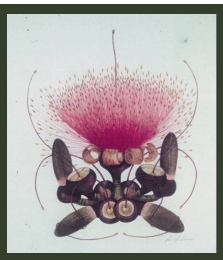
Gifford Arboretum Newsletter

Spring 2018 Volume 13, Issue 2



Drs. Doug E. Soltis and Pamela S. Soltis 2018 Gifford Arboretum Lecturers

By Christine J. Pardo

We are very pleased to announce that our 2018 John C. Gifford Arboretum Lecture will be given by **Drs. Douglas E. Soltis and Pamela S. Soltis**, professors at the University of Florida and world-renowned experts on floral genomics and development; big-picture plant phylogeny; and phylogenomics, as well as next generation sequencing of plants.

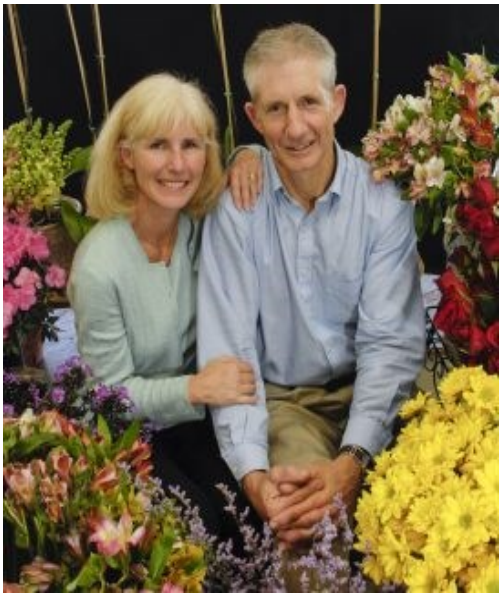


Photo by Eric Zamora

Dr. Doug Soltis is a Distinguished Professor in the Department of Biology and the Affiliate Curator at the Florida Museum of Natural History. He is the director of the Tree of Life Web Project and has given TED talks about his work.

Dr. Pam Soltis is a Distinguished Professor and Curator of the Florida Museum of Natural History. She is the director of the Biodiversity Institute at UF, and Director of Research Activities for the iDigBio program to digitize biological collections.

The pair are both members of the National Academy of Science and the American Academy of Arts and Sciences, and have received the Darwin-Wallace Medal from the Linnaean Society of London. This husband and wife team are the Principal Investigators of the Laboratory of Molecular Systematics & Evolutionary Genetics, commonly known as the "Soltis Lab," and are increasing our understanding of plant and general evolution in significant ways. Together they have numerous scientific publications and books, including the latest version of the Phylogeny and Evolution of Angiosperms published just this year. They are also involved in various citizen science and conservation initiatives. Their work was recently featured in an exciting interview on Episode 61 of the In Defense of Plants podcast, entitled "Building the Angiosperm Tree of Life".

Biology Dept. Chair:
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Gifford Arboretum Director:
Stephen D. Pearson

Aldridge Graduate Curator:
Christine J. Pardo

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Photo by Jeff Gage

Pam Soltis received her Master's and Doctoral degrees in Botany from the University of Kansas. Her long-term research focuses on polyploidy and plant phylogenetics. Polyploidy is the ability of genomes to double and have 2 or more sets of homologous chromosomes, something that plants generally do more readily than members of the animal kingdom. This ability in plants has played a big part in improving food plants and, with mutations, can sometimes lead to new species.

Doug Soltis received his Master's and Doctoral degrees in Plant Biology from Indiana University. His research focuses mainly on plant systematics, investigation the patterns and processes of plant evolution. Some of his work includes sequencing a draft genome of the species *Amborella trichopoda*, the only living species of an ancient group of flowering plants that also serves as a reference genome for all angiosperms.

