Announcing the 41st Annual Conference of the Florida Native Plant Society

We invite you to join us for this year’s virtual conference featuring expert speakers, a plant identification competition, online networking, virtual vendors, online auction, and field trips: May 20-22, 2022.

Additional Expert Speakers

Nancy Bisset, Anne Mackay and Carolyn Schagg – Florida Wildflower Foundation: The early days. Travel back in time to experience the statewide campaign to gain acceptance for and appreciation of Florida native plants.

Jim Draper – Defining radical naturalism

Ellen Honeycutt – Strategies for effective social media outreach

Pete Johnson – Crosby Sanctuary: Progression of a nature preserve

Bruce Means – Biodiversity of the Florida Panhandle

Sean Patton – Aquatic butterfly gardening

Chadd Scott – Engaging native plant advocates through current events in conservation

Renee Stambaugh – Enhance your yard and attract wildlife with native plants

Conservation and Research Grant Presentations

Jessica Balerna – Evaluating trade-offs among biophysical and cultural ecosystem services in freshwater wetlands impaired by groundwater extraction

Caitlin Bumby – Uncovering the true origins of a rare orchid endemic to Florida

Shelby Krupar – Genetic diversity and spatial genetic structure of Guzmania monostachia (Bromeliaceae) in Florida

Gage LaPierre – Seed mixture strategies in groundcover restoration of pine savannas

Mandy Morgan – Preliminary floristic inventory for the recently-protected Gladys Douglas Preserve in Pinellas County

Keynote Speakers

Dr. Emily Coffey
Torreya and other rare plant conservation cooperation with FNPS

Ginny Stibolt
Building better gateways to Florida’s biodiversity

Larry Weaner
Growing, planting and maintaining native plants: Turning a challenge into an opportunity

For more information: https://fnps.org/conference/2022

Apply for the Florida Native Plant Society 2022 Grant Awards

Endowment Research Grants
The Florida Native Plant Society maintains an Endowment Research Grant program for the purpose of funding research on native plants. These are small grants ($2,500 or less), awarded for a 1-year period, and intended to support research that forwards the mission of the Florida Native Plant Society which is “to promote the preservation, conservation, and restoration of the native plants and native plant communities of Florida.”

Conservation Grants
FNPS Conservation Grants support applied native plant conservation projects in Florida. These grants ($5,000 or less) are awarded for a 1-year period. These projects promote the preservation, conservation, or restoration of rare or imperiled native plant taxa and rare or imperiled native plant communities. To qualify for a Conservation Grant, the proposed project must be sponsored by an FNPS Chapter.

Dan Austin Award for Ethnobotany
The Dan Austin Award for Ethnobotany will provide up to $1,500 to graduate or undergraduate students who are studying Florida ethnobotany (the study of the relationship between peoples or cultures with plants native to Florida or Florida ecosystems. These can be current uses or historic uses.

Cornelia McNamara Grant
The Florida Native Plant Society has established a Cornelia McNamara Grant program for the purpose of funding applied research on native plants and habitats, particularly those that are rare or imperiled. These are small grants ($1,500 or less), awarded for a 1-year period, and intended to support research that will yield data to inform the management for or restoration of native species and habitats.

For application guidelines and details, visit https://fnps.org. Click on ‘What We Do/ Awards and Grants’.

Questions regarding the grant programs should be sent to info@fnps.org.

Application deadline is March 4, 2022. Awards will be announced at the May 2022 Annual Conference. Awardees do not have to be present at the Conference to receive an award.
Palmetto

MEMBERSHIP
Make a difference with FNPS

Your membership supports the preservation and restoration of wildlife habitats and biological diversity through the conservation of native plants. It also funds awards for leaders in native plant education, preservation and research.

Memberships are available in these categories: Individual; Multi-member household; Sustaining; Lifetime; Full-time student; Library (Palmetto subscription only); Business or Non-profit recognition.

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.

To become a member:
Contact your local chapter, call, write, or e-mail FNPS, or join online at https://fnps.org

The purpose of the Florida Native Plant Society is to preserve, conserve and restore the native plants and native plant communities of Florida.

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

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ON THE COVER:
Red buckeye (Aesculus pavia) at the Crosby Sanctuary. Photo by Pete Johnson.

CORRECTION:
In Palmetto 37-3, the plant depicted on the cover was mistakenly identified as common fanpetals (Sida ulmifolia). The correct name is climbing hempvine (Mikania scandens).
Our Beloved Blanketflower
A cherished Florida native or evil exotic?

Article and photos by Roger L. Hammer

Blanketflower (Gaillardia pulchella) is an extraordinarily attractive and popular wildflower among home gardeners throughout Florida. The species name, pulchella, appropriately means “beautiful.” The Florida Department of Transportation is even involved in roadside beautification projects, spreading hundreds of thousands of blanketflower seeds along the I-10 corridor in northern Florida, as well as other major roadways in the state, turning them into linear masses of color. It is often included in wildflower seed mixes, plus potted plants and seed packets can be purchased in most garden centers and nurseries statewide.

Blanketflower is also known as firewheel, but in the American Midwest it is called Indian blanket for the resemblance of the colors on the ray flowers (“petals”) to the colorful blankets woven by Native Americans. In Mexico it is called girasol rojo (red sunflower). It is an annual, biennial, or sometimes short-lived perennial with wind-dispersed seeds that will sprout the following spring in open sunny areas wherever there is bare, sandy soil. It can also be found growing in undisturbed natural habitats such as sandhills and beach dunes in Florida, as well as road swales, parking lot islands, median strips and other disturbed sites.

The good news is that it is one of the prettiest and most adored wildflowers in Florida gardens, but the bad news is that recent research indicates it is not native to Florida nor anywhere else east of the Mississippi River in the United States. Over the years, the Florida nativity of blanketflower has been questioned by many botanists, even though it has been touted as a Florida native wildflower for decades, so it will take time to adjust to viewing it as just another naturalized exotic.

A 2020 report titled Studies in the Vascular Flora of the Southeastern United States was published in the Journal of the Botanical Research Institute of Texas with research articles written by a cadre of respected botanists, including Alan Weakley, Edwin Bridges, Steve Orzell, Keith Bradley, Alan Franck, and others. In this publication is a paper authored by Alan Franck, collections manager at the University of Florida Herbarium, with the heading “Gaillardia pulchella is not native to the eastern U.S.A.”

Although other botanists have openly questioned the Florida nativity of Gaillardia pulchella, Dr. Franck offers very convincing proof in a major botanical journal. In the United States, Gaillardia pulchella is believed to be native from Kansas to Arizona east to Texas and Louisiana but, oddly enough, it was first described in 1786 by French botanist Auguste-Denis Fougeroux de Bondaroy (1732–1789) from a cultivated plant collected in France in 1783. Over many decades there have been taxonomists who have assigned other names to various forms of this species, namely Virgilia helioides (1788), Gaillardia picta (1834), Gaillardia drummondi (1836), Gaillardia lobata (1862), Gaillardia scabrosa (1862), Gaillardia villosa (1915), and Gaillardia neomexicana (1926), but those names, and quite a few others, are sunk under synonymy with Gaillardia pulchella, with some being either illegitimate or misapplied names.

In the nursery trade there are also numerous cultivars with names like ‘Sundance,’ ‘Arizona Sun,’ and ‘Texas Sunset.’

The most damning evidence against Gaillardia pulchella being native to Florida is that it was not reported as being present by any of the early botanists, and Dr. Franck rightly
noted that it is highly implausible that all of those sharp-eyed, veteran field botanists could have overlooked a plant with such gaudy flowers. Plus, he noted that the earliest report of *Gaillardia pulchella* in the eastern United States seems to have been made by German-American botanist Charles Theodore Mohr (1824–1901) when he reported it in 1878 growing in ship ballast on Pinto Island, Alabama, referring to it on an herbarium sheet in 1882 as a “foreign plant” from Texas. Furthermore, it was noted that early reports of it in Florida were either of cultivated specimens or plants that appeared to have escaped cultivation. Once it became popular in the nursery trade, reports of it growing outside of cultivation escalated in Florida and elsewhere across the eastern United States. And, as it began to show up in undisturbed habitats, such as sandhills and beach dunes, it was assumed to be a native component of Florida’s flora. The sad truth is, it’s been an impostor all along, but please don’t shoot the messengers! To help assuage your mental anguish, we still have *Gaillardia aestivalis* as a Florida native.

References


About the Author

Bioinoculants: A New Tool for Combating Plant Invasion

Karim Dawkins and Nwadiuto Esiobu

The invasion of non-native plant species disrupts ecological processes and biodiversity with dire consequences for food chains, further exacerbating the impact of climate change. Florida is a hotbed for exotic invaders, ranking as the most invaded state in the country, due in part to its warm, humid climate. The Brazilian pepper tree (BP—Schinus terebinthifolius) tops the list as one of the most tenacious, difficult-to-control invasive plants in the Everglades National Park (ENP) and surrounding areas (Figure 1). With more than 700,000 acres of Florida dominated by this Category 1 invasive plant, current extensive and expensive control/restoration measures relying on chemical treatment or mechanical uprooting have been minimally successful. Unlike Melaleuca (Melaleuca quinquenervia), where current control efforts have been successful in restricting spread, the BP is not only resistant but has expanded its range even further north up to Alabama.

Land managers in Florida continue to face enormous challenges with the fast regrowth of cut stumps, the effective establishment of BP even among natural undisturbed landscapes and the efficiency of the spread of its numerous seeds by frugivorous birds. While the recent release of a thrips insect (Pseudophilothrips ichini) and a yellow Brazilian pepper tree leaf-galler (Calophya latiforceps) that selectively target BP promise to be a useful biological control for established plants, curtailing propagation, competition and spread of BP requires additional tools. In fact, the restoration of native ecology after mechanical removal of BP is further impeded by the poorly understood BP ‘legacy effect’ (Nickerson & Flory, 2015), where invaded soils fail to support healthy native plant communities. Initial studies of the rhizosphere of BP (Dawkins & Esiobu, 2017) showed that like other invasive plants it alters the soil microbial community and consequently, nutrient cycling fluxes that affect the performance of other native plant species.

In addition to the BP ‘legacy effect’, the low biotic resistance of some Florida communities may play a significant role in the vulnerability of its ecosystems to exotic invasive species. Biotic resistance is a measure of the relative competition index of resident communities and the invading species. It is the ability of a consortium of native species (plants, herbivores, microbes) above and below ground to reduce invasion by introduced exotic species (Levine et al., 2004). The phenomenon of biotic resistance is not general in all cases of plant invasion. It has been demonstrated in communities (defined by taxa and scale), where the occurrence of invasive species is negatively correlated with higher species richness and diversity of the native plant species, suggesting a role for resource competition and/or enemy release. This decrease in the diversity of above ground flora and their respective below ground microbial communities provides an empty niche in which exotic invaders can get introduced, successfully establish and spread. Environments with high biotic resistance usually have abundant and diverse native flora that compete with exotic invasive plants during introduction and establishment.

In Florida, the aggressive displacement of native plants by the invasive Brazilian pepper tree is the result of resource competition faced by resident species among others. But what can be done to improve Florida’s low biotic resistance? Land managers use methods such as herbicide treatments to remove weedy grass species and prescribed burning to remove dominant plant species to support a more diverse ecosystem. These methods target the above ground flora without direct attention to the critical below-ground microbial component of the entire process (Dawkins & Esiobu, 2016). Our field survey of the prevalence of key potentially beneficial mycorrhizal fungi in invaded Florida parks, showed a moderately low relative abundance of Glomus spp. in the rhizosphere of two native plants compared to the invasive Brazilian pepper tree. Acaulospora spp. was nearly four-fold less abundant under the Brazilian pepper tree.
compared to within the soil under the native plants (Figure 2). This could be an indication or result of an undefined invasion mechanism that alters the soil mycorrhizal community, potentially to the advantage of Brazilian pepper tree and the detriment of native plants. One possible explanation for the low relative abundance of *Glomus* spp. in the rhizosphere of the two native plants in our sample is that *Glomus* spp. populations are historically low in both diversity and number in native Florida soils. The introduction of an invasive plant with an elaborate root system, BP in this case, mops up the available beneficial microbes, leaving a deficit in supply for the nearby native plants.

