Save the Date for the 41st Annual Florida Native Plant Society Conference: May 19-22, 2022

Join us for Florida's premier event focusing on the preservation, conservation and restoration of our natural lands, ecosystems, and local communities. The 2022 conference theme is “Gateway to Florida's Biodiversity” and the conference will be a hybrid event, held both in-person at the University of North Florida in Jacksonville and also broadcast as a virtual event for those preferring the convenience and reduced cost of a virtual event. For more information, visit www.fnps.org/conference/2022

Applications are being accepted for the FNPS 2022 Endowment Grant Research Awards, Conservation Grant Awards, the Dan Austin Award for Ethnobotany, and the Cornelia McNamara Grant

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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.

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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.

Application guidelines and details are on the FNPS website at www.fnps.org – click on ‘What We Do/Awards and Grants’. Questions regarding the grant programs should be sent to info@fnps.org. Application deadline for the 2022 Awards is March 4, 2022. Awards will be announced at the 2022 Annual Conference. Awardees do not have to be present at the Conference to receive an award.
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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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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.

ON THE COVER:
Mallow scrub-hairstreak (Strymon istapa) on climbing hempvine (Mikania scandens). Photo by Andee Naccarato.
Beyond Monarchs & Milkweed: More Native “Weeds” That Sustain Butterfly Diversity

Today, it is common knowledge that monarch butterflies are in trouble and the presence of milkweeds (their host plants) can help save them. The well-publicized decline of migratory monarch butterflies in North America has driven conservationists and gardeners alike to embrace milkweeds on their properties to support the reproduction of monarchs. Prior to the widespread acceptance and propagation of milkweeds in the name of monarch conservation, milkweeds have not always been treated so fondly. Some of the “weedier” species found in disturbed places (such as fencerows, pastures, and roadsides) have been relentlessly sprayed with herbicides, especially in agricultural areas, or otherwise removed. Combined with general loss of habitat and other factors, monarchs were left with fewer and fewer host plant resources (for review, see Belsky & Joshi, 2018).

Gardeners’ acceptance of milkweeds for monarchs is important, but what about other butterflies that rely on “weedy” host plants? In Florida, there are at least 27 butterfly species whose native host plants are often dismissed as weeds (Table 1). Although those species may not be currently imperiled, we can

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<th>Host Plant(s)</th>
<th>Butterfly Species</th>
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<td>Cudweeds/everlastings (Gamochaeta sp.)</td>
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<td>Virginia pepperweed (Lepidium virginicum)</td>
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<td>Great southern white</td>
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Facing page, top to bottom: Three butterflies and their weedy host plants: dainty sulphur (Nathalis iole) and beggarticks (Bidens alba); mallow scrub-hairstreak (Strymon istapa) and common fanpetals (Sida ulmifolia); little metalmark (Calephelis virginiensis) and purple thistle (Cirsium horridulum).

Table 1. “Weedy” native host plants for Florida butterflies (Source: Minno et al., 2005)
Imagine how their populations could dwindle (like the monarch) if their once “weedy” host plants started to disappear.

Consider some reasons why a weedy host plant is beneficial to butterflies. A weedy host plant typically:
- Thrives in full sun and along habitat edges (where butterflies are active),
- Requires less search time for discovery,
- Provides lots of egg-laying sites and caterpillar food, and
- Reseeds and resprouts quickly.

As a female butterfly, much of your daily life revolves around your host plant. This is the plant you need to start the next generation of butterflies. The easier it is to find your host plant (due to its weedy tendencies), the better your chances are of laying lots of eggs and having plenty of food around for your insatiable caterpillars.

Most of the butterflies adapted to utilize weedy host plants in Florida are much less famous than the monarch. Let’s get to know three of them, along with their host plants.

1. **Dainty sulphur (Nathalis iole)** and **beggarticks (Bidens alba)**

   This yellow butterfly is not much larger than the daisy-like flowers of its host plant, beggarticks. The dainty sulphur can be recognized by the small black dots like spreading ink stains on the underside of its forewings. Look for this butterfly flitting barely above ground-level, with females frequently landing on seedlings of beggarticks (Minno et al., 2005). If you find it difficult to identify this plant before it blooms, let a female dainty sulphur point it out to you. You’ll know that an otherwise non-descript, two-inch tall stem with a few leaves is beggarticks when a dainty sulphur curls her abdomen down to a leaf to deposit a slender, yellow egg.

   In addition to its role as the dainty sulphur’s host plant, beggarticks is also an extremely popular nectar plant for a wide variety of butterflies. Larger and smaller species seem equally drawn to its sugary offerings (Table 2). Beggarticks is a dependable nectar plant because it is exceedingly abundant, especially in south Florida, with year-round blooms. What’s more, each “flower” is truly composed of many florets, each one a potential nectar well. Those poky, two-pronged seeds that develop after the flowers are pollinated ensure that there will be plenty of beggarticks for the next generation of butterflies.

2. **Mallow scrub-hairstreak (Strymon istapa)** and **common fanpetals (Sida ulmifolia)**

   There’s more than meets the eye when it comes to the mallow scrub-hairstreak. This diminutive butterfly found in coastal south Florida could be easily overlooked due to its overall drab coloration.
Observers must look closely to notice the orange-rimmed black spot and hair-fine tails coming off the hindwings. Although these features may seem subtle, the black spot and tails may function as a false head (complete with false eye and antennae). When threatened by a small predator (or an overzealous butterfly watcher), the mallow scrub-hairstreak shuffles its hindwings together to draw attention towards its less-vital rear end (Sourakov, 2013).

True to its name, this hairstreak is associated with smaller members of the mallow (or hibiscus) family for its host plants. One example is the common fanpetals, which occurs throughout peninsular Florida and may be encountered in more naturally-maintained yards. The creamy-yellow flower is noticeable among other groundcovers, even though it is about the size of a shirt button. The petals have the same slightly waxy feel as ornamental hibiscus. The flower buds of common fanpetals are singled out by female mallow scrub-hairstreaks as egg-laying sites and seem to be preferred over the leaves as caterpillar food (Minno et al., 2005).

3. Little metalmark (Calephelis virginiensis) and purple thistle (Cirsium horridulum)

Perhaps the most secretive of the three butterflies described here, the little metalmark is a tiny, rusty-orange butterfly with narrow, iridescent blue bands. Its overall look may remind you of a shiny, new penny. This tiny butterfly tends to be rather shy of onlookers and quickly finds places to hide. Although the caterpillars are striking with their long white hairs, they can be difficult to find due to their typical behavior of eating only the undersides of their host plant’s leaves. Clear “windows” in the leaves where only one layer of cuticle remains is a clue that caterpillars have been feeding there (Minno et al., 2005).

When imagining what type of host plant would make a suitable pairing for such a tiny butterfly, the tall purple thistle with intimidating spines might not immediately come to mind. However, associating with such a well-protected plant may offer the little metalmark added layers of safety. Most herbivores would not savor a mouthful of spiny leaves (Hanley et al., 2007) and insectivores may be similarly off-put, which means the little metalmark’s eggs and caterpillars are less likely to be eaten. Like the beggarticks described above, the large flowers of purple thistle are also pollinator magnets.

Here are some ways that you can support the dainty sulphur, mallow scrub-hairstreak, little metalmark, and the other Florida butterflies that use weedy natives as host plants:

- Take some time to identify the “weeds” on your property and determine which ones are Florida natives. Sites like www.fnps.org/plants and www.inaturalist.org can help.
- Allow at least some of the native “weeds” to persist. Depending on your neighborhood’s rules, you might choose to benignly neglect a back corner of your yard or commit to a fully sustainable lawn with high groundcover diversity.
- Reduce or eliminate use of herbicides and pesticides unless absolutely necessary. Any non-native, invasive plants may require targeted treatments.
- Observe the lifecycle of the native “weeds.” When do they bloom? What do their seeds look like? When do you notice butterflies or other pollinators visiting?
- Look for butterfly eggs or caterpillars on the known butterfly host plants to confirm that your yard is sustaining butterfly diversity. Books such as Florida Butterfly Caterpillars and Their Host Plants (Minno et al., 2005) or Butterflies of Florida (Daniels, 2003) can help with identification.

To learn about more butterflies that use weedy natives as host plants, view 10 Native Weeds for 20 Butterflies on the Florida Native Plant Society’s YouTube Channel at https://youtu.be/PyrrcVshwDk.

References


About the Author

Andee Naccarato is president and programs chair of the Naples Chapter of the Florida Native Plant Society. She has taught southwest Florida residents and visitors about the value of local ecosystems and native landscaping since 2013. Andee has published over 100 “Meet the Native” articles featuring southwest Florida’s native plants in the Fort Myers News-Press. As an active member of the North American Butterfly Association, Andee volunteers for butterfly surveys throughout south Florida. She received a Master of Science degree in Environmental Science from Florida Gulf Coast University.
Red Mangrove: Ecology of a Keystone Species (Part 1)

Linda Eastman and Leigh Goddeau

On the first day of our Coastal Systems module in the Florida Master Naturalist Program (FMNP), we two eager “citizen scientists” found ourselves discussing common interests in ecological relationships and the possibility of exploring a small-scale ecosystem. It did not take long for us to agree to collaborate on our requisite final project: a study of a single red mangrove tree and the organisms that shared its space in the world. In this two-part series, we share what we learned in completing this project in 2014 and following it up in the years since.

Giant hermit crab (*Petrochirus diogenes*) inhabiting the shell of a Florida crown conch (*Melongena corona*), an example of a transient tertiary consumer in the trophic hierarchy.

An orange tunicate makes its home on a submerged mangrove prop root.
An isolated red mangrove (*Rhizophora mangle*) at Coral Cove Park on Jupiter Island was the subject of our exploration.
Leigh knew of the perfect tree for our study; a small mangrove growing in the intertidal zone of the Indian River Lagoon just a mile north of the Loxahatchee River estuary and Jupiter Inlet. This tree was set apart from others in the fringe of mangroves which had been restored along the river side of Jupiter Island. We believed it was established enough to support other life, small enough to enable us to accomplish our project in just eight weeks, and its location in Palm Beach County’s Coral Cove Park made it accessible.

Initially we thought we would simply document the species we found in, under and around the tree. But soon we became fascinated not only with the number of different species but with how and why these creatures ended up in that particular place. With every discovery came new questions. What drew the animals to this tree? What are they eating? What is eating them? How is the tree useful to them? How does the tree function in this ecosystem?

We soon recognized that the red mangrove is a keystone species but the intricacies of this mangrove’s ecosystem are difficult to imagine without actually “getting into” the tree and finding out through observation and research how all the pieces fit together.

The Tree

Along with seagrasses, mangroves are among the very small number of flowering plants that can survive in a marine environment. The term “mangrove” refers to a taxonomically diverse group of more than fifty tropical and subtropical shrubs and trees worldwide that have evolved adaptations allowing them to survive and reproduce in salt water.

Three species of mangroves are found along Florida’s low-energy shorelines: the red mangrove (Rhizophora mangle, family Rhizophoraceae, order Malpighiales), the black mangrove (Avicennia germinans, family Acanthaceae, order Lamiales), and the white mangrove (Laguncularia racemosa, family Combretaceae, order Myrtales). The red mangrove is the one with long arching roots that make it look as though it is “walking.” When sharing habitat with the black and white mangroves, the red mangrove is typically found in the water at least some of the time.

Red mangroves are facultative halophytes meaning they are able to survive and reproduce in fresh as well as salt water. But they are best suited to saline environments where they outcompete plants that cannot tolerate these conditions. The red mangrove’s specific adaptations include:

- Long arching prop and drop roots that stabilize the tree
- Mechanisms for aeration and salt exclusion in highly saline, anaerobic soils
- Propagules – seeds that germinate while still attached to the parent tree

Native to the tropics and sub tropics of the Americas and Western Africa, the red mangrove’s range in the continental United States is limited to the southern two thirds of peninsular Florida. The species is susceptible to freezing temperatures but is gradually moving north as the climate warms. (Cavanaugh, et al, 2019).

