaping, 78 species were planted (15 grass/sedge, 54 forb/shrub, and 9 trees), totalling 14,196 individual plants, all native to south-central Florida. This created a landscape that neither restores nor replicates the original Florida scrub, scrubby flatwoods, or cutthroat wetlands, but derives inspiration and pays homage to these native plant communities found originally on-site. Landscaping includes 1.115-acres of new planting in 2011, surrounding the Learning Center and Lodge, and 0.220-acres planted in the Archbold Plaza in 2012, totalling 1.553-acres.

Using the concept of right plant, right place, five planting communities were designed by Archbold staff and our designer/contractor, The Natives, Inc. (see Plant List). Species were selected, and plans customized, to meet the criteria of firewise, elevation, topography, and soil type (Immokalee sand, Basinger fine sand) heavily modified by 3' of fill (sand), former concrete paving, and construction debris. Species included perennial bunchgrasses and clonal shrubs, designed to hold the ground and resist establishment of invasives, interspersed with annual seeders, to meet the goal of a self-regenerating landscape that will endure over time.

Dry Prairie. A dry prairie surrounds both buildings in well-drained sandy soils planted with bunchgrasses such as wiregrass and lopsided Indiangrass, and wildflowers native to Florida's dry prairies that include blazing stars, pineland purple, and bluecurls. Areas with more fill and well-drained sandy soils were also planted with scrub flowers such as scrub blazing star, October flower, and manyflowered beardtongue. Soils over septic tanks are shallow and planted with species that can survive even drier conditions, including gopher apple, or those that are rhizomatous, such as twinflower and grassleaf goldenaster, surviving by rooting in deeper soils adjacent to the tanks.

Shrub Islands are interspersed throughout to welcome wildlife and provide structural diversity. Species that offer food and nesting sites for birds and insects were added, using scrub oaks such as sand live oak and myrtle oak as dominants, but also adding tough buckthorn and rusty staggerbush.

Mesic Flatwoods. Trees, shrubs, and grasses planted on strips next to the parking area provide a transition to natural vegetation to the west. These plants occur mainly in xeric to dry mesic Florida scrub, including saw palmetto, tough buckthorn, beautyberry, South Florida slash pine and sand live oak.

An Ecotonal Prairie was created to include a gradient from relatively dry soils to a lower area that is seasonally flooded, receiving water draining from higher elevations. It is

planted with hydrologically appropriate species depending on slope position, reflecting the concept that a little elevation goes a long way. Areas with shade under louvres or retained trees were planted with shrubs and groundcover adapted to shade such as beaked panicum and Carolina jessamine, the latter screening a west facing window.

Seasonal Wetland. Retention ponds were deliberately engineered with variable topography, and planted with species selected for varying levels of soil moisture and water depths over time. The deepest areas that hold water nearly year-around were planted with white waterlily, duck potato, and pickerelweed. The slopes received grasses and frogfruit that grow naturally on seepage slopes. A novel engineering feature, a large, shallow littoral zone, was planted with Baldwin's spikerush, (a fine spreading sedge), whitehead bogbutton, and numerous other species that can survive moist soils and occasional flooding.

Plant establishment and maintenance

More than 14,000 plants were grown during 2010-2012 by The Natives, Inc. in their nurseries in Davenport, Florida. Native Green Cay Nursery donated slash pines.

Plant establishment required creative solutions to significant barriers. Before and during construction (2009-2011) the site was disked and repeatedly herbicided to be invasive-free. After construction, soils from fill or excavated from the retention pond with pH 6.05 to 7.99, had to be top-dressed with pelletized sulfur to decrease pH closer to the native pH 4.5-6.0. Planting holes received a small amount of organic fertilizer with minor nutrients, and plants were installed at or slightly above the soil line to avoid rot. PAM12 Plus was scattered on erosion-prone slopes. The area was mulched with pine straw shipped from a Georgia plantation and guaranteed to be free from invasive plants. After one year of temporary irrigation with above-ground pipes for establishment, the site receives no irrigation, fertilizer, or mulch, meeting our design criterion of a prairie that needs only sun and rain. A maintenance crew from The Natives comes 2-3 times a year to spot-spray weeds and to pull weeds by hand. Additional wiregrass plants were added in 2013 and Archbold planted 144 shrubs in 2014 to replace acid-loving rusty staggerbush and Darrow's blueberry that died. In the future, prescribed patch burns may be used for maintenance to mimic nature.

Native landscaping was essential for the project to achieve LEED Platinum® designation, the highest award for green buildings, and only the 12th such award for a commercial building in Florida. It contributed to meeting LEED criteria for a sustainable site and for water efficiency, such as using ¾ million gallons less water annually than typical irrigation. Seasonal ponds reduce the area needed for retention, lower nutrient runoff, and increase groundwater recharge. The site was also

Plant List: Archbold Learning Center and Lodge
Species by Community Type

Common Name	Scientific Name	Numbers	Subtotal
Ecotonal Prairie			
Wiregrass	<i>Aristida stricta</i> var. <i>beyrichiana</i>	60	
Broomsedge	<i>Andropogon glomeratus</i> var. <i>glaucoptis</i>		
and chalky bluestem	<i>Andropogon virginicus</i> var. <i>glaucus</i>	60	
Longleaf panicum	<i>Panicum longifolium</i>	60	
Florida tickseed	<i>Coreopsis floridana</i>	60	
Slender blazing star	<i>Liatris gracilis</i>	60	
Dense blazing star	<i>Liatris spicata</i>	60	
Wedgeleaf button snakeroot	<i>Eryngium cuneifolium</i>	59	
Pineland chaffhead	<i>Carphephorus carnosus</i>	16	
Water cowbane	<i>Tiedemannia filiformis</i>	59	
Starrush whitetop & giant whitetop	<i>Rhynchospora colorata</i> & <i>R. latifolia</i>	12	
			506
Seasonal Pond			
Chalky bluestem	<i>Andropogon virginicus</i> var. <i>glaucus</i>	347	
Shortspike bluestem	<i>Andropogon brachystachyus</i>	377	
Muhly grass	<i>Muhlenbergia capillaris</i>	299	
Frogfruit	<i>Phyla nodiflora</i>	291	
Sand cordgrass	<i>Spartina bakeri</i>	280	
American white waterlily	<i>Nymphaea odorata</i>	3	
Pickereelweed	<i>Pontederia cordata</i>	22	
Duck potato	<i>Sagittaria latifolia</i>	16	
Scarlet rosemallow	<i>Hibiscus coccineus</i>	2	
Prairie iris	<i>Iris hexagona</i>	2	
Edison's St. John's-wort	<i>Hypericum edisonianum</i>	25	
Baldwin's spikerush	<i>Eleocharis baldwinii</i>		
and whitehead bogbutton	<i>Lachnocaulon anceps</i>	995	
			2,704
Dry Prairie			
Wiregrass	<i>Aristida stricta</i> var. <i>beyrichiana</i>	3143	
Elliott's lovegrass	<i>Eragrostis elliottii</i>	785	
Purple lovegrass	<i>Eragrostis spectabilis</i>	787	
Beaked panicum	<i>Panicum anceps</i>	1282	
Lopsided Indiangrass	<i>Sorghastrum secundum</i>	1433	
Splitbeard bluestem	<i>Andropogon ternarius</i>	10	
Butterfly milkweed	<i>Asclepias tuberosa</i>	110	
Yellow buttons	<i>Balduina angustifolia</i>	9	
Florida paintbrush	<i>Carphephorus corymbosus</i>	150	
Pineland purple	<i>Carphephorus odoratissimus</i> var. <i>subtropicanus</i>	128	
Partridge pea	<i>Chamaecrista fasciculata</i>	132	
Twinflower	<i>Dyschoriste oblongifolia</i>	136	
Tall elephantsfoot	<i>Elephantopus elatus</i>	146	
Rayless sunflower	<i>Helianthus radula</i>	73	
Slender blazing star	<i>Liatris gracilis</i>	127	
Shortleaf blazing star	<i>Liatris tenuifolia</i>	93	
Chapman's blazing star	<i>Liatris chapmanii</i>	28	
Gopher apple	<i>Licania michauxii</i>	218	
Grassleaf goldenaster	<i>Pityopsis graminifolia</i>	179	
Sandhill wireweed	<i>Polygonella robusta</i>	8	
Bluecurls	<i>Trichostema dichotomum</i>	56	
Manyflower beardtongue	<i>Penstemon multiflorus</i>	16	
Garberia	<i>Garberia heterophylla</i>	13	
Scrub blazing star	<i>Liatris ohlingerae</i>	40	
October flower	<i>Polygonella polygama</i>	8	
Carolina jessamine	<i>Gelsemium sempervirens</i>	20	
Scrubland goldenaster	<i>Chrysopsis subulata</i>	44	
			9,174
Dry Prairie/Scrub			
American beautyberry	<i>Callicarpa americana</i>	4	
Garberia	<i>Garberia heterophylla</i>	6	
Atlantic St. John's-wort	<i>Hypericum tenuifolium</i>	45	
Gallberry	<i>Ilex glabra</i>	2	
Rusty staggerbush	<i>Lyonia ferruginea</i>	43	
Coastalplain staggerbush	<i>Lyonia fruticosa</i>	0	
Fetterbush	<i>Lyonia lucida</i>	0	

Darrow's blueberry	<i>Vaccinium darrowii</i>	10
Adam's needle	<i>Yucca filamentosa</i>	22
Saw palmetto	<i>Serenoa repens</i>	52
Chapman's oak	<i>Quercus chapmanii</i>	3
Pygmy fringetree	<i>Chionanthus pygmaeus</i>	1
Tough buckthorn	<i>Sideroxylon tenax</i>	20
		210

Landscape Trees in Prairie

Myrtle oak	<i>Quercus myrtifolia</i>	
and Scrub oak	<i>Quercus inopina</i>	16
Turkey oak	<i>Quercus laevis</i>	5
Bluejack oak	<i>Quercus incana</i>	2
		23

West Mesic Flatwoods/ West Parking

American beautyberry	<i>Callicarpa americana</i>	91
Coral bean	<i>Erythrina herbacea</i>	3
Muhly grass	<i>Muhlenbergia capillaris</i>	91
Sand live oak	<i>Quercus geminata</i>	91
Myrtle oak	<i>Quercus myrtifolia</i>	91
Tough buckthorn	<i>Sideroxylon tenax</i>	91
Sand cordgrass	<i>Spartina bakeri</i>	91
Saw palmetto	<i>Serenoa repens</i>	90
		639

Large Landscape Trees in Prairie and Flatwoods

Cabbage palm	<i>Sabal palmetto</i>	15
Sand live oak	<i>Quercus geminata</i>	13
South Florida slash pine	<i>Pinus elliottii</i> var. <i>densa</i>	16
		44

Screen of Vines to Shade West-facing Windows, Reducing Building Energy Use

Coral honeysuckle	<i>Lonicera sempervirens</i>	50
		50

Expeditions Plaza 8-12-12

(includes seasonal wetland/mesic flatwood communities)

Trees

South Florida slash pine	<i>Pinus elliottii</i> var. <i>densa</i>	1
Sand live oak	<i>Quercus geminata</i>	5
Myrtle oak	<i>Quercus myrtifolia</i>	3
Cabbage palm	<i>Sabal palmetto</i>	8

Plants

Yellowleaf hawthorn	<i>Crataegus flava</i>	2
Saw palmetto	<i>Serenoa repens</i>	9
Sand cordgrass	<i>Spartina bakeri</i>	4
Coontie	<i>Zamia integrifolia</i>	16
Adam's needle	<i>Yucca filamentosa</i>	7
Blackeyed Susan	<i>Rudbeckia hirta</i>	5
Muhly grass	<i>Muhlenbergia capillaris</i>	475
Purple lovegrass	<i>Eragrostis spectabilis</i>	84
Elliott's lovegrass	<i>Eragrostis elliottii</i>	40
American beautyberry	<i>Callicarpa americana</i>	6
Coral bean	<i>Erythrina herbacea</i>	3
Garberia	<i>Garberia heterophylla</i>	3
Firebush	<i>Hamelia patens</i>	4
Yaupon	<i>Ilex vomitoria</i>	3
Myrtle oak	<i>Quercus myrtifolia</i>	4
Rusty staggerbush	<i>Lyonia ferruginea</i>	4
Tough buckthorn	<i>Sideroxylon tenax</i>	6
Darrow's blueberry	<i>Vaccinium darrowii</i>	10
		702

Archbold Plant Replacements, September 2014

Florida rosemary	<i>Ceratiola ericoides</i>	47
Coastalplain staggerbush	<i>Lyonia fruticosa</i>	8
Scrub palmetto	<i>Sabal etonia</i>	
and saw palmetto	<i>Serenoa repens</i>	48
Sand live oak	<i>Quercus geminata</i>	4
Gopher apple	<i>Licania michauxii</i>	2
Lake Wales balm; Christman's mint	<i>Dicerandra christmanii</i>	35
		144

GRAND TOTAL

14,196

awarded Water Star® designation from the Southwest Florida Water Management District and Florida Friendly™ Gold from the University of Florida's Institute for Food and Agricultural Sciences (IFAS).

Archbold's native landscaping provides varied learning opportunities, serving to inspire society about its many benefits. Archbold hosts more than 10,000 visitors annually who view the native landscaping, ranging from the public and conservation groups (including FNPS) to scientists, students, professionals, and nearly 2,000 schoolchildren. Many walk the self-guiding "Ridgescaping Trail", with 6 signs explaining the landscape goals (SWFWMD-funded) and 116 plants labeled with name tags. Archbold offers 4 public landscaping tours annually, works with the Pygmy Fringetree Festival, and partners with artists such as Mollie Doctrow, who installed 3 beautiful wildflower shrines inspired by endangered scrub plants, to promote arts-nature engagement. In conclusion, Archbold's native landscaping connects the outside to the inside, offering attractive and tranquil scenes with focal points of learning, visible from all buildings, paths and driveways, and enhancing the long views to the beauty of the surrounding Florida scrub.



Figure 4: A blaze of fall flowering grasses greets visitors wandering down the sandy slopes of the ecotonal prairie, on their way to Archbold's Nature Trail.

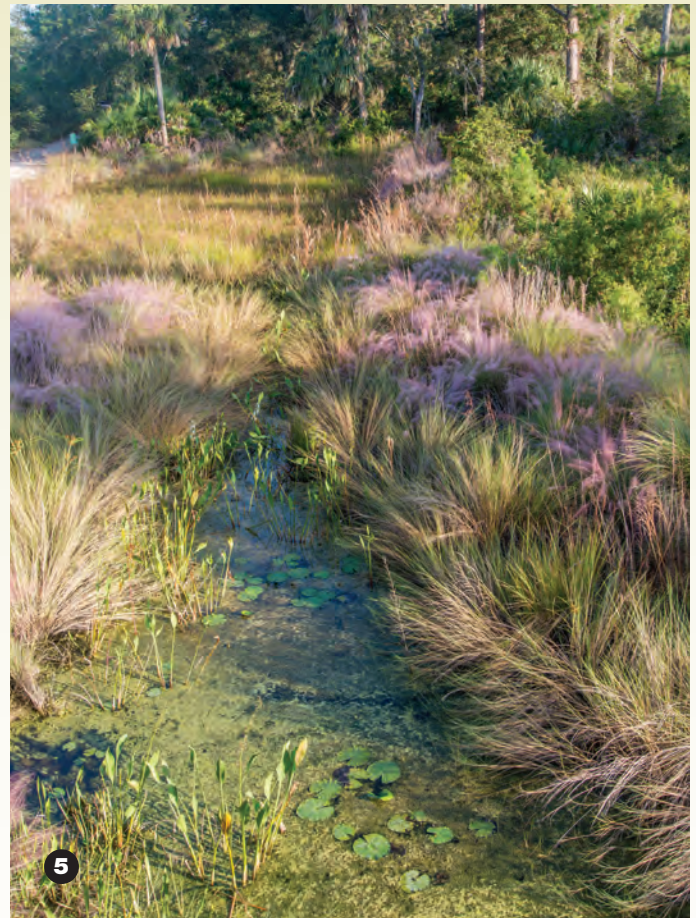


Figure 5: This seasonal wetland provides an instructive example for how to create a diverse wetland ecosystem that also serves to hold back and treat stormwater runoff.