Bioinoculants are a subcategory of biofertilizer. Biofertilizers are biological products containing living microorganisms that, when applied to seed, plant surfaces, or soil, promote plant growth (Vessey, 2003). The environmental benefits of biofertilizers have been known for many decades (Mącik et al., 2020) but biofertilizers are just reaching mainstream agriculture due to improved microorganism strain selection.

We hypothesized that the use of appropriate bioinoculants will improve the growth rate and yield of Florida native plants by improving their competitive advantage for limited resources like water, phosphorous and nitrogen. The application of bioinoculants to broader ecosystem restoration deserves attention. Bioinoculants come in many forms including commercial varieties you can purchase at farm stores or online and contain a concoction of beneficial fungal and bacterial microbes that are able to improve the performance of a variety of plant species (Figure 3).

Here we summarize the results of our studies that point to the potential value of biofertilizers as important tools in Florida ecological restoration. The bioinoculants used for this study contain arbuscular mycorrhiza (AM) fungi from the phylum Glomeromycota and ectomycorrhiza (EM) fungi from the class Basidiomycetes and Ascomycetes which form symbiotic relationships with the roots of numerous plant species. We also tested bioinoculants that contain beneficial bacteria such as *Rhizobia* spp., *Bradyrhizobium* spp., *Bacillus* spp., *Trichoderma* spp., and *Pseudomonas* spp. How do these different microbes benefit the native plants during restoration? Are microbes even important?

Microbes are the single most important organisms able to break down recalcitrant organic matter into available nutrients that can be reused by plants and other organisms. The microbial community supports the above ground vegetation, and the plants supply the microbes with carbon substrates. Plant growth promoting microbes (PGPM) found naturally in soil benefit plants usually by three main mechanisms: 1) as biofertilizers improving the allocation of essential soil nutrients like phosphates and nitrates from soil eg. fungal mycorrhizas & *Rhizobium* spp., 2) phyto-stimulators – producing plant-like hormones that can improve root growth like *Azotobacter* spp., and 3) biocontrol agents eg. *Trichoderma*, *Pseudomonas* and *Bacillus* spp. to prevent infection from other pathogenic microorganisms.

Up to 80% of terrestrial plants associate with AM/EM fungi. When in association with plants, AM are able to extract and supply inorganic phosphate using their extensive hyphal network in return for organic carbon exudates from plants usually in a mutualistic symbiosis. AM and EM are also integral in improving water uptake in drought conditions and providing protection from soil pathogens. In general, plants with slower developing root systems or a lower root: shoot ratio are more positively affected by AM/EM association. Mycorrhizal interactions are also affected by abiotic factors such as soil condition, pH, phosphate concentration and other soil chemistry factors.

**Experimental Design**

The use of soil inoculum and conditioners can improve recovery of an entire disturbed ecosystem by boosting the competitive edge (a component of biotic resistance) of native plant communities to some invasive species (Perkins & Hatfield, 2016). In this report, we present the initial evidence...
that the application of biofertilizers will support native plants and help to curb BP invasion. Specifically, we evaluated the effect of two soil remediation/biofertilizer treatments on BP/native seedling performance and the infection level of fungal mycorrhiza over a 45-day period. Soil was collected near the local Florida Atlantic University Davie Greenhouse and amended 2:1 with commercial topsoil. Seeds from beggarsticks or Shepherd's needle (Bidens alba) and South Florida slash pine (Pinus elliottii var. densa) were collected from a local plant nursery. Brazilian pepper tree (Schinus terebinthifolius) seeds were collected from the local U.S. Department of Agriculture branch office in Davie, Florida. These seeds were subsequently used in the germination and growth experiments. Beggarsticks or Shepherd's needle (N1) is a weedy, mycorrhiza-dependent native plant species in Florida and is usually found growing alongside BP and also in some disturbed areas. Florida slash pine (N2) is a common species found in pine flatwoods which are currently close to being threatened. Slash pine was also previously shown to be subdued when grown with Brazilian pepper tree in a previous greenhouse study (Nickerson & Flory, 2014). All the seeds were pre-germinated, and the seedlings transferred to the sets of the experiment with non-invaded soil as follows: 1) No treatment control (NT), 2) mycorrhizal fungal inoculant (Myco) and 3) bacterial + fungal inoculant (M+B). For each of the different treatments, we had BP grown alone, BP+N1, BP+N2, N1 alone, N2 alone and plant free pots which were grown for 45 days. All treatments were done in three replicates.

Bioinoculants can be used to improve germination rates and seedling performance of natives

Seedling performance is a great limiting factor of native plant restoration efforts (Perkins & Hatfield, 2016). Invasive plants alter the soil microbial community in native soil which contribute to seedling performance. Our controlled grow room study assessing the effect of bioinoculants on germination rate was also promising. Combining native plants with BP in a pot amended with mycorrhizal bioinoculants showed a significant improvement in the percentage seed germination rate (Figure 4). Slash pine and Shepherd's needles germination rate increased approximately two fold with the mycorrhiza inoculant addition shown in Figure 6D has a reduced network of hyphae when treated with the bioinoculants, which correlated with a high infection level of mycorrhiza and native seedling performance. The micrograph of SP native without bioinoculant addition shown in Figure 6D has a reduced network of hyphae compared to the treatments in Figure 6(A-C). In terms of bioinoculant type, the opposite was seen for the Shepherd's needle native where a higher seedling performance was observed in the M+B biofertilizer (Figure 5i). In this case the combination of beneficial fungi and bacteria were integral to its success. This underscores the need for careful selection and screening of the appropriate strains and types of microorganism for restoration of a given ecology or native plant.

As also shown in figure 5ii Brazilian pepper tree showed no significant improvement in performance and size in the no treatment control and both bioinoculant treatments (mycorrhiza only and mycorrhiza and bacteria). This was expected as a previous meta-study (Levine et al., 2004), has shown that the inclusion of fungal mycorrhizas has a mixed
Figure 5:

i) Above and below ground biomass of both native plants – slash pine (SP) and Shepherd’s needle (SN) when grown as a monoculture (only) or with BP after 45 days and in the three treatment conditions – NT (no treatment), MYCO (mycorrhiza only treatment) and M + B (mycorrhiza and bacteria treatment).

ii) A) Slash pine and B) Shepherd’s needle native plants grown with invasive BP after 45 days in the different treatments C) Brazilian pepper tree invasive plant growth in the different treatments after 45 days. NTC (no treatment control), MYCO (mycorrhiza only), M+B (mycorrhiza and bacteria). Scale bar = 1mm.

positive and negative effect on exotic invaders due to the sometimes species-specific nature of these microorganisms. It is also quite possible that in the case of invasive BP, mycorrhizal infection is already saturated in the no treatment soil which would still contain some native mycorrhiza. In Figure 5ii image C, invasive BP had a more extensive root network than the treatment conditions. Mycorrhiza and other PGPMs can also help stimulate root production. High mycorrhiza infection levels were also seen using microscopy for invasive BP even without bioinoculant treatment (Figure 6E).

Conclusions

The addition of beneficial microbes in our study improved the biomass yield of natives but not that of BP suggesting a deficit of these microbes in Florida soils. Early germination and establishment of native plants will augment their competitive advantage and resilience against invasion; underscoring the potential relevance of bioinoculants as a tool to improve native plant restoration efforts. An ideal remediation/biofertilizer treatment should increase the performance of the natives while decreasing the performance of the invasive plant or even decreasing the performance of the invasive plant with a neutral effect on the native. The former was closer to what we observed in our experiment, but no significant decrease was seen in the performance of the invasive Brazilian pepper tree.

Neutralizing the effect of invasive plants with microbial inoculants containing beneficial fungal and bacteria species has great potential to bolster continuar on page 11...
We have all heard that many plants native to Florida are on the decline because of habitat loss, invasive species, poaching, and development. Blaine Baxter, an Eagle Scout and Jupiter, Florida native whose motto is: “If you see a need, take the lead” decided to do something.