Photo by Kristen Grace

For the Lecture, they will present **"Building and Exploring the Tree of Life - Mobilizing and Integrating Big Data in Analyses of Biodiversity."** Their lecture will describe how they have created a Tree of Life that maps the relations of all living things. Interestingly, all vertebrate animals (mammals, birds, fish reptiles, and amphibians) make up only 0.03% of species! On the other hand, the tiniest organisms, like microbes, contain most of the variation amongst species. Knowing the relations between species can, for example, help scientists identify new plants or other organisms with potential medicinal uses or other benefits to mankind. And understanding the symbiotic relations between species can both help identify potential ecological collapse as well as help us know what steps are needed to halt or avoid same.

The species Amborella trichopoda. Photo by Sangtae Kim.

This promises to be a very interesting and informative presentation that you will not want to miss. It will also be another great chapter in the series of wonderful presentations that have constituted the Gifford Arboretum Lectures over the years. Please mark your calendar and make plans to attend this event on **Thursday, April 5, 2018 at 7:00 PM in Cox Science Center Room 126.** A reception in honor of our lecturers will follow. Free parking is available in the purple lot at the south end of the Arboretum.

Special **thanks** are extended to the Montgomery Botanical Center for once again being a co-sponsor of the 2018 Gifford Arboretum Lecture and supplying housing for our Lecturers while they are in town.

Director's Message

By: Stephen D. Pearson

It is bittersweet that I write my final Director's Message of my six and a half year tenure as Director of the John C. Gifford Arboretum. I never dreamed or intended that it would last this long when I was hired as "Interim Director" at the end of 2011. But the University liked what I brought to the position, and I love the Arboretum, nurturing it, and sharing its treasures and beauty with others. It is a great resource for education and research, and I hope and pray that the University will cherish it and foster it to continue to grow as a great resource for the school and the community. It is a living museum and laboratory for students and professors who are interested in plants and nature, and where else in Miami can one go for free to see and learn about rare and beautiful trees? It is a wonderful garden, and it should be nurtured and treasured forever.

But the truth is that back problems and other physical ailments have been making it increasingly difficult for me to fulfill the physical aspects of the job, and I had decided to retire during the summer of 2017. However, after the threat of the potential road through the Arboretum was resolved in a favorable manner that included expanding the Arboretum, I decided in December, 2016 to stay one more year to, as I imagined, help see the new area off to a good beginning. But it is sometimes said in the legal profession that "no good deed goes unpunished," and the coming year instead brought Hurricane Irma and a host of other problems that I will describe later.

But first, let me review the joys that accompanied the first five and a half years of my work. I had been an attorney for almost 30 years who just happened to have a love affair with plants and an understanding of their importance to a healthy environment. I was a trustee of Fairchild Tropical Botanic Garden for many years and proudly serve today on the board of directors of the Montgomery Botanical Center. I had started several plant related organizations and, as chair of the Miami Beautification Committee, had helped pioneer the planting of trees along our highways. But plants had always been only an avocation until I became Director of the Arboretum. For me, this job was a nice segway into retirement, or at least a third career that does not require so much physical labor. I hope that I have left the Arboretum a better place than when I started.

I am very proud of the speakers that I have brought in to speak to the Arboretum group during my tenure, starting with Dr. Scott Zona and continuing through a roster that included professors and plant and/or environmental experts from UM, FIU, Miami-Dade College, the USDA, Fairchild, Montgomery, the Kampong, TREC, and local plant societies, including my dear late friend Larry Schokman. We have enjoyed some great annual Gifford Arboretum Lectures as well, starting with Dr Carol Horvitz, continuing with luminaries like Drs. Barry Tomlinson and Walter Judd, amongst others, and finishing in 2018 with Drs. Doug and Pam Soltis. We have also enjoyed lots of good tours and I want to say a special "thanks" to some of my friends who made these extra special, including Dr. John Cozza, Chris Rollins, Dr. Brad Bennett, Steve Woodmansee, and Dr. Larry Noblick, amongst others. Finally, the Arboretum got a new dimension of sound with some wonderful performances by various talented students affiliated with the Frost School of Music.