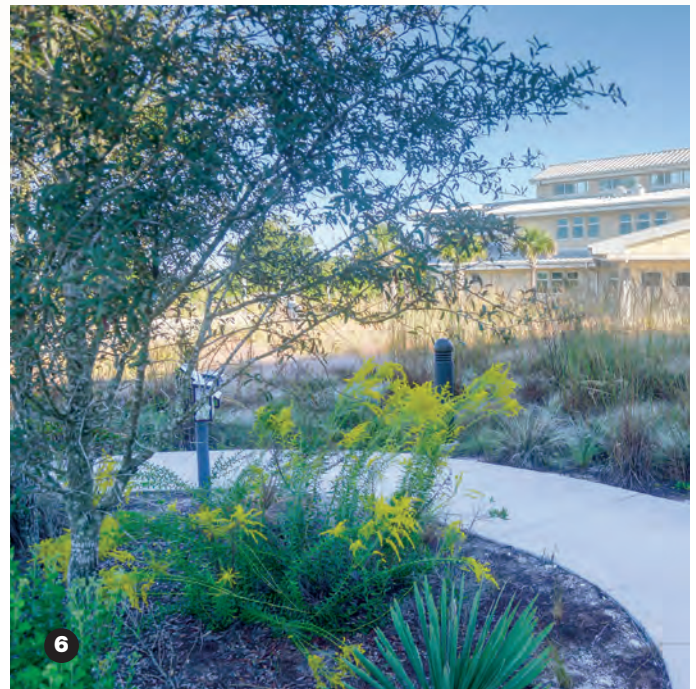


Figure 6: Islands of trees and shrubs attract wildlife and serve as focal points of interest when seen from buildings and paths.

2016 FNPS Landscape Awards

We encourage you to participate in the 2016 program. Award winners will be honored at the FNPS Annual Conference in Daytona Beach.

An application is available online at

http://www.fnps.org/assets/pdf/awards/fnps_landscape_awards_application_2016.pdf.

To see additional photographs of the award-winning designs, visit www.fnps.org and click on 'What We Do > Landscaping'.



Remembering Dan Austin

(continued from page 7)

Charles Roberts, Geography Department, Florida Atlantic University – “Of all the people currently doing research in South Florida, I have found that Dan

Austin has done more to facilitate a discussion on the uniqueness of the South Florida vegetation communities... behaving differently in the South Florida environment than in the literature, which is written mostly either on the tropics or the temperate zone.”

Walt Courtenay, Florida Atlantic University, retired – “Over the past three decades, you have out-published all of the other faculty members and did an outstanding job heading up the environmental sciences program.”

Kathy Burks, Florida Natural Areas Inventory, deceased – “Dan Austin – the first word that comes to mind is “maestro”. He’s one of Florida’s master botanists. Every time I talk with him I learn something more about plants. I really enjoyed working with him as co-chair of the FLEPPC (Exotic Pest Plant Council) list committee. The list would not be where it is today without him. He is the “father of the list.”

Richard Moyroud, Mesozoic Landscapes, Lake Worth, Florida – “Dan’s been a wealth of information and knowledge and help – from the Exotic Pest Plant Council, to native plants issues, and many others. He also has an excellent sense of humor – which is very useful in the field.”

Anne Cox, President, Florida Native Plant Society – “When I think of Dan Austin, I think of the time he spent with me on my master’s thesis. Any time I’d call during the week, he would always be available and call me back.”

Chris Lockhart, Habitat Specialists, Inc. – “One thing I remember about Dan Austin is his contagious enthusiasm for the fascinating world of plants – the good, the bad, and the cool, interesting stuff. He was also a great mentor for my thesis and dealing with journal reviewers for publication. In his flora class, he showed us how to eat cactus fruit – very carefully. He took us out to Fakahatchee Swamp, sometimes going waist deep in water. He was also very sneaky when field-testing his students.”

Cynthia Plockelman, SFWMD, retired – “I will treasure all my memories, including a trip to the Fakahatchee Strand, which scared me witless but I went anyway. I survived and it was a great time. Thanks for everything you’ve done for Florida!”

Fun scientific names offered for Dan were:

Jacquemontia of-all-trades (Suzanne Koptur, FIU)

Daniellia morningglory-guy (Roger Hammer, Miami-Dade Recreation and Parks, retired; author).

Further Tributes to Dan Austin

Dan passed away on January 20, 2015, but his spirit lives on in our community. As announced at the 2015 FNPS Conference in Tallahassee, the Dan Austin Scholarship Fund will be created to benefit a student of ethnobotany. Anyone wishing to contribute to this fund should send their tax-deductible donation to FNPS and specify that it go toward this scholarship fund. The goal is to have enough funds to offer a scholarship for 2016. Chris Lockhart will chair the scholarship fund committee.