Blaine has been working on the 5.2 mile Mike Machek Trail, part of the Tanah Keeta Scout Reservation in Tequesta, Florida for over 2 years. With financial support from a conservation grant he received from the Florida Native Plant Society, he learned how to identify the plants growing along the trail, using a species list from the adjoining Jonathan Dickinson State Park (JDSP) as a guide. Blaine focused on helping to control non-native plants, and used his plant identification skills to make sure he wasn’t spraying anything important by accident.

After discovering that there were imperiled species in the area, he contacted Rob Rossmanith, JDSP Park Biologist, for help. He also had the support of Terrence Hamilton, CEO/Scout Executive of the Gulf Stream Council, Boy Scouts of America. With the encouragement of these advisors, Blaine reached out to Pine Jog Environmental Education Center, which is part of Florida Atlantic University.

One of the native plants he learned about is *Tolumnia bahamensis*, a semi-epiphytic orchid species that lives in the coastal scrub of Martin and Palm Beach Counties. This orchid is usually found within leaf litter or near the lower branches of Florida rosemary or scrub oak plants. Blaine became interested in working with the orchid, and over time, he earned Pine Jog’s support for his efforts to help augment the population of dancing lady orchids in Tanah Keeta.

Using orchids grown at Pine Jog from seed pods collected in the wild, Blaine organized placing the orchids under Florida rosemary plants, which resemble (but are not related to) the culinary herb rosemary. Although the orchids are placed on the ground, they are expected to grow up through their companion plants, and Pine Jog researchers learned...
that the orchids grow more successfully when shaded by pines.

In a single day, the group augmented the wild population of dancing lady orchids with roughly one hundred new plants, which have an expected survival rate of approximately fifty percent. This outplanting is only the eighth reintroduction of these endangered orchids and the Tanah Keeta Scout Reservation site represents a “Northern Lab” location. Sites further south include the Yamato, High Ridge, Lantana, Hypoluxo, Jupiter and Juno scrub areas, where plantings began in 2017.

Blaine and the scientists from Pine Jog monitored the orchids after six months, and their approximately sixty-seven percent survival rate exceeded expectations. The appearance of blooms will be the best clue that the reintroduction has worked.

A senior at Jupiter High School, Blaine hopes to study botany at the University of Florida. His goal is to restore endangered species.

Further Reading


Bioinoculants:
A New Tool for Combating Plant Invasion

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ongoing restoration efforts. Changes in the soil microbial community brought about by natural and anthropogenic factors that affect specific microbes needed by native plants may be undesirable and eventually lost, affecting subsequent native populations. These lost microbes can be replenished through the use of biofertilizers to protect plants and supply nutrients. Besides being costly, the production of chemical fertilizers depletes nonrenewable resources and the oil and natural gas used to produce these fertilizers pose numerous human and environmental hazards. It would obviously be advantageous to employ efficient biological nitrogen and phosphorus sources to plants as a substitute for at least a portion of the chemical fertilizers currently used.

The many potential benefits of this new ecological restoration tool emphasize the need for repeating the study in a field type setting before deploying it for wider applications.

References


About the Authors

Nwadiuto (Diuto) Esiobu Ph.D. is the principal investigator and director of the microbial biotech laboratory at Florida Atlantic University. She and her students employ molecular and multidisciplinary ecological tools to understand microbial interactions with plant and animal hosts, and how these could be harnessed for improving environmental sustainability and health. Diuto loves to sing and dance. She enjoys traveling around the world and experiencing new cultures and cuisine. Nature, for her, is divine!

Karim Dawkins is a Ph.D. candidate in Dr. Esiobu’s lab at Florida Atlantic University. His dissertation research involves delineating the microbial basis of plant invasion with an end goal of finding alternative solutions for native plant restoration. He is a member of the Florida Native Plant Society and recipient of its research grant award in 2020. Karim enjoys traveling, camping and kayaking.
The Inspiring Story of Crosby Sanctuary

How volunteers from one local Audubon chapter built a 510-acre preserve

Above: The Crosby Sanctuary contains both wetlands and uplands.