What are some functions of the red mangrove that qualify it as a keystone species?

According to The Nature Conservancy, mangroves provide many functions that qualify them as keystone species:

1. Mangroves are land superheroes. They protect shorelines from storms by absorbing wind and wave energy, driving rain and floodwaters. Their tangled root systems hold shorelines in place during changing tides and weather events.

2. Mangroves play an important role in filtering water and removing excess nutrients. Some of these nutrients are bound into the soil while others may be broken down and, in the case of nitrogenous waste, released into the water in inert form, mitigating the harmful overgrowth of algae in the estuary.

3. Mangroves sequester carbon. Mangrove forests along with detritus collected in the surrounding soil are highly effective carbon sinks.

4. Mangroves provide shelter for animals. Their canopies shelter a wide variety of birds, insects, spiders, crustaceans and mammals. In the intertidal zone, roots act as real estate or
nurseries for hundreds of marine animal species. Sessile filter feeders such as oysters and tunicates attach to the roots and stay. Adult fish and invertebrates come into the mangroves to spawn, and larvae or young fish use mangroves as their home until they mature and move out into seagrass beds, coral reefs and the wider expanses of offshore waters. Where mangroves have been removed, reef fish populations plummet.

5. Mangroves support a massive food web. The living parts of mangroves as well as detritus from falling leaves, twigs and branches form the basis of an enormous terrestrial and aquatic food web.

6. Mangroves draw tourists, fishermen, boaters and nature lovers. These activities promote wise use of resources, add significantly to Florida’s economy, and provide undeveloped wilderness where the human spirit may find adventure, peace, purpose, solace, and contentment while witnessing the million miracles of nature. (The Nature Conservancy, 2020)

7. Mangroves also provide benefits to seagrasses and coral reefs and are supported by them in turn. Why Mangroves Matter points out that mangrove trees trap sediment and pollutants that would otherwise run off the land, damaging seagrass beds and coral reefs. Intact seagrass beds trap silt, which can damage reefs, and the hard structure of reefs provides additional protection for the seagrass beds and mangroves. (American Museum of Natural History, ND).

While the red mangrove can reach over 80 feet tall in optimal tropical conditions, in subtropical Florida they average about 20 feet in height. A thick mangle forest is notoriously tangled and difficult to penetrate however our specimen tree was isolated in open estuarine water and separate from the nearby mangroves higher on the beach, enabling our free exploration. At high tide, the tree was surrounded by two to three feet of water. Low tide exposed a short “bridge” of mangrove peat on the landward side of the tree. With a few scrapes and bruises, we could make our way under the canopy into the center of the tree where the roots formed shadowy nooks, crannies and hiding places for marine life.

Framing the data: Trophic function and spatial distribution

For our FMNP research project we were most interested in the diversity of species attracted to and dependent upon the tree for shelter and/or food. In order to understand and organize the large number of species we found in the small arena of this one tree, we framed our data in two ways: first, their spatial distribution working from the top down, and then trophically, using the food web.

In terms of trophic function, mangroves are primary producers of energy, converting sunlight into energy-filled biomass through photosynthesis. The first level of energy transfer in the food web occurs as primary consumers – herbivores and detritivores – feed directly on various parts of the tree. A very few species eat the living leaves, twigs and bark, and fungi and bacteria help to break down detritus in various stages of decomposition. But the result of this consumption is a transfer of energy that nourishes an estimated 90% of sport and commercial fisheries. (United States Fish and Wildlife Service, 1999)

Secondary consumers, species that prey on primary consumers and their byproducts, are far more numerous and varied. These in turn feed tertiary and quaternary consumers, usually farther from the tree in deeper water. Most of the tree-associated organisms we found fell into the primary and secondary consumer categories, but there were exceptions including transient tertiary consumers such as sea stars, large hermit crabs, and wading birds.

With respect to our methods, we only observed, photographed and researched to learn more about species we found while carefully avoiding altering or causing damage to the tree, the site or its inhabitants.

In Part 2 of this series we will discuss the great diversity of organisms observed using the tree as habitat during our eight-week study, establishing the mangrove’s importance as a keystone in its ecological community.

References


About the Authors

Linda Eastman is a lifelong nature lover and former teacher from Detroit who retired to Florida in 2011. Eager to embrace her new home, she completed the Florida Master Naturalist Program, the Audubon Field Academy’s Birding Naturalist Program and George Rogers’ online course, Native Plants of South Florida. She is past president of the Martin County Chapter of the Florida Native Plant Society.

Leigh Goddeau is a (mostly) life-long Floridian who has always loved the ocean and its creatures. She enjoys taking classes in the Florida Master Naturalist Program and learning about Florida’s natural systems. She also collects books on natural history and is a member of the Society for the History of Natural History.
Ginny Stibolt

The groundsel tree (Baccharis halimifolia) occurs throughout Florida, and it thrives in many conditions from wet and brackish to sandy, dry, acidic or alkaline. This evergreen shrub has wedge-shaped, irregularly-lobed waxy leaves and can grow in full sun or partial shade. It naturally occurs at the edges of forested areas. It’s best used as part of a mass or hedgerow because single specimens can become rangy. They do tolerate trimming if you wish to control the size or produce a neater habit. Groundsel trees also make a good addition to large rain gardens.

Groundsel tree is one of the few shrubs in the aster family (Asteraceae), and its flowers appear small and insignificant in the landscape because there are no ray flowers (which look like petals on the typical aster flower head) — only the disc or central flowers. It’s dioecious with the female plants being the ones we see in the fall with their abundance of showy, fluffy seeds ready for flight. It reseeds well, so you may already have this plant growing in the wilder areas on your property.

According to University of Florida Professor Ed Gilman, “Salt-bush is rarely planted by designers and horticulturists, perhaps because it is too ‘common’ in native stands. A useful shrub or small tree for reclaiming wet sites, salt-bush could be used more frequently near retention ponds and drainage ditches.” He adds, “With proper care to remove recurring dead wood, nice small-tree specimens can be created. These can become valuable additions to many landscapes. They come into flower and are attractive at a time when few other small trees or shrubs are flowering.”

In addition to groundsel tree and salt-bush, this adaptable shrub has quite a few other common names including sea-myrtle, high-tide bush, aster tree, groundsel bush, cotton-seed tree, menguili, consumption weed, and silvering. In the past it was used to treat coughs or consumption. Today, it can serve as an attractive addition to the home landscape, especially when planted along with plants that have contrasting foliage.

**Where to plant:**
- Full sun to partial shade
- Best in moist areas, but drought tolerant once established
- Tolerates inundation with brackish water; tolerates salty winds
- Size: 3-12 feet high and often as wide

**Recommended uses:**
- Specimen plant in casual settings; grows in both wet and dry soils
- Natural screen or buffer plant
- Rain gardens, pond edges, erosion control

**Landscape benefits:**
- Striking accent plant when in bloom: Female plants have silvery, plume-like achenes in the fall
- Blooms when few other trees are in bloom

**Wildlife benefits:**
- Attracts numerous species of bees
- May serve as a nectar plant for butterflies, including the monarch butterfly (Danana plexippus)
- Provides cover and nesting habitat for some species of birds
- Seeds are eaten by small birds and other wildlife

**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 (www.climatewiselandscaping.com) and author or coauthor of four Florida gardening books published by the University Press of Florida. Ginny’s blog is www.greengardeningmatters.com.

