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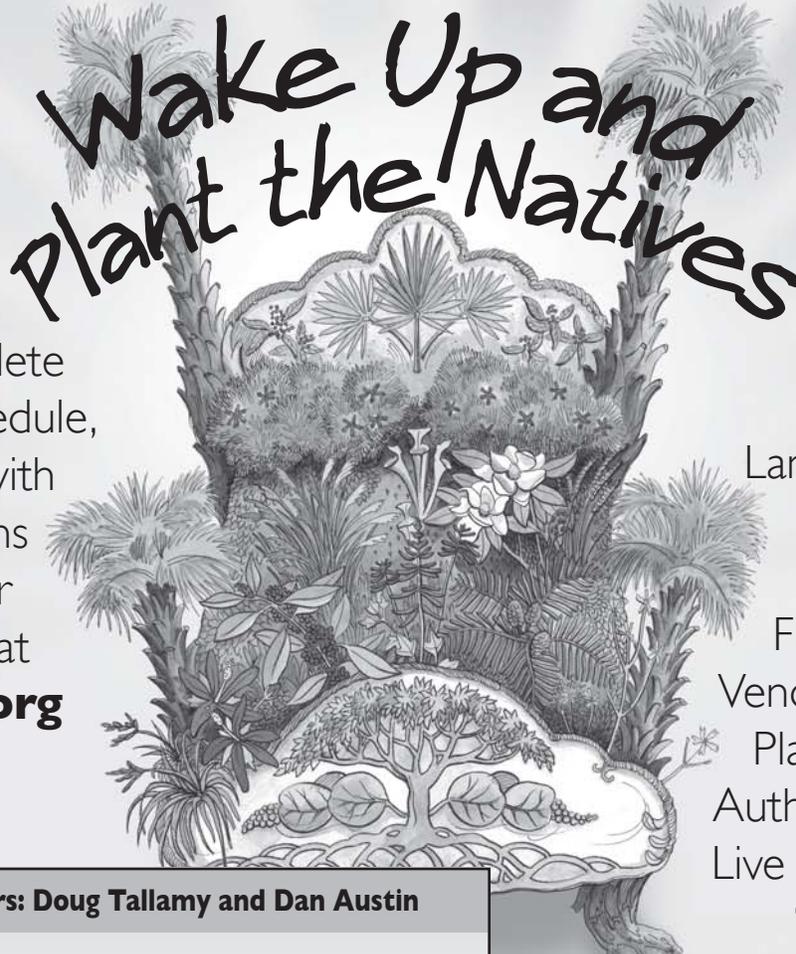
The Quarterly Journal of the Florida Native Plant Society

Palmetto



A New Species of Native Orchid? • A Conversation With Doug Tallamy • Florida's Botanical Art

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Keynote Speakers: Doug Tallamy and Dan Austin

Doug Tallamy, Ph.D. – Learn why we need biodiversity and why landscape paradigms must be changed to preserve it; see how animal diversity depends on native plants, and discover what a sustainable suburban ecosystem might look like. Dr. Tallamy's new book is *Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens*.

Daniel F. Austin, Ph.D. – In *Plants and People: From Swamps to Deserts – An introduction to the plants shared between Florida and the Southwestern United States* two distant and climatically different regions that share plant species and genera are examined. Indigenous peoples, the similarities and distinctions between their livelihoods, and the plants growing in both regions are the focus of this fascinating presentation by the author of *Florida Ethnobotany*.

Sea Level Rise in Florida

Plenary Speaker Dr. Harold R. Wanless

Dr. Wanless and his students have been studying the dynamics and evolution of tropical shallow marine and coastal environments since the mid 1960s, documenting the influence of changing sea levels and catastrophic events such as hurricanes. Learn how this information is being used to predict the future of coastal environments in the face of climate change.

The Status of Conservation in Florida **Panel Discussion with:**

Greg Brock, Ph.D., *Florida Department of Environmental Protection*; Richard Hisenbeck, Ph.D., *The Nature Conservancy*; Tom Hoctor, Ph.D., *University of Florida*; Reed Noss, Ph.D., *University of Central Florida*; Jon Oetting, *Florida Natural Areas Inventory*. Moderator, Gene Kelly, President, *Florida Native Plant Society*.

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ON THE COVER:

Gulf fritillary butterfly visiting open flowers of *Sacoila paludicola*. Photo by Craig Huegel.

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Perhaps the bluest lagoon in all of Central America, Laguna de Apoyo and her forested slopes are an important habitat for a variety of flora and fauna. This paradise is also one of the destinations FNPS will visit during our upcoming summer expedition. Article by Elston Chavarria.

Palmetto seeks 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 at pucpuggy@bellsouth.net, or visit www.fnps.org and follow the links to Publications/Palmetto.

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Editorial Content: We have a continuing interest in articles on specific native plant species and related conservation topics, as well as high-quality botanical illustrations and photographs. Contact the editor for submittal guidelines, deadlines and other information.

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Typical flowers of *Sacoila paludicola*.
All photos by Craig Huegel.



A “New” Species of Native Florida Orchid?
Sacoila paludicola





Typical flowers of *Sacoila lanceolata* var. *lanceolata*. Note the difference in color and flower structure from that of *Sacoila paludicola*.



Late-season flower stalk of *Sacoila paludicola*. It is obvious that most flowers develop into seed capsules.



Typical *Sacoila paludicola*. Note yellowing basal leaves and the tall thin flower stalk typical for this species.

By: Craig N. Huegel, Ph.D.

Florida is blessed with approximately 100 orchids in its native flora (Wunderlin 1998, Brown and Folsom 2006). Some of these are relict terrestrial species from an earlier climate; now found only in the northernmost counties of Florida and more common north of us. A few, such as the recently described *Pteroglossaspis potsii*, are endemic; found only in isolated pockets of the state. Others are epiphytic or terrestrial species confined in Florida largely to the Fakahatchee Strand State Preserve and lands adjacent, but also distributed in the Caribbean, and/or in Central and South America. A relatively large, but confined, population of one of these, the leafy beaked ladiestresses (*Sacoila lanceolata* var. *paludicola*) was recently discovered in southern Sarasota County; more than 90 linear miles from its nearest previously known location. Data collected since this discovery provides strong evidence that the leafy beaked ladiestresses is a unique species, properly referred to as *Sacoila paludicola*.