Efforts led by Alana Edwards, his last graduate student, are also under way to petition FAU to name the FAU Preserve in Dan’s honor. As a world-renowned scientist, author and significant contributor to the university, the value of his efforts is hard to calculate but could easily exceed that of many notable financial contributions provided to the university. Many colleagues, professionals and students have written letters of support. Here is an excerpt from one of the letters that speaks for all his students:

“Dr. Austin...opened the door for me to enter into the rest of my life with a sense of accomplishment and direction in hand. It wasn’t just me. He helped so many.... He was the beacon of inspiration in his compassion, his professionalism, his great love of his wife, Sandy, that we students could clearly see, his love of plants, of the Earth, his respect for people, and his sincerity to act to improve the environment and students.... The past eight years I have taught environmental science at G-Star School of the Arts. There is not a day that passes by that I do not think of Dan and hope that somehow my students will get some glimpse of his influence in our classes.” – **Renee L’Hoste Rasha, environmental analyst, science educator.**

Additional Reading

Journal of Economic Botany, 2015, Vol. 69

Daniel F. Austin – The Man Behind the Name by Bradley C. Bennett

For a digital collection of Dr. Austin’s non-*Ipomoea* publications and other articles of interest compiled by Alana Edwards (Education & Training Coordinator at Florida Atlantic University’s Center for Environmental Studies), visit <http://tinyurl.com/dan-austin-pubs>

A short article about Dan Austin (now in review) will appear in *Wildland Weeds*, a publication of the Florida and Southeast Exotic Pest Plant Council (FLEPPC), online at www.FLEPPC.org

Dan Austin’s book *Baboquivari Mountain Plants* is available from The University of Arizona Press, <http://www.uapress.arizona.edu/Books/bid2208.htm>

What is the REAL *Zamia pumila*?

Daniel B. Ward

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Florida botanists are very familiar with *Zamia*, the plant affectionately called “Coontie,” supposedly the name given it by the Seminoles. We know it to be a cycad, an unimaginably ancient form of plant that flourished long before the dinosaurs and still persists, beloved by horticulturists but now often threatened or endangered. Florida has two species. One is a foreigner, the “Cardboard Palm” (a ridiculous name!) or *Zamia furfuracea*. The other is a native, variable in different parts of the state, but apparently all a single species.

But botanists have long disagreed as to the scientific name the Coontie should bear. Much of the literature, dominated by out-of-state authorities, has long used the name *Zamia integrifolia*. (This is the correct name, by the way, as I’ll hope to show.) In the late 1970s a Canadian botanist, Jim Eckenwalder, working at Fairchild Tropical Garden, undertook a study of the West Indian *Zamia*. He found them to be variable – as everybody knew – and finally just said the heck with it, and in 1980 called them all *Zamia pumila*. (*J. Arnold Arbor.* 61: 701-722). Our Wunderlin & Hansen *Guide to the Vascular Plants of Florida* (2011) has followed Eckenwalder’s lead. A few lonesome souls used another early name, *Zamia floridana*.

Your present scribe – not to be different, but with a passion to tidy up erroneous scientific names – was one of the few who persisted with *Zamia floridana*. He wrote a paper (*Phytologia* 91: 95-104. 2009) arguing that *Zamia integrifolia* was invalid and should be replaced by *Z. floridana*. Simply put, Linnaeus’ son, the author of *Z. integrifolia*, had included his father’s earlier *Z. pumila* as a synonym. By doing so his plant name was made superfluous – and the rule-book of this game, the *International Code of Botanical Nomenclature*, has decreed that superfluous names are invalid.

The *Code* also provides a pathway whereby an invalid name may be made legitimate; this process is called conservation and requires the aggrieved party to convince the majority of an international committee that the rules of the *Code* should be set aside and the desired but invalid name be restored. [For a fuller comprehension of this arcane issue, read the *Phytologia* article. You will then understand why mothers don’t encourage their children to grow up to be nomenclaturists.]

The two northern taxonomists who wanted to conserve *Zamia integrifolia* didn’t refute your scribe’s argument. But they pointed out (*Taxon* 61: 1111.2012) that *Z. integrifolia* was more often used than *Z. floridana* and for that reason should be

conserved; to lose the more familiar name would be disruptive. And the committee agreed. Thus, *Z. floridana* has again disappeared into synonymy under *Z. integrifolia*.

But Linnaeus (the father) had created the name *Zamia pumila* long before either of these two names were published. And the *Code* gives priority great power. Thus, Eckenwalder (and Wunderlin & Hansen), if they interpreted the West Indian (and Florida) cycads to be a single species, were within their rights in using the earliest name. Thus, Florida botanists could choose between *Z. pumila* and *Z. integrifolia*, depending upon whether they believed the West Indian complex represented only a single species or whether it was composed of several species one of which reached Florida.