During my tenure, we have introduced over 150 new plant species into the Arboretum; created new signage for the trees and plants that includes QR codes that allow guests to learn about the species as they walk through the garden with a smart phone and a QR reader app; created maps and a new catalog for the Arboretum; created a map and brochure for the University's Palmetum; started a Plant of the Year program to help native fauna; and published 13 newsletters, all of which are available on the Gifford Arboretum website. I want to thank the Aldridge Curators who served during this time and who helped make this possible: Anuradha Gunathilake (3 years); Wyatt Sharber (half year), Luis Vargas (1 year, plus help before and after his term), Erika Bueno (1 year) and Christine Pardo (1 year). I also want to thank all of the members of the Gifford Arboretum Advisory Committee whose help, support and advice have been important and much appreciated. Finally, I want to say special thanks to you, the Arboretum constituency, for your support and for simply caring about and loving the Gifford Arboretum.

It is ironic that my initial involvement with the Arboretum was in the 1980s when I helped my late friend Kathy Gaubatz successfully defeat a proposal by UM to turn the Arboretum into a parking lot. After many years of being engaged in a legal career, I then became involved again in the early 2000s when another proposal for parking and a road through the Arboretum was under consideration. I helped to lead the charge against this boneheaded proposal and the threat of over 100 new parking spaces was fairly quickly shelved. However, the potential need for a road goes back to an old obligation of the University to construct an interior loop road that it agreed to do when it received permission to close Miller Road (SW 56 St.) on the west side of the

campus and construct Lake Osceola. Instead, the University just continued to build more buildings and athletic facilities until the only place where a connecting road could be placed was through the Arboretum. The threat of a road through the Arboretum was still an ongoing problem when I became Director, and probably my biggest contribution to the Arboretum has been to help get that threat resolved once and for all, with the original Arboretum having been preserved intact.

On November 15, 2016, the Coral Gables City Commission released the University from any further obligation to build an internal road in exchange for the University's promise to expand the area of the Arboretum by approximately .7 acres that consisted of the area behind 1300 Campo Sano, the wooden building that was restored and preserved when the University removed the other old wooden buildings in this area a few years ago. The University was also obligated to construct a small stretch of "service road" through this area that was to be gated and used only by UM service vehicles.

When nothing happened in the spring of 2017, I assumed that the University was simply waiting to create the road during the summer of 2017, long before the December 2017 deadline. In enlisting my help and support to convince the Coral Gables Commission of the value of adopting this resolution to the internal road problem, I was clearly told that the parking lot behind 1300 Campo Sano was going to be removed and that this was part of the .7 acre expansion of the Arboretum. I believe that the Commission was also told that and, at any rate, I do not believe that one can even get close to a .7 acre expansion without this area, especially since some of the original Arboretum was taken by the service road and one of its trees had to be moved. Trusting that this was the case, I announced at Arboretum meetings and events that it was my intent to turn the parking lot area into a small example of pine rockland. My friend, South Miami Vice Mayor Bob Welsh, and I worked very hard on several hot days in the spring of 2017 to properly plant 7 new pines and some saw palmettos in the area just east of the parking lot to start this project.

I was very disappointed when absolutely nothing appeared to have happened during the summer of 2017, obviously the right time to do things like build roads since school was in recess. But I was crestfallen when I was then told in the fall of 2017 that the University had decided not to remove the parking lot and did not feel that it was required by their agreement with the City. I guess I should have known better after all the things I had seen as a lawyer, but when you can't trust the people who are supposed to be on your team, it is terrible. I felt betrayed, used and disgusted.