Since it was first described by Carl Luer (1971) from observations he made in 1965 within the Fakahatchee Strand State Preserve, the leafy beaked ladiestresses has been considered merely a distinct variety of the more common and widespread leafless beaked ladiestresses (*Sacoila lanceolata*); distinguished largely by whether leaves are present at blooming or not. As their common names denote, the leafless beaked ladiestresses loses its leaves many weeks before the emergence of its flower stalk. The leafy beaked ladiestresses, however, tends to keep its leaves until blooming is initiated. While this single trait has simplified field identification, Luer noted many other significant differences between the localized population of “leafy *Sacoila lanceolata*”

orchids (or *Spiranthes lanceolata* as they were then called) and the more common leafless variety. Although he considered the differences to be “minor” and attributable to “natural variation”, he described numerous characteristics that differentiated the two forms, including habitat preference; leaf shape, persistence and “glossiness”; flower color and size; and blooming season. He also noted that these differences were not the result of growing-condition influences; that plants of each variety maintained their unique differences even when grown in pots next to each other and given the same culture.

The taxonomic classification of the “leafy” variety of this orchid has persisted perhaps because no new populations have been found outside the general area of Fakahatchee Strand State Preserve and it has not been well studied. Populations found in the general vicinity of the type location described by Luer and later from nearby Corkscrew Swamp in Collier County are naturally occurring. Small populations of this orchid also have been identified within the Big Cypress National Preserve (Jimi Sadle, personal communication), but not within the nearby Florida Panther National Wildlife Refuge, (Stewart and Richardson, 2008) and it is questionable whether other populations (i.e. Miami-Dade, Broward and Palm Beach Counties) were purposely introduced (Hammer, 2001; P.M. Brown, personal communication). It is certain that Frank Craighead made several attempts to introduce it from the Fakahatchee Strand to areas within Everglades National Park during the mid-1900s, that at least one population continues to persist inside the park boundary, and that several other populations persisted for years (and possibly disseminated seed) before finally disappearing (Hammer, 2001).

A “New” Species of Native Florida Orchid?



Dehiscing seed capsules. Because *Sacoila paludicola* is self-pollinating, nearly every flower develops into a seed capsule.

Hammer (2001) also cites anecdotal information questioning the natural occurrence of the colony recently found in Broward County. As such, the “leafy” variety of this orchid has one of the most-restricted natural ranges of any of Florida’s orchid species. Without more specimens for study, taxonomists largely accepted Luer’s original assessment that this orchid is a localized variety, shaped by its occurrence in the denser shade and wetter soils of the Fakahatchee Strand.

The range of this orchid changed dramatically in 2007, however, when a disjunct population of nearly 300 individual leafy beaked ladiestresses was discovered in a small area of hydric hammock in south

Sarasota County by the author, Kathleen McConnell, and Nina Raymond. This discovery allowed for a closer investigation of the characteristics previously noted by Luer to see if differences between the two varieties were consistent. The results of this fieldwork have been published elsewhere (Huegel and McConnell 2008). In addition, morphological and ecological data collected from this population have resulted in a proposed change to its taxonomic status; elevating it to species status, *Sacoila paludicola* (Brown 2008). For the remainder of this article, I will use this new, but as yet unaccepted, scientific name for the leafy beaked ladiestresses.

The newly discovered Sarasota population of *Sacoila paludicola* is restricted to a region of hydric hammock that rarely floods and occurs in an area less than 2 acres in size. Although extensive searches were conducted elsewhere in the region, its restricted occurrence to this area is well defined by ecological conditions not present elsewhere on the property. Based on published written descriptions (e.g. Hammer, 2001; Hammer, 2002) and personal conversations (Mike Owen, Jimi Saddle), these conditions are very similar to those found for previously known populations from south Florida.

The forest community is characterized by a nearly closed canopy dominated by laurel oak (*Quercus laurifolia*) and cabbage palm (*Sabal palmetto*), although strangler fig (*Ficus aurea*), live oak (*Quercus virginiana*), sweet bay (*Magnolia virginiana*), swamp bay (*Persea palustris*), dahoon holly (*Ilex cassine*), and red mulberry (*Morus rubra*) are scattered throughout. Various woody shrubs comprise the mid-canopy, especially saw palmetto (*Serenoa repens*), wild coffee (*Psychotria nervosa* and *P. sulzneri*), and American beautyberry (*Callicarpa americana*). The understory is dominated by ferns, especially swamp fern (*Blechnum serrulatum*), marsh fern (*Thelypteris palustris*), and whisk fern (*Psilotum nudum*). In addition to *S. paludicola*, two other terrestrial orchids are common; the toothpetal and longhorn false reinorchids (*Habenaria*

odontopetala and *H. quinqueseta*, respectively). Also present in the understory of the hammock is wild coco (*Eulophia alta*), although this orchid is not generally found growing within the same areas of the forest as *S. paludicola*. The soils are hydric, contain high organic concentrations, and are either saturated near the surface, or inundated for 6 to 9 months each year. Also possibly important is the absence of feral hogs (*Sus scrofa*). They have not been present for at least the past decade according to the current land manager at the site. Some evidence of groundcover disturbance, caused by the nine-banded armadillo (*Dasypus novemcinctus*), was noticeable, but the characteristic large-scale rooting and vegetative destruction caused by hogs has not altered this forest understory.

Sacoila paludicola was not distributed uniformly within the hammock forest. Its distribution was noticeably restricted to the more open patches where saw palmetto, in particular, was less dominant. For the most part, *S. paludicola* was more abundant along the edges of unimproved walking trails and within patches where the understory was less dominated by woody species. In these areas, the control of Brazilian pepper (*Schinus terebinthifolius*) has also served to maintain a greater degree of openness within the mid canopy than in other regions of the property. The land manager has made a concerted effort to remove the debris by hand from this nuisance plant control program rather than piling and leaving the material on site. Although the site burned extensively during the summer of 1989, the effects of this fire seem to have been rather uniform throughout the hammock and do not seem to explain the distributional pattern of *S. paludicola*. Any subtle changes that might have been present immediately after the fire would likely have been lost during the intervening 19 years.

Soil conditions also seem to be a major influence on the distribution of *Sacoila paludicola* within the project site. Although high organic soils are uniformly present throughout the hydric hammock where this species occurs, the hydrology is more variable. The region occupied by this species does not seem to be inundated for extended periods, but seems to remain nearly saturated during most months. Areas of extended or reduced hydrology do not seem capable of supporting this species.

This narrow habitat restriction differs greatly from the habitats occupied by *Sacoila lanceolata*. *S. lanceolata* has been described from nearly every county in peninsular Florida, and from the Caribbean, Central and South America as far south as Uruguay. Throughout this region, it is found in open sunny locations, such as pastures, roadsides, and open woodlands; not in shady hydric forests.

Sacoila paludicola does not always maintain its leaves to the flowering season. Less than 10 percent of the Sarasota County population was leafless at the initiation of blooming in 2008, but this sample did not include any orchids that may have already lost their leaves by March and did not produce a flower stalk. Fieldwork conducted in July 2008 confirmed our suspicions that a larger percentage of the population loses its leaves prior to the blooming period than was previously measured. At this time, more than 50 unmarked mature plants were located within the same location as the marked ones; evidence that they may have been overlooked because they were leafless at the start of the March 2008 field season.

Although most *Sacoila paludicola* in our population had leaves at

the time flower stalks were forming, most had leaves that were clearly turning yellow or were dead, but still attached. Less than 25 percent had leaves that were green and seemingly vigorous. Although leaf loss in *S. paludicola* seems to be more prevalent than previously believed, it still is in sharp contrast to *S. lanceolata* which always loses its leaves prior to the development of an above-ground flower stalk and typically is leafless for four weeks or more prior to the flowering season.

The extended presence of leaves in *S. paludicola* seems important to the production of a flower stalk. Although most plants do not bloom in any given year, we saw a positive relationship between the number of leaves produced and flowering. Every plant that had four and five leaves produced a flower stalk as did 50 percent that produced three leaves. Plants having one or two leaves produced flower stalks in significantly lower percentages

Like *Sacoila lanceolata*, *S. paludicola* eventually loses its leaves. Leaves were generally absent or dead by 8 May when flowering was completed and seed capsules were dehiscing. Plants do not lose all of their leaves at the same time, however. Nearly half of the plants that retained leaves on 8 May lost at least one of them between 3 April and 8 May. Plants also do not remain leafless for long once their leaves are lost. Most seem to initiate new leaves within just a few weeks. Although *S. paludicola* is deciduous, the length of time that it remains leafless is decidedly less than that of *S. lanceolata*.

The maintenance of leaves is likely an adaptation to life within shady forested habitats. While *S. lanceolata* is found most commonly growing in open, sunny areas where abundant energy required for blooming can be acquired and stored in a shorter period of time, *S. paludicola* is resident to habitats where far less solar energy reaches its leaves. Under these conditions, maintaining leaves for a longer period may be necessary to store sufficient energy to allow for the development of a flowering stalk. Our data suggests that the total surface area of leaves for blooming plants was greater than that for non-blooming ones.

Flowering is also decidedly different between the two species. As described by Luer (1971), *Sacoila paludicola* blooms earlier than *S. lanceolata*, and the flowers are noticeably different in both color and structure. Flowering was synchronous and occurred during a 4-week period between mid-March and mid-April. All flowers were a uniform scarlet red in color. Flower stalks were well-developed during a 24 February site visit, but the flower buds were immature and no flowers were evident. Flowering was evident on a return field visit 15 March, but was at its peak on 30 March. By 3 April, flowering was nearly completed. No flowering was evident on a 20 April site visit.

The flowering period of the Sarasota population of *Sacoila paludicola* is nearly identical to that found in the Fakahatchee Strand, based on nearly a decade of unpublished observations recorded by Preserve biologists and shared with the author (Mike Owen, personal communication). It also seems to closely correspond to the blooming season of herbarium specimens of *S. paludicola* collected while in flower in western Cuba (Jim Ackerman, Univ. Puerto Rico, personal communication). This differs markedly from blooming season dates reported in the literature for *S. lanceolata* in Florida (Hammer, 2002; Brown and Folsom, 2005; Stewart and Richardson, 2008), suggesting that *S. lanceolata* does not initiate blooming until late-April and that the peak of blooming occurs sometime in May.

The two species also have very different pollination strategies. Catling (1987) found that *Sacoila paludicola* is self-pollinating; not apomictic (fertile seed production without pollination) like south Florida populations of *S. lanceolata* or pollinated by hummingbirds

like populations of *S. lanceolata* outside of Florida. Catling postulated that apomicty developed in south Florida *S. lanceolata* populations because of a lack of hummingbirds during the May-June blooming season. This is not likely the selection pressure faced by *S. paludicola*, however, as ruby-throated hummingbirds (*Archilochus colubris*) are not uncommon migrants in south Florida during its earlier blooming season. The universal development of a pollinator-independent reproductive strategy in *S. paludicola* is more likely a response to the selection pressure required by its different habitat requirements. Ruby-throated hummingbirds are less likely to occur in the shady forested habitats where *S. paludicola* occurs than in the sunnier pastures and roadsides favored by *S. lanceolata*.

The differences between *Sacoila paludicola* and *S. lanceolata* are great and seem to be the result of long-term adaptation to the vastly different habitat conditions exploited by each species. Our observations suggest that the population discovered in Sarasota County exhibits similar physical characteristics and ecological requirements to previously known populations in extreme south Florida; characteristics and requirements that are quite dissimilar to populations of *S. lanceolata*. Although further study is warranted, this stability within disparate populations of each individual species throughout its known range and the stark differences between the two species irrespective of geographic range suggests that these are not varieties of the same species, but separate ones. Although this is the same assertion made by P.M. Brown (2008), the final decision is yet to be made and may be debated for some time.

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About the Author:

Craig Huegel was a founding member of the Pinellas Chapter of the Florida Native Plant Society and has authored two books for FNPS. He writes and lectures extensively about wildlife and native plants. Craig has a Ph.D. in Animal Ecology from Iowa State University, and an M.S. in Wildlife Ecology and a B.A. in Zoology from the University of Wisconsin.

Dancing In The Scrub

BY STEVE MORRISON



Chapmannia floridana is unique to Florida, but is quite common in upland habitats. Why it takes to dancing becomes clear with closer observation.

Chapmannia floridana flowers.
Photos by Shirley Denton (top)
and Paul Rebmann (bottom).

In the dim light
of dawn, an ancient
ritual persists in the scrub,
not far from where you
perform your
morning rituals.

This one is a subtle rite; by no means a spectacle. Its first clue comes in a curious form: the nodding of flowers in the morning stillness. Being surrounded by nodding *Chapmannia floridana* flowers is to become lost in a silent, undulating ballet. Are little fairies working merrily down in the sand pulling on the stalks? What else could create this wonderful display of moving color in the saturated air at daybreak?