Now, most abruptly, after some years of thinking we had reached at least semi-stability, we find we don’t know what Linnaeus meant by his name *Zamia pumila*! Discussion of variable living organisms is without value unless agreed-upon names can be assigned to the different populations. This agreement is achieved by the name being based upon an actual specimen or illustration. Where the original author had only one specimen or cited a single specimen as his basis, that specimen becomes the holotype. Where the original author did not state which of his materials was his basis, a later writer may designate one of the author’s materials, including illustrations in his cited references, to become his lectotype. This power, conferred by the *Code*, is of critical importance in the determination of the correct name for the Florida cycad.

At this point we must delve into history – where the name *Zamia pumila* came from, how it happened to be formed, and what was actually written about *Zamia* by Linnaeus, the man we acknowledge as founder of plant classification.

Carl Linnaeus as a young man had spent the years 1735 to 1738 in Holland, studying and working in the botanical gardens of Amsterdam and Leiden. In the 17th and early 18th century, when Dutch colonial power was at its peak, its merchant bankers acquired great wealth. Almost in the spirit of friendly competition, and stimulated by these powerful men, the larger cities established magnificent gardens, supplying them with exotic plants gathered from wherever the nation’s trading vessels sailed. The Amsterdam garden, under the guidance of its leading botanist, Jan Commelijn, had brought together hundreds of species from the West Indies (as well as

South Africa and beyond). In Holland Linnaeus had full access to these botanical riches. (Jan Commelijn had died just prior to Linnaeus' arrival, but his nephew Caspar Commelin was still of influence. These names were memorialized by Linnaeus by the name *Commelina*, the dayflowers.) Linnaeus surely knew and used Commelijn's illustrated folio of the gardens of Leiden and Amsterdam, *Horti Medici Amstelodamensis*, published in 1697.

Some years later, after returning to Sweden, Linnaeus, then securely employed at Uppsala University and internationally respected through his 1753 landmark *Species Plantarum* ed. 1 and other publications, undertook an expansion and revision of his earlier work. He clearly wished to be comprehensive, to include all the plants of the world. But the isolated, cold and biologically inhospitable land of his birth could not approach the lush gardens of Holland, and many of the plants he had once seen and studied were now inaccessible. His 1762 revision, *Species Plantarum* ed. 2, where he first published the genus *Zamia*, is quite cryptic. There is no useful description of his new "*pumila*," and its source is only the unhelpful "Habitat in America meridionali." But he did cite four references he believed of value, one of them Commelijn's *Horti*.

Commelijn's treatment was vastly superior to that of Linnaeus. He gave more than a page of description and discussion – first in Latin, then repeated in Dutch – of his "*Palma prunifera humilis non spinosa*" and its origin from "*insulae hispaniolae*." His full-page plate is of a five-leaved plant with narrowly ovate to lanceolate, long-tapering leaflets, the apex acute and the margins bearing widely spaced small teeth. (See FIGURE.)

More than two centuries later, in 1980, with the requirements of the *International Code* firmly in place – and since no specimen existed – Eckenwalder designated Commelijn's plate as the lectotype for *Zamia pumila*.

It is unclear whether the plant of 17th century Holland once grew in Hispaniola and has since been lost, or whether the original source was in error. But Commelijn's plant, as illustrated by his full-page plate, doesn't resemble any *Zamia* we now know from the West Indies or Florida. The Florida plant with all its variations has linear or narrowly oblong leaves, a blunt apex, and never marginal teeth.

It is unfortunate that Eckenwalder, as well as later authors addressing the West Indian cycads, did not realize the significance of this typification and the change it must cause in the understanding of *Zamia pumila*. Though he cited – and surely saw – the Commelijn plate, Eckenwalder made no reference to the characteristics that set it apart; presumably he interpreted these differences as acceptably within his all-encompassing single West Indian species.

So what is the REAL *Zamia pumila*? Truth is, right now we do not know. It has to be a plant that conforms to



FIGURE: Commelijn, plate 58, 1697; via Google Scholar.

Commelijn's plate – with narrowly ovate, long-pointed leaves. Surely something from Mexico or elsewhere in Central America must have been the plant grown in Amsterdam so long ago. A later Dutch botanist, Friedrich Miquel, in 1847, in describing a new species from Mexico (*Zamia fischeri*), noted it to be similar to Commelijn's plant; but he acknowledged he was unsure – he called his name a *nomen provisorium*. Miquel was right to be cautious, for there are several somewhat similar Central American species. Resolution of the modern identity of Commelijn's plant – the type of our *Zamia pumila* – will take expertise beyond that of a Florida botanist.