Right: Wax myrtle (Morella cerifera) and sweet pinxter azalea (Rhododendron canescens) in bloom.
Recently, I spoke with Pete Johnson, a biologist who has been the volunteer director of the Crosby Sanctuary for the past 20 years. I’ve known Pete since 2006 when the Florida Native Plant Society’s Ixia Chapter was restarted in Jacksonville, so he’s been an active participant in advocating for the environment in northeast Florida for a long time.

What follows is a summary of our conversation about the Crosby Sanctuary, a 510-acre preserve that is owned and managed by the Duval Audubon Society. This preserve is bordered by suburban neighborhoods and riverine floodplains in northern Clay County, and was put together piece by piece over several decades. After hearing about what this Audubon chapter accomplished, I thought that FNPS chapters might be inspired to envision a similar scenario if and when opportunities arise in their local areas.

Cobbling together a sanctuary

The acquisition of the Crosby Sanctuary’s 510 acres happened as opportunities arose over the span of approximately 35 years. The Sanctuary got its start in 1979 when Jay and Abbie Crosby donated 150 acres of property to the Duval Audubon Society. In 1985 they donated another 250 acres of adjoining property, consisting of mostly unbuildable wetlands. An additional 45 acres were acquired as mitigation from a developer in exchange for their using wetlands to build a nearby Target store. Later, chapter members learned of a vacant lot in an adjacent suburban neighborhood and convinced the owner to sell it. Purchasing the lot saved it from being developed for yet another suburban house, and created a space that could be used as an entrance to the Sanctuary. This easily accessible area gave members and volunteers more room to work with. They have installed native landscaping, benches, outdoor classroom seating, signage and parking.

In 2005, members of the chapter approached the owner of eight acres located just inside the entrance area. This piece of unused land was owned by the developer of the Orange Park Country Club, who donated it to the chapter. Later, they were able to acquire an additional 64 acres of uplands near the country club which was burdened with four years of unpaid property taxes totaling $7,000. Duval Audubon offered to pay the taxes if the owner donated the land, which was worth $250,000.

The mission and use of the sanctuary

The chapter’s mission for the sanctuary is to protect biodiversity and ecosystem functions, while providing opportunities for the community to enjoy, study and appreciate nature. Having this property as a focal point for field trips and outings helps generate enthusiastic members who want to keep participating. Not everyone wants to identify every bird or plant; some want to get out in the woods, or prefer to build something or do something meaningful that helps create an enjoyable space where others can experience nature. It’s helpful to the chapter to have this resource for the whole community.

The chapter has run volunteer work days and field trips for a wide range of local groups including the Sierra Club, the Ixia Chapter of FNPS, school groups, corporate volunteers, scouts, and others. They have also worked with the Florida Youth Challenge Academy, Ridgeview High School Earth Club and several Eagle Scouts to complete numerous improvement projects. Organizations can contact the Duval Audubon Society to schedule special guided field trips, and individuals are encouraged to attend regular monthly work days and open house events.

Financing the sanctuary

Fund raising efforts include mentioning the Crosby Sanctuary in an annual fundraising letter, and sometimes anonymous donors earmark Crosby to receive their donations. Maintenance costs are a couple of thousand dollars annually – although it can vary widely depending on needs.

Article by Ginny Stibolt; photos by Pete Johnson

Learn more about the Crosby Sanctuary: Pete Johnson will be a speaker at the 2022 Florida Native Plant Society Conference. The title of his presentation is “Crosby Sanctuary – Progression of a Nature Preserve.”
Show your support for native plants! Reserve your FNPS license plate voucher now.

Your financial support helps fund:
- Support for conservation land acquisition.
- Participation in land management that enhances habitat suitability for native plants, wildlife, and beneficial insects.
- Education about our native species and landscapes.
- Research on native plant species.
- Public policies that protect our native flora, especially rare species.
- Supporting legislation to protect our natural lands and native plants.
- Encouragement of local landscaping practices and policies that preserve Florida’s native plant heritage.
- Information about native plants and native plant communities, and how we can help protect our natural resources and wildlife in urban environments.