The situation then got worse when Hurricane Irma decimated the Arboretum. I am 65 years old and have lived through more than a few hurricanes, so I consider them part of life in our area. Although I was disappointed when I was thrown out of the Arboretum on a calm and sunny day before the storm (I was staking plants to rebar, and all of the plants that received this treatment survived Irma with little, if any, damage) and was hurt to see the extent of the damage after the storm, it didn't seem that bad and I was even thinking about some ways in which the Arboretum could be improved. But what happened after the storm was horrible. Yes, the damage was extensive, but the truth is that most of the trees could be saved and that those that could not were mostly things that were easily replaced, like an African Tulip (*Spathodea campanulata*) and Cannonball (*Courouptia guinensis*). After chasing a construction crew out that was hatracking and needlessly destroying things in the Malvales and Gymnosperms exhibits one morning, I spent several 10 hour days working in the hot sun to carefully cut up the trees that could not be salvaged. Then on Saturday when I was off campus working with TREEmendous Miami to restore a tree planting at Virginia Key Beach Park, the University decided that the clean up in the Arboretum was not happening quickly enough. But instead of carefully picking up and removing the debris that had been cut up, they sent bulldozers in that not only picked up the cut debris, but destroyed anything it their paths. Trees that could have been salvaged were lost as well as many small plants that has suffered no damage from Irma, including some of our rarest species, like *Dalbergia melanoxylon* and *Commiphora africana*, both from Africa.

Needless to say, I was heartbroken, especially after I had been told after the construction crew was run out that nothing further would happen in the Arboretum except under my supervision. To compound my bad feelings, the service road construction project started a few days later by needlessly removing curbing in 2 areas of the Arboretum; destroying a sidewalk in the Arboretum and the stone wall and gate at the north end of the Arboretum; and destroying one plant and burying another (*Eugenia brasiliensis* - Grumichama) with rock and dirt that destroyed 8-10 years of growth. While there were apologies, there was no compensation to the Arboretum and, although the curbs have since been replaced, I gave up on the sidewalk ever being repaired as had been promised. I am still hoping and waiting for the stone wall and gate at the north end of the Arboretum to be repaired.

The bad beginning of the road construction was the proverbial last straw and I resigned my position. However, in hopes of securing a proper future for the Arboretum and realizing that the plants I had worked so hard to care for the last 6 years were in desperate need, I rescinded my resignation and agreed to stay until this summer. The Arboretum went for 6 months following Irma without any irrigation and I shudder to think what would have happened if I had not been out there carrying milk jugs full of water

for the trees and trying to care for them as best I could. The Arboretum still looks ragged, but we now have a new irrigation system and the healing summer rains will hopefully be arriving soon.

The University asked me to stay another year, hopefully to secure a proper future for the Arboretum, but I have declined. Even though any realistic assessment of my back and health requires this decision, I have also been terribly disappointed by how the construction of what should have been a simple "service road" has progressed. I shudder to think how much money the University has wasted on this project, even needlessly resurfacing the small parking lot behind 1300 Campo Sano that was to be removed and added to the Arboretum. But why would a short "service road" through the new section of the Arboretum need concrete curbs and drainage grates? Did someone think that rain is a bad thing in an Arboretum? And in spite of my lobbying against additional lights and explaining how light can be detrimental to plants, many new (and ugly) light fixtures were added in areas that already had sufficient lighting. And if it is a service road for UM service vehicles only, how much use is going to occur at night anyway? Today, the road is still not finished with trenches now being dug in the Arboretum to install fiber optics and there are no gates even though I have warned that some vehicles had been flying though this area endangering pedestrians. Yet, when I asked for $40,000 to restore the Arboretum and do things like add a small water feature that would allow aquatic plants to be included in the Arboretum, I was told that there was no extra money for such things. Simultaneously, a greenhouse for research that has been proposed for part of the Arboretum expansion area and that would be an excellent addition to UM's science programs is also looking for funds. I could describe other excessive and unnecessary expenses for this road, but the point is that priorities are askew and money is wasted even as worthwhile endeavors go unfunded. This needs to change.