Yes, *Zamia integrifolia* is a name we can use, if we wish. Maybe we can't say what Linnaeus meant by his earlier name. But we can say, with confidence, that the name *Zamia pumila* cannot be correctly applied to any native Florida plant!

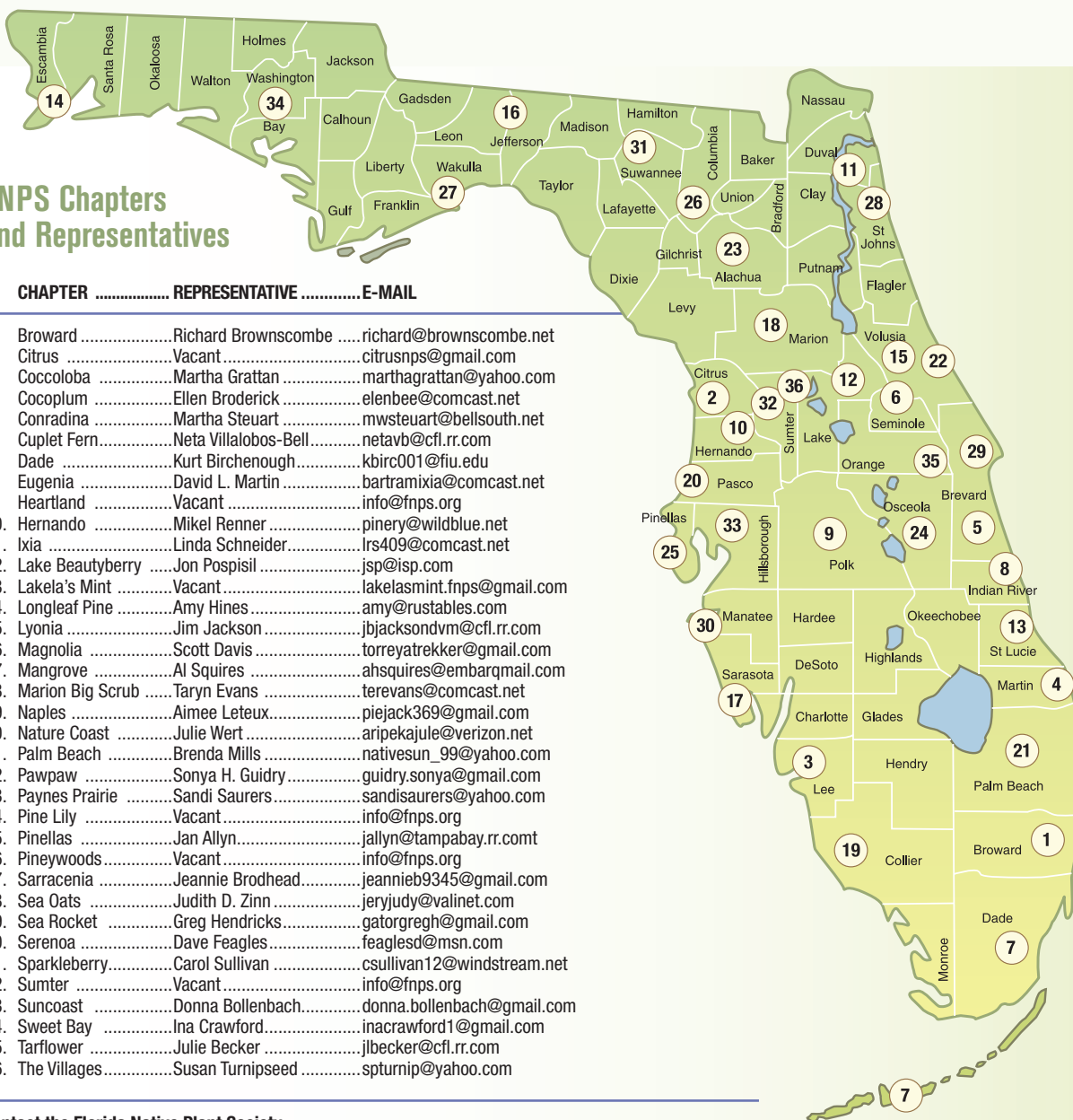
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