Further Reading

About the Author
Ginny Stibolt is a botanist, native plant enthusiast, and an award-winning garden writer. She's coauthor of Climate-Wise Landscaping: Practical Actions for a Sustainable Future, and author or coauthor of four peer-reviewed Florida gardening books published by the University Press of Florida. Ginny’s blog is www.greengardeningmatters.com

Red buckeye (Aesculus pavia).
Read just the first few pages of *The Palmetto Book* by Jono Miller and you will discover two obvious things: (1) This is a book written by a man who is passionate about his subject and (2) It is a book written by an excellent writer. The combination makes for an interesting and enjoyable read. When I first learned about Jono’s plans to publish a book on this singular topic, I was somewhat quizzical as to how such a thing could be pulled off in a full-length book. The answer is that he has accomplished it and done it with finesse, a vast accumulation of data and personal experiences, and with a wry sense of humor at just the right places. The result is a very readable book — what Jono calls a “peregrinating ramble about a plant you didn’t necessarily think you wanted to know more about, but do.” This is a work that has taken nearly three decades to complete, so it is a labor of love as well.

*The Palmetto Book* is a biography and natural history of Florida’s state tree — the cabbage palm (*Sabal palmetto*). It is not an exploration of other “palmettos” — the saw palmetto (*Serenoa repens*) or any of the other native palms in the *Sabal* genus, though they are mentioned when appropriate. As Jono puts it, the book “is a collection of stories” and it is creatively divided into three parts that make it even more accessible.

Part I covers the ecology and history of this palm in both Florida and South Carolina where it also is the state tree. Jono has amassed a wealth of historical information in these early chapters and I found them fascinating. His descriptions of the original Fort Moultrie and the British attacks into Charleston Harbor during the early stages of the American Revolution were especially enlightening to me. From here, he devotes chapters to the often-asked questions regarding whether cabbage palms are “trees”, why some palms are booted and others have smooth trunks, and the history of its final nomenclature as *Sabal palmetto*. Throughout, the chapters contain ample historical images and illustrations by the author. Each one of these chapters contains things you likely do not know, and I’m betting you will find that they are all things you will be glad you learned.

Parts II and III are longer, and I would be hard pressed to find a topic that isn’t covered in depth and with reverence to the plant and its place in Florida’s pantheon of culturally and ecologically significant icons. In Part II Jono tackles topics such as palms in the landscape and the role the cabbage palm plays in Florida’s various ecosystems. He fearlessly addresses the questions regarding the fairly recent “invasion” of this plant to ecosystems critical to the Florida panther and other wildlife. As a former land manager, I had come to similar conclusions and it was affirming to read his accounts and the conclusions of others tasked with the role of managing natural lands. Part II ends with a detailed look at the impacts of sea-level rise on this very salt-tolerant tree.

Despite my natural inclination to focus on ecology and history, Part III may well be the most enjoyable part of the book. In it, Jono covers the history of humankind’s use of cabbage palms — everything from hearts of palm and how to harvest it to the making of chickees, tikis, and log homes. There are chapters devoted to its historical use in films and in luring northerners here via the use of cheesecake postcards. There are even recipes culled from a wide variety of historical sources, including famed author Marjorie Kinnan Rawlings. Who knew there was this much controversy regarding the proper Cracker way to prepare cabbage palm for the table?

A book like this could have been a dry examination, an ecological monograph of sorts, that would have been of interest only to the academic world, but it is not. Jono’s work is heavily footnoted from exhaustive research, and academics will find no fault in it. What makes it different is that it also is a love story borne from a long-time personal passion for this singular plant. Jono draws his readers in because we want to understand his passion as much as we want to understand the cabbage palm. What also makes it different is his sense of humor, seasoned throughout every chapter of the book. I found myself smiling constantly as I worked through the chapters. It was a pleasant surprise. It’s not easy to combine all of these elements together, and Jono has done an admirable job of it.

Read this book. Better yet, purchase it and then read it. I’m willing to bet that you will be fascinated by it to a degree far higher than you expect. I just wish Jono would become fascinated by some other new species and have yet another thirty years to set it all to prose.

**About the Author**

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