**References and Further Reading**


Florida Native Plant Society (ND). Baccharis halimifolia. Available at: https://www.fnps.org/plant/baccharis-halimifolia


This article is reprinted from http://fnpsblog.blogspot.com/2010/11/shrub-to-be-thankful-for-groundsel-tree.html and has been edited for Palmetto.
Book Review:

Herbarium, The Quest to Preserve & Classify the World’s Plants

Sue Dingwell

What is a herbarium? “On the face of it, it’s just a collection of dead plants,” Barbara Thiers said with a laugh during a podcast recently as she answered questions about her reasons for writing this book. A herbarium, actually a collection of dried plant specimens mounted on paper, labeled, and cataloged like a library is used for archival and research purposes. In the new book, Herbarium, The Quest to Preserve & Classify the World’s Plants, Thiers has constructed a fascinating story of the creation of herbaria all over the world and has provided brilliant proof that far from being dead collections, herbaria are both very much alive and vitally important.

Thiers first began her attempt to elevate public interest in the subject at the herbarium where she has worked for thirty years and is now director, the William and Lynda Steere Herbarium at the New York Botanical Garden. She began by holding open houses, laying out tables of specimens and having staff on hand to tell the stories of the identity of individual plants and how each came to be placed in the herbarium. She found that people were not only very interested but kept asking “Is there a book I can read about this?” When Timber Press approached her about writing one, she was ready and eager to take the task on.

Thiers found that her biggest problem was not what to put in the book, but what she had to exclude. The exact same problem presented itself for this book review. The book overflows with so much of interest: history, mystery, scandal, and adventure abound. Even those familiar with the ongoing relationship between humans and plants will make new discoveries as Thiers leads the reader through centuries of plant explorations. And at the heart of it all, the reasons,

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then and now, that make our knowledge of what is growing, and where, so important: “As much as our modern lives tend to separate us from the rest of Earth’s biodiversity, we cannot exist without it, and these preserved organisms give us information about our world and clues to its future that we cannot learn any other way.”

The book itself is definitely a thing to have and to hold, so do yourself a favor and invest in a hard copy. Thick pages and generous layouts filled with abundant illustrations enhance the lucidly written narrative throughout. Illustrations deserve special note, covering not only herbarium specimens but also prints of paintings, gorgeous hand-drawn and hand-painted plant renderings, maps, portraits, photographs of botanical gardens, and historic sites from around the world. I loved seeing images of the Linnean Society’s Library in London.

Beginning with the first written records of plant knowledge in India and China, Thierry book paints a vivid picture of the evolution of mankind’s search to discover and understand the plants that inhabit our world. She describes many of these wandering plant seekers as “odd but lovable people,” and the tales of their explorations certainly corroborate that observation.

For example, the first known herbarium was started by Luca Ghini, a physician from Italy who loved plants. Hired by the University of Bologna to lecture in medicine in the early 1500s, he began by teaching his students about medicinal uses of plants. Then he began to bring living plants in for students to observe instead of just reading about them, and his class became so popular that a course on botany became a core part of the curriculum. Oh those plant people!

When he wanted a way for students to study real plants during the winter months, Ghini began to press, dry, and preserve the plants, and the first herbarium was born. Next Ghini created the first botanic garden in order to establish a living resource for his students. If you visit the Tower of Pisa, you can still see his garden in the same neighborhood.

In the 18th and 19th centuries, European countries began to send out voyages of discovery resulting in tales of adventure that are not only instructive to botanists and ecologists, but are highly entertaining. Jeanne Baret, a French peasant with demonstrated knowledge of local medicinal plants had to pose as a man in order to be an accomplice to the naturalist, who was also her lover, onboard a ship France sent out on an expedition. She became the first woman to circumnavigate the world. She was largely responsible for collecting the majority of 30,000 plant specimens, many still stored in numerous herbaria around the world. And that’s only half the story.

José Mutis, sent by Spain to South America, not only collected plants, but was also committed to improving the lives of the people there. He trained local mestizos to illustrate plants for the Casa de Botánica he established. They developed a distinctive technique using dyes derived from native vegetation that produced more vibrant colors than those being used in European illustrations at the time.