These mustard-colored flowers are perched along a long, erect stem almost waist high. Named after the famous botanist, Dr. Alvin Wentworth Chapman, who scoured Florida in the 1800s, *Chapmannia floridana* is unique to Florida, but is quite common in upland habitats. Why it takes to dancing becomes clear with closer observation.

The answer is quite simple: early-rising bumblebees are making their rounds. The frail architecture of the long stem and the habit of the flowers to lean over to one side set the stage. As it lands in search of nectar and pollen, the bee weighs down the flower in a graceful arc. Only in the first light of day does this species seem to be drawn to *Chapmannia*. The mutually beneficial exchange between this plant and this insect has been occurring for a very long time. Bumblebees were bending down *Chapmannia* flowers long before humans arrived in Florida. However, the bees that arrive each spring are a new generation, and with no instruction, they somehow know to continue the age-old pilgrimage to these flowers.

Does *Chapmannia* depend on this species of bumblebee for pollination? Does the bee depend on this plant, or is this just a dance of strangers? It is

quite possible that no one knows. There are so many interactions like this between plants and insects. And what other, subtler rituals does this humble plant sustain? Are its seeds hauled off by a specific ant to its colony, unintentionally aiding in the dispersal of the seeds?

Perhaps fire plays a role in *Chapmannia's* life cycle, for it occupies Florida's dry places that have been frequented by wildfires for millennia. Does fire remove ground debris and open up places for the plant to establish itself? Or does fire in some way prepare the seed for germinating, or perhaps it changes soil chemistry to favor this plant? And what requisite relationships take place below ground between *Chapmannia's* roots and soil-dwelling microbes? So much goes on in the life of every plant, every insect. We observe the most obvious, the undulating flowers. But there is much more. Most of nature's dances go unnoticed.

We know just snippets about *Chapmannia floridana* and the bee that pollinates it. But we don't need to know anything at all about either of them to marvel at the sight of dancing flowers in the morning ether. And what is a dance, but the coming together of two separate lives for just a moment, together creating the wonder that is life on earth.



Chapmannia floridana flowers are perched along a long, erect stem almost waist high. Photo by Paul Rebmann.



About the Author:

Steve Morrison lives on former (and future) oceanfront property on the eastern slope of the Lake Wales Ridge. With scrubby flatwoods outside his back door and Tiger Creek out the front door, he is immersed in the daily happenings of the natural world. Although he has no formal science background, he has been a curious observer of Florida's natural landscape for a long time. Finding equal fascination in the workings of the European honey bee, Steve has spent a good bit of his free time over the years as a beekeeper, and as a result has come to be called "Sticky Steve" by his friends. For his day job, he manages The Nature Conservancy's preserves on the Lake Wales Ridge.

Everyone with access to a patch of earth can make a significant contribution toward sustaining biodiversity. *Bringing Nature Home* explains how.

Review by Sue Dingwell

The origins of Douglas Tallamy's book, *Bringing Nature Home* are rooted in his purchase of ten acres of land in southeastern Pennsylvania that had been invaded by alien plants such as multiflora roses, bittersweet, and Japanese honeysuckle. As Tallamy and his wife began to remove the exotic species and replace them with natives, he noticed a striking pattern. While native plants exhibited normal signs of insect presence, exotics were left largely untouched. Knowing that so many animals depend partially or wholly on insect protein for food, he came to some alarming conclusions about the effects of the alien invasion of plants in North America. Subsequent research, combined with a strong desire to help the public understand the consequences of their gardening choices lead him to write *Bringing Nature Home*.

This is a book that will delight and educate native plant supporters whether they are new converts, or have been believers for many years. It incorporates fascinating explanations of plant/insect interactions, tightly reasoned arguments for preserving biodiversity, and practical advice for gardeners, including indices by region listing which plants attract specific insects, all presented in clear, easily accessible prose.

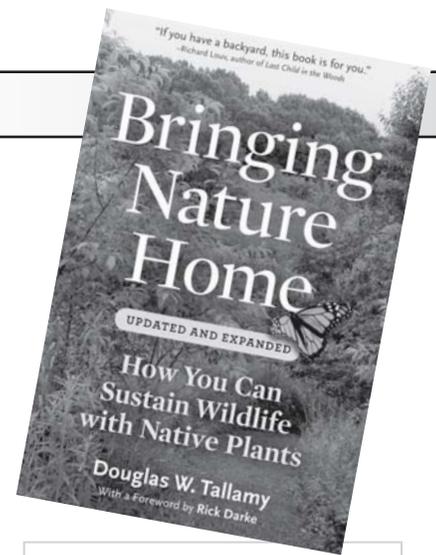
Those who are involved in advocacy for natives will find plenty here to upgrade their toolkits. *Bringing Nature Home* goes far beyond the standard three bullet points (less water, less fertilizer, no pesticides) and deep into the heart of the wonderfully intricate web of life that sustains mankind on this planet. The author explains in detail how and why native plants play such

an important role in sustaining viable ecosystems and why the suburban garden has become a critical component of efforts to maintain them.

A comprehensive discussion of trees comprises a chapter entitled "What should I plant?" The answer is "All native plants are not equal." Trees that support the greatest number of insect herbivores will consequently support greater wildlife diversity in the restored suburban garden.

The oak tree turns out to be a superstar in this category, and the genus has numerous species native to Florida. Although oaks provide nut forage for vertebrate wildlife and nesting cavities for dozens of bird species, what makes the oak a quintessential wildlife plant, is that no other genus supports more species of Lepidoptera (moths and butterflies), which means more types of bird food. Oaks are the "lifeblood for many large, showy and positively bizarre lepidopterans." Examine the underside of an oak leaf, urges Douglas Tallamy, and you will see caterpillars unlike any you have seen before.

The increasing loss of bird species has long been a sad fact in North America, and here the critical importance of insects becomes plain. While adult birds may eat the berries of exotics such as bittersweet (or Brazilian pepper in Florida), most bird species depend on insect protein and fat for the nutrients required to make eggs and feed fledglings. It won't matter how many berries you provide in your garden for adults birds if they are unable to reproduce – and if we don't provide the native plants the insects live on, there won't be any insects for birds to consume.



Bringing Nature Home
By Douglas Tallamy
Published by Timber Press
360 pages. With 312 color photos; diagrams and tables.
ISBN-13: 9780881929928

The habits and preferences of insects are described and beautifully photographed in the chapter called "What Bird Food Looks Like."

"Our nearly universal animosity toward insects is understandable, but seriously misplaced," says Tallamy. Of the 9 million or so species of insects, only 1 percent affect humans negatively. The other 99 percent pollinate plants, return the nutrients tied up in dead plants and animals to the soil, keep populations of insect herbivores in check, aerate and enrich the soil, and, provide food either directly or indirectly for other animals.

One of the many interesting experiments described is one in which Tallamy viewed thousands of photographs taken from a camera placed next to a wren's nest box. His job was to identify the arthropods (the species-rich, jointed-feet class of insects) in the wren's beak. He learned that spiders make up half of the prey items that wrens feed their young. The conclusion – now is the time to stop paying pesticide companies to eliminate insects from our restored suburban gardens.

This chapter provides information on the specific preferences insects have for the plants they choose as larval hosts,

and nectar and food sources. Here also is an educational feast of marvelous insect adaptations: the clever bolas spider who hides on leaf spots and hunts by swinging from its front leg a single strand of silk tipped with a glob of glue; the butternut woollyworm who looks like a segment of white feather boa; the milkweed beetle, who knows how to disable the defense system of a plant by snipping precisely midrib, thus blocking the flow of mouth-gumming latex sap; and caterpillars who know how to fold and tie leaves.

“When I talk about biodiversity in suburbia, I am talking about a natural

resource that is critical to our long-term persistence in North America” says Tallamy. The author’s point in writing *Bringing Nature Home* is actually the fact that this is good news – here at last is a cause we can each do something about. Developers are paving over fields and forests, while land available for conservation is fast running out. But suburban gardens now occupy a large enough percentage of land to make a significant contribution in changing the downward slide.

In conclusion, the book presents a wealth of resources not only to educate ourselves, but also to help us carry our

message about native plants to the larger community. Not the least of its attractions is the books’ numerous “sound bytes” that make great impact. Here is one that this writer has used to end several presentations lately: “Gardening with natives is no longer just a peripheral option favored by vegetarians and erstwhile hippies. It is an important part of a paradigm shift in our shaky relationship with the planet that sustains us – one that mainstream gardeners can no longer afford to ignore.”

A Conversation with Douglas Tallamy

Douglas W. Tallamy received a Ph.D. in Entomology from the University of Maryland in 1980. Since the publication of his book *Bringing Nature Home*, he has been in constant demand as a speaker, appearing at locations such as Longwood Gardens and the Morris Arboretum. On February 26, 2009, Sue Dingwell, President of the Palm Beach Chapter of FNPS, interviewed Dr. Tallamy for *Palmetto*.



SD: *Have you been surprised by the response to your book?*

DT: Completely surprised. I never planned to write a book in the first place. I realized no one was doing the kind of research I thought was needed to verify that native insects are largely not supported by the alien plants that cover so much of our suburban gardens. So I started some research

projects. I included some of the research along with a map of the food web showing interactions between specific plants, insects and animals into a pamphlet, and that eventually evolved into the book.

SD: *When did you first realize the book was going to be a hit?*

DT: The book was published in November of 2007. My friend Richard Darke noticed that it had climbed to number 3,000 on Amazon’s rating system. I didn’t think that was very significant. Then that spring Anne Rivers gave it a good review in the New York Times and it climbed to number 34. Timber Press sold out at that point and we lost the whole spring getting it reprinted. Soon, speaking requests began to stream in, which I had in no way anticipated.

SD: *As you make the rounds on the speaker circuit, is there one question that has been recurring over many geographical areas?*

DT: Yes – “Are cultivars as good as the original native plant?”

SD: *Are they?*

DT: If the change is just one of size it would probably not have a bad effect. However, if creating a cultivar involves a difference in the chemistry of the leaf, or the flower color, then the resulting plant’s efficacy in its native environment is also altered.

SD: *Do you have any experience with tropical plants?*

DT: No, not really. But the issues are the same everywhere. My wife and I teach a study abroad course every year in Monteverde, Costa Rica. This year when we travelled there, we were greeted by a city planted over in impatiens. (Author’s note: *Impatiens wallerana* is native to East Africa).

SD: *Audiences often express frustration with Home Owners’ Associations. How can HOA rules be changed to be more native friendly?*

DT: The rules those groups try to enforce were made a long time ago by people who were ignorant of the facts, and rules made by people can also be changed by people. I have been able to see changes even in some non-native commercial growers who have attended my presentations. Right now I am trying to target the groups that I feel can be most influential in effecting change: those who garden for others, such as landscape architects.

SD: Thank you, Dr. Tallamy. We are looking forward to your keynote presentation at the FNPS Conference in May.



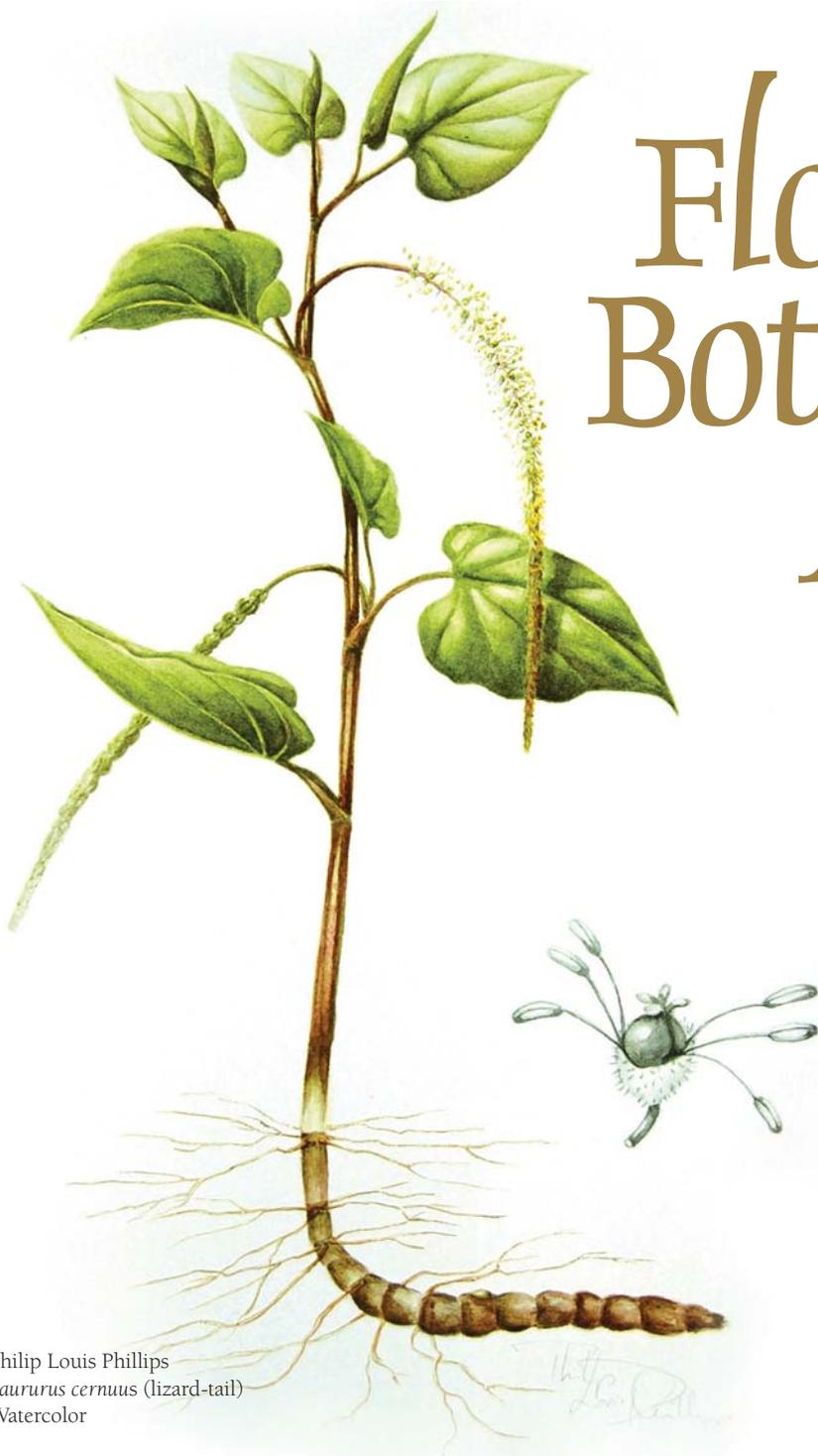
by Philip Louis Phillips

The impact of botanical art on Florida native plants, if properly applied, could be an influential component to other efforts at their preservation. Too many uninformed people think of Florida's natives as rather dull and uninteresting in comparison to the widely planted tropicals from other regions.

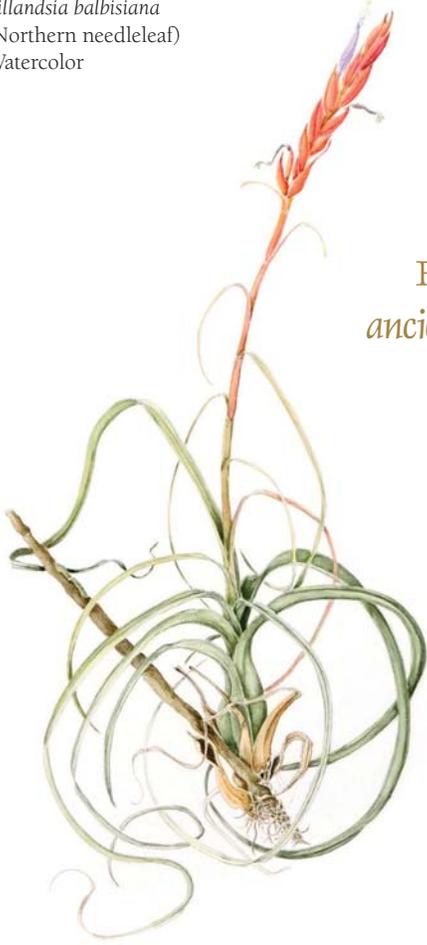
Florida's Botanical Art

By artfully displaying the various natives that are not visible on the denuded highways and vegetation-stripped developments, botanical art can dramatically show the average Floridian what they are missing. By simply becoming involved in the depiction of flowers, many of these people are being brought face to face with the native flora – even with the basic concept of native flora – and finding themselves fascinated. Some botanical artists are even developing a further purpose. As a technological society we are longing for not only human contact but contact with a wider and deeper reality.

In 2005 a group of botanical artists, on the verge of completing their studies, decided to start the Florida Society of Botanical Artists (FSBA), a not-for-profit organization. The purpose was to provide support and continued interaction, as well as professional development. It was also our intent to include education as part of our mandate. In 2008 the FSBA became an official chapter of the American Society of Botanical Artists, a national organization



Philip Louis Phillips
Saururus cernuus (lizard-tail)
Watercolor



As elsewhere throughout the United States and the world, Florida is enjoying a botanical art renaissance. The interest in this ancient-rooted discipline has grown in step with the renewed interest in a natural world that is dwindling all too fast. Public awareness and education about native plants is a necessary part of the conservation program.

interesting or provocative way, botanical art's foremost purpose is to provide a scientifically accurate representation of a flower, a whole plant, or a floral segment. The means of doing so may range from a simple line drawing or half-tone illustration to a full-color portrait including pollinators as well as magnifications of various plant parts – or anything in-between.

The first known illustrations of Florida plants were those of Mark Catesby. While other Europeans may have depicted landscapes in their explorations, they took no pains to show individual specimens. Catesby, however, included individual plant illustrations, as well as mammals and reptiles in his book *The Natural History of Carolina, Florida and the Bahama Islands*. Catesby was one of the first to depict plants and animals with ecological connections. However, he could show only plants with wide distribution (at least into neighboring Georgia, i.e. no Florida endemics), since he himself never actually penetrated Florida's borders. The plant paintings that he created however are exemplary and served as a guide to others.

Later on, John James Audubon also portrayed many plants and tied flora to the appropriate fauna, but never (unlike Catesby) concentrated on the plants themselves. Nevertheless his works show a variety of well-drawn and accurately portrayed Florida natives.

And while other botanical artists such as Martin Johnson Heade were to live and paint in Florida, much of their work pictured landscape scenes or plants seen on travels to the more tropical regions of the Caribbean or South America. Historically, even though involved early on with exploration of its natural history, Florida's indigenous flora has remained a largely untouched subject for artists.

More recently, the second half of the 20th Century saw several publications that used nicely laid out pen and ink line drawings, specifically focused on Florida plants. Of special mention are two of these: *The Native Trees of Florida*, by E. West and L. Arnold (Univ. of Florida Press, 1950) with drawings by Robert K. Turner, and *Drawings of Florida Orchids* by Blanche Ames (reprinted 1959, Cambridge Massachusetts). Both books are somewhat limited by the available print technologies of their time, but certainly not by the talents and care of the artists. Until recently, little notice was taken of the fineness of illustrations, with a few minor exceptions such as the acclaim given to Mrs. Ames by botanists in her lifetime. (Being married to the eminent Dr. Oakes Ames didn't hurt.)

As field guides proliferated in the past 20 years, building with the momentum of the environmental movement and the increase in Florida's population,

with international membership. Both locally and nationally, as artists interested in the flora of the world, it has been our ongoing mission to bring recognition to endangered and threatened plants.

In 2008, the FSBA held its first exhibition. "In Our Own Backyard: Florida Native Plants" brought together the works of more than a dozen artists, with 30+ plants portrayed. This exhibition may be seen on-line at the FSBA Web site, www.fsba.us. While we are a growing organization, still finding its way, I believe we can bring our talents and dedication to the important pursuit of conservation. Through weekly sessions of sketching at parks and conservation areas, we are also familiarizing ourselves with the abundance of Florida's offerings.

But what makes something "botanical" rather than simply "floral" or "fine" art? Simply put – it's the intent plus the methods employed which differ and define. While all art in some way attempts to present its wares in a pleasing,

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Florida's Botanical Art

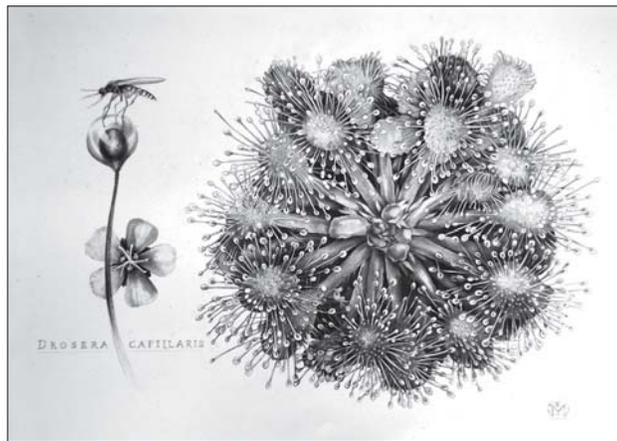
there also came a reliance on photography rather than drawing and painting as the means of illustration – with mixed results.

It's understandable that with the advent of cheaper and easier photography, handwork and specialized printing became more costly, contributing to this trend. But in the process, some of the qualities of the fine drawings were lost. The ability to compare one plant against another in separate photos became difficult as no measuring devices were commonly used. Field photos, especially close-ups, could leave one wondering about two flowers' relative sizes. In effect, some of the information lost could have been included, but some of the care and precision that is possible in drawing could not be replaced.

Some recent guides, such as Gil Nelson's *Shrubs and Woody Vines of Florida*, are using a combination of photography and drawing effectively. This welcome change is making the use of field guides easier, at least in the sense of being able to see defining traits of species. More work needs to be done in this area however. In any effort to distinguish plants in the field, it's always helpful to have visual diagnostic aids.

But pen and ink drawing, which is at the heart of many field guides, is only one method of botanical art. And while it reaches many people with an interest in our native flora, it is to some degree preaching to the choir. After all, anyone picking up a field guide to wildflowers or native trees is already somewhat aware of the "real" Florida.

Traditionally the main techniques of botanical art are drawing, pen and ink, and watercolor. In general oil has been little used in scientific illustration



Marjorie Shropshire
Drosera capillaris (pink sundew)
Graphite

– primarily due to the trouble involved in reproduction. Watercolors were more easily copied by engravers and then hand-colored after printing. Pen and ink (or drawing to a lesser degree) could be also copied for engraving or block printing purposes. Drawing was generally not considered final artwork, but was used for learning, sketching in the field or setting up for further pen and ink work. Drawing as an art form in and of itself is a modern idea.

While these are by and large the methods still used, there are new materials as well. One of the most common and rising quickly in use is colored pencil. No longer a children's coloring tool, the newer brands are light fast and have similar pigments to fine art paints. Color pencils also reproduce well; in fact too well if you're overly "scribbly" while blocking in a color. All those separate stroke lines can show up in print! Modern materials such as acrylic are also being explored, but to a lesser extent.

In general more work needs to be done in color, and with more accuracy than has been done in the last 30 or 40 years. The great floral portraits that helped define the very best of botanical art in the past – created by artists such as Pierre-Joseph Redouté, Francis Bauer, and William Hooker – are being emulated today. The techniques and materials are being rediscovered and added to, and in some cases surpassed. But the vast majority of Florida native plants remain untouched as subjects for art. Time,

effort, and of course, money need to be put into action.

For work to be of the highest level, botanical accuracy needs to be maintained – not simply glossed over, but executed with enough detail that the plant depicted can be identified as to species, in some

cases to subspecies where appropriate. In field guides especially, but in paintings as well, diagnostic characters need to be clear and "readable". Because botanical art is meant to be scientific, it is meant to inform, as well as to delight the eye.