I want to finish replanting the Arboretum and leave it in as good a condition as I can, but the time has come for me to move on when I finish this work during the summer. The University knows what is needed and that is a full time Professor who has a Ph.D. in botany and who splits his time between being Arboretum Director and teaching and research, paired with a full time horticulturist to properly care for the Arboretum, the Palmetum, the Alexander Microbiome and any other special plant areas of the University. I hope and pray that it does so and that you, as Arboretum lovers and supporters, will help make sure that the University does. While the University made a small first step in the right direction by hiring a part time Director, it is not a sustainable strategy to expect to find more old men who will bring their own tools and supplies, and work very hard for less than a living wage. It is also past time that the University gave plant science the full support that is so desperately needed and deserved in today's fast changing world.

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PALMETUM MAP AND BROCHURE

With financial support from the International Palm Society, we completed a new map and signnage for the University‘s Palmetum about 2 years ago. A brochure containing a map of the Palmetum and the palm species growing there was created and has been available at the Palmetum for visitors. However, so that you can have it and refernce it at any time, here is the link:

http://www.as.miami.edu/media/college-of-arts-and-sciences/content-assets/bio/docs/Palmetum brochure.pdf

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ARBORETUM CATALOG FINALLY FINISHED

It has been a long time coming to completion, and with a living collection that changes over time, it is never really finished, but the link to the new Arboretum Catalog is below. For each of the Arboretum‘s 14 exhibits, the catalog contains some general information about the exhibit, a map of the exhibit, and a lists of all plants planted in the exhibit, including plants that fit the exhibit‘s name parameter (Section 1) and plants that do not, but are planted there for other reasons (Section 3). Also included as Section 2 is a list of all plants belonging within the exhibits name parameter, but planted in other exhibits.

We should have realeased this catalog earlier, but it has been delayed by things like trying to digitalize the maps (a worthy effort that fell short, but hopefully can be compteted someday), other work and health needs, and, finally, a hurricane. It is a sucess if it serves as a useful tool for those who want to learn more about the Arboretum‘s plants and also provides a framework for further improvement. Booklets of the Arboretum‘s exhibit maps will be available at the Lecture. HERE“S the link to the f ull catalog: www.as.miami.edu/gifford-arboretum-catalog

Some of the good things that have been happening at the Arboretum!

Sharon Trbovich and **Betsy Tilghman** present a $2,000 check for the Arboretum to Steve Pearson. This gift was from the National Garden Club Association.

Deplanchea tetraphylla (Golden Bouquet) in flower

Stunning flower of Brownea macrophylla

Barbara McAdams gave a rain barrel workshop in the Arboretum

Dr. Chris Baraloto gives a presentation to our group

Groovegate performs in Arboretum

We also enjoyed a wonderful presentation my **UM Professor Michelle Afkhami** on microbes and their importance in South Florida native ecosystems on Feb. 7th. Sadly. I have misplaced the photo. I took, but it was a great presentation!

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We have more great programs coming up in the spring semester!!

On Wednesday, April 18, 2018, Arboretum Director **Steve Pearson** will lead a walking tour of the Arboretum‘s fruit and edible plants. 4:30 PM starting at the stone semicircle bench in the Arboretum.

On Wednesday, April 18, 2018, there will be the final Music in the Arboretum performance of the season with contemporary singer/songwriter **Nina Guerrero**, paired with an Arbor Day celebration sponsored by UM‘s Green Team that is led by **Teddy L‘houtellier** and celebrating another year where the University of Miami has been designated a Tree Campus USA by the Natiional Arbor Foundation. 6:00 PM at the stone semicircle bench in the Arboretum.

On Wednesday, May 2, 2018 – **Dr. Brett Jestrow**, Herbarium Curator at Fairchild Tropical Botanic Garden will present“Recovering from Irma and Planting New Species at Fairchild.“ 7 PM in Cox Science Center Room 166

There will also be a tour of the Arboretum‘s flowering trees and shrubs at a date to be announced in May.