In America we meet all the explorers and botanists we know from our own nation’s history, and whose names we have become so familiar with through the plants they have discovered: Nuttall, Bartram, Barton, Clayton, Muhlenberg, Gray, Lewis, and Clark among them. We also meet Alice Eastwood, who went into a burning building after an earthquake in San Francisco, and on discovering the collapse of the marble staircase leading to the sixth floor where the herbarium resided, ascended the banister by putting her feet between the rungs in order to save as many specimens for the California Academy of Sciences as she could.

So many ‘firsts’ were made by these plant-loving people – first herbarium, first botanical garden, first laws to protect native plants being just a few. The California Academy of Sciences became one of the first institutions in America, and quite possibly the world, to recognize and encourage women scientists, thanks to the accomplishments of Eastwood and her mentor Mary Katharine Brandegee, who spent her honeymoon walking 500 miles from San Diego to San Francisco to collect plants with her equally plant passionate husband.

Moving past America and into more modern times, Thierry touches on contributions to plant discovery and herbaria from countries around the world including China, Africa, Brazil, and Australia. I should mention that those who appreciate algae, bryophytes, and fungi will find plenty of references and artwork pertaining to these lifeforms as well.

The final section of the book is devoted to explaining the value and relevancy of herbaria to the challenges of today. New and better tools such as mapping and geographic information systems (GIS), DNA extraction and next generation sequencing (NGS), and powerful ways to organize data are giving herbarium records new applications, enabling us to study life on both a molecular level and a global scale. Thierry gives a special mention to IDigBio, a joint effort between the University of Florida and Florida State University to create a national data portal and training center where herbarium specimens from most areas of the country can be searched online (https://www.idigbio.org/portal).

Thierry explains the uses of these records as we confront species extinction, invasive plants, pollution, and changes in atmospheric conditions and phenology. As a changing climate alters our world, understanding its effects will be critical to decisions of how to manage them. Herbaria are here to help, and a more enjoyable and informative book about them would be hard to imagine.

About the Author

Sue Dingwell is a member of the Colorado Native Plant Society, where she serves on the Media and Conservation Committees. She is also a member of the Florida Native Plant Society.
Chuck McCartney, longtime Florida Native Plant Society member and friend, passed away in 2020, generously leaving a legacy to FNPS.

Chuck was a fourth-generation South Floridian and lifelong orchid enthusiast. Through his participation in the Dade Native Plant Workshop and FNPS Dade and Broward chapters, he also became interested in Florida’s wildflowers.

Chuck earned a bachelor’s degree in English education from Florida State University, and worked as a newspaper journalist and editor in South Florida. He retired after nearly 19 years as a copy editor with The Miami Herald’s Broward Edition. In the mid-1980s, he worked as an editor for the American Orchid Society (AOS) and wrote numerous articles on orchids for AOS publications as well as for California’s Orchid Digest, England’s Orchid Review, publications of the Fairchild Tropical Botanic Garden, and for FNPS chapter newsletters. For many years Chuck graciously volunteered his editing skills, reading each issue of Palmetto before it went to press. He also wrote more than a dozen articles, mostly on native orchid topics for the magazine. Look for Chuck’s Palmetto articles at this link: https://www.fnps.org/resources/palmetto_articles_authors

His special interest was the wild orchids and other wildflowers of his native South Florida as well as the Southern Appalachians, and he spoke on these subjects to native plant groups, orchid societies, garden clubs and natural history organizations. Chuck led many FNPS chapter field trips, freely sharing his considerable knowledge and love of orchids and wildflowers. Many people shared fond memories of time spent botanizing with him. Christina Bird-Holenda said, “Having known Chuck as one of my ‘super’ South Florida mentors, and many memorable ventures into the Fakahatchee...the times of trudging into the wilds and rewards of fantastic visions of gorgeous wild flowers...including, of course, the famous “ghost orchid”...the stories of his adventures and his take on life...all added up to my total enjoyment of being around him.”

Kate Donohue and Rich Ackerman, in the Fort Lauderdale Orchid Society newsletter wrote, “Chuck was greatly admired and liked in the orchid world. His quiet, unassuming manner hid a brilliant mind and keen intellect. He gladly shared his knowledge in great detail and touched the lives of many....”

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