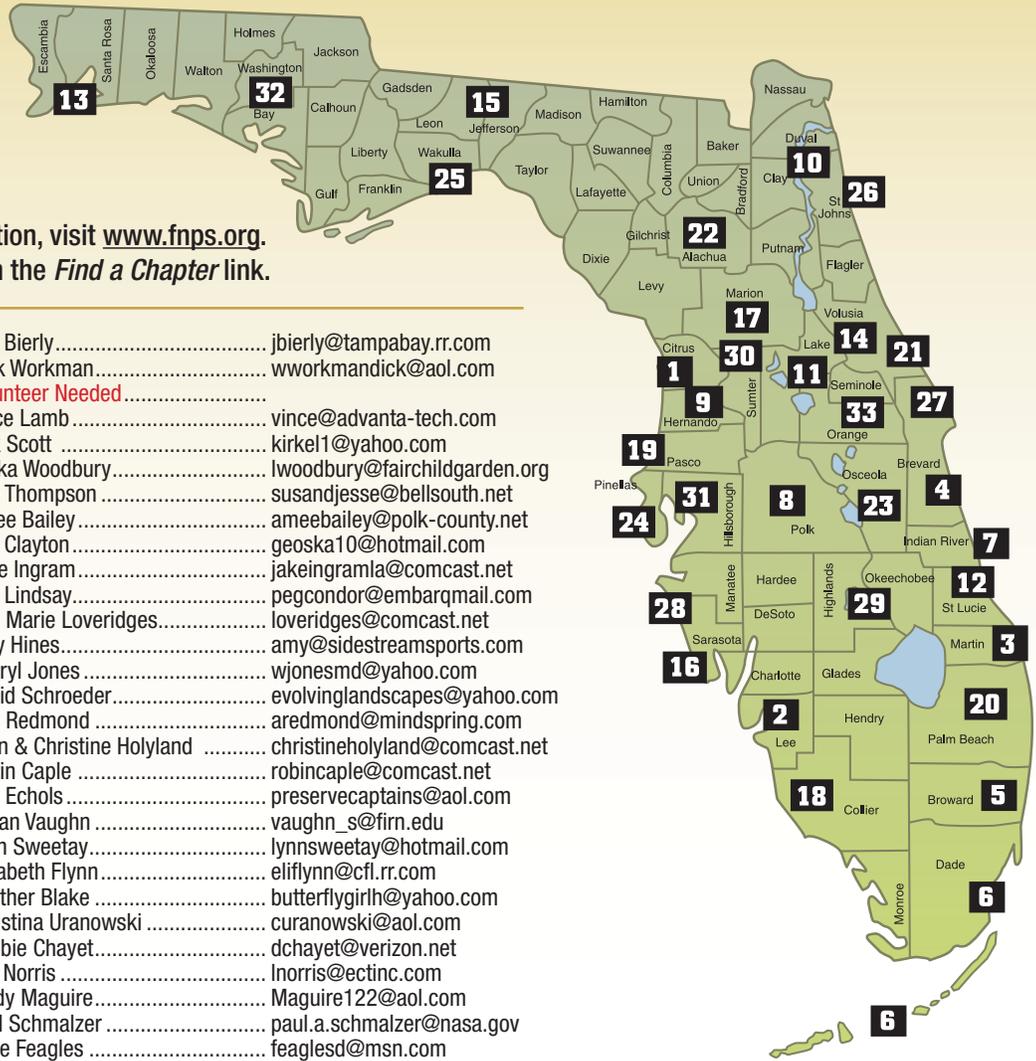
Botanists, nature historians, and ecologists working with botanical artists for their illustrations should ask for this accuracy, but should also be able to help achieve it. After all, most botanical artists are not botanists, and they may not have a scientific background other than what they have learned in botanical art classes. Like the interweaving that we associate with ecological systems, one individual or one species can't exist without the others around working in harmony.

Bringing the beauties and intrigues of the natural world, and of Florida's native greenery to the public is an important task. Any one group or method can't do it alone. The FSBA is one more voice that can reach people.

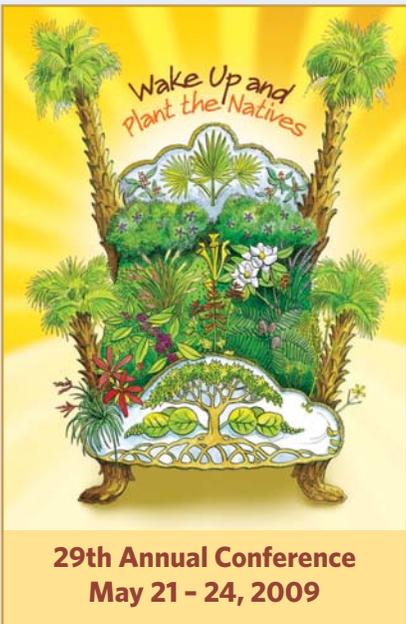
There are several centers of botanical art activity in Florida, with varying degrees of involvement with native plants. The education of other artists and the general public is part of each center's agenda. As more students emerge with the knowledge and abilities to produce scientifically accurate artwork, the FSBA hopes to bring together these various artists from around the state and encourage the study and depiction of our native flora.

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**29th Annual Conference
May 21 - 24, 2009**



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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.

Organization: Members are organized into regional chapters throughout Florida. Each chapter elects a Chapter Representative who serves as a voting member of the Board of Directors and is responsible for advocating the chapter's needs and objectives. See www.fnps.org.

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Nicaragua's Fountain of Youth

by Elston Chavarria

Perhaps the bluest and deepest lagoon in all Central America, Laguna de Apoyo is Nicaragua's fountain of youth.

This centuries old crater is the lowest point in Central America, reaching a depth of 200 meters. Located in the center of Nicaragua's Pacific Coast, Apoyo lies in the middle of a long volcanic chain which runs through the country from north to south. Formed after a strong volcanic eruption left a hole measuring six kilometers in diameter, Apoyo has evolved into a paradise where the waters are kept warm by sulfuric thermal vents called fumaroles.

Set against a backdrop of steeply walled volcanic slopes and covered with thick dry tropical forests, this dormant volcano echoes with howler monkeys from dawn to dusk. Declared a nature reserve in 1991, Laguna de Apoyo represents one of seventy-eight protected areas in Nicaragua. The lagoon and her slopes are an important habitat for a variety of flora, fauna, and endemic species of fish.

The forests of Apoyo have numerous species of plants and tropical trees, such as pochote, black rosewood, mahogany, hog plum, guacuco, pithaya cactus, and many beautiful orchids. The fauna is diverse as well, including opossums, giant anteaters, pacas, jaguarundis, white-faced capuchin monkeys, green iguanas, common boas, toucans, hummingbirds, blue jays, and rare butterflies. The area contains over 200 bird species, like oropendolas, falcons, and 65 species of migratory birds.

The waters are home to many species of fish including 4 recently discovered endemic species.

The lagoon has a surface area of 2,110 hectares and its waters are considered the most crystal clear of all fresh water bodies in Nicaragua. Water temperatures during winter range from 27°C to 28°C and during the summer, as a result of wind-driven mixtures of deeper water, temperatures decrease slightly. The warm temperatures and the therapeutic mineral properties of the water make Apoyo one of the most enjoyable lagoons for swimming in Central America.

The natural beauty, abundant flora and fauna, calm waters and the green slopes of the crater make Apoyo an incredible destination for visitors. Activities such as swimming, hiking, bird watching, diving, paragliding, and sailing may be enjoyed. Although it receives 30,000 to 60,000 visitors per year, Laguna de Apoyo has yet to realize its immense potential for eco-tourism and truly is one of Nicaragua's hidden treasures; her fountain of youth.

If interested in exploring Laguna de Apoyo and Nicaragua's spectacular cloud and dry forests, virgin rainforests and charming colonial cities, join FNPS on our adventure this summer.

Nicaragua – Land of Lakes & Volcanoes
 Tour: July 16 – 28, 2009
 For information contact:
 Elston Chavarria 954-662-1539
www.latinamericanadventuresllc.com