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The John C. Gifford Arboretum
University of Miami

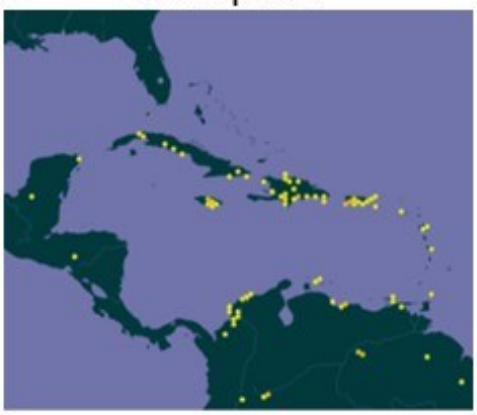
2018 Plant of the Year – *Guaiacum officinale* (Zygophyllaceae)
(Roughbark lignum vitae, Guayacán)

Available for distribution Spring 2018

Figure 1: Flowers of *G. officinale*
Photo credit: James Johnson

Figure 2: Fruits of *G. officinale*.
Photo credit: Joel Abroad

Description



Source of image: https://www.gbif.org

A beautiful, small tree, *Guaiacum officinale* produces multitudes of blue flowers (Figure 1) and fruit that are yellow-orange capsules held above the compound leaves (Figure 2). The fruit then split open to reveal red flesh and black seeds. *G. officinale* is the national flower of Jamaica, but is also classified as endangered on the IUCN Red List. This is because its strong, heavy wood (it will sink in water) was greatly valued in earlier times and today for its durability, strength, and self lubricating properties. This species also has traditional medicinal uses for gout, rheumatism, and other ailments, and its clear resin called "Guaiac" has been used medicinally. Lignum vitae means "tree of life" and it also provides food and cover for birds, and nectar for bees and many butterflies.

Some fauna that use *G. officinale*

Catbirds, Mockingbirds, and Blue-headed Vireos eat the seeds.
Photo credits: Wikimedia Commons.

It is a larval host plant for lyside sulphur, *Kricogonia lyside*.

Photo credit: Wikimedia Commons

It is a nectar source for bees and many butterflies.
Photo credit: James Johnson in habitat, Guantanamo Bay, Cuba.

Habit

- Tree of 30 to 35 feet at maturity, densely crowned and evergreen
- Bark – Greenish-brown and furrowed, suitable for orchids
- Leaves – Opposite, compound leaflets
- Fruit – Yellow-orange capsules of 5 cells, each containing a seed

Growth Requirements

- Watering: Drought tolerant but prefers moisture retentive soil with organic matter.
- Light: Full sun
- Salt tolerance: Moderate in soil, tolerant to salt winds
- Growth: Slow to moderate

Please Donate to the Gifford Arboretum

Mailing Address: John C. Gifford Arboretum, Rm. 231 Cox Science Center
University of Miami, 1301 Memorial Drive, Coral Gables, FL 33124-0421
Website: http://www.bio.miami.edu/arboretum

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Your Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Email:_____

❒ **Please keep me informed of activities at the Gifford Arboretum.**

❒ **Please find enclosed my tax-deductible donation to the University of Miami-Gifford Arboretum. (Tax deduction excludes value of benefits)**

❒ **Please send me information about including the University of Miami in my estate plans.**

Membership levels (annual)		**Benefits**
❒ **Student friends**	**$5**	**newsletter and discounts**
❒ **Friends**	**$25**	**newsletter and discounts**
❒ **Supporters**	**$100**	**all above plus t-shirt**
❒ **Donors**	**$1,000**	**all above plus special luncheon**
❒ **Benefactors**	**$5,000**	**all above plus display on plaque**

T-shirt size (circle one): S, M, L, XL

Make your donation by check: Total amount enclosed $_____
(payable to *University of Miami– Gifford Arboretum*)
by credit card: Amount $_____
Type of Card (Master Card, Visa, AMEX, etc) _____