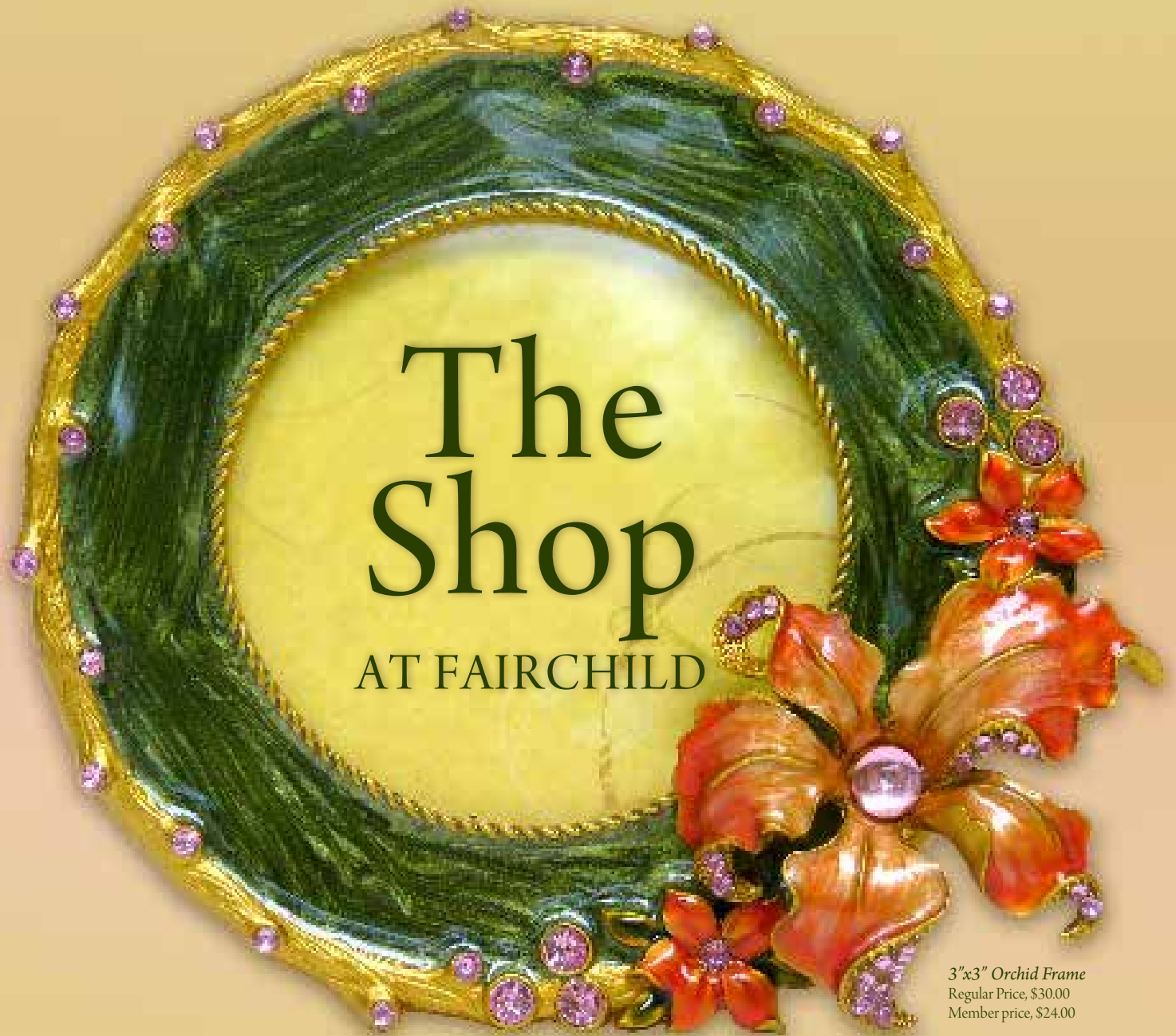


the TROPICAL GARDEN

FALL 2015



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FAIRCHILD TROPICAL BOTANIC GARDEN



A WONDERLAND OF PLANTS IN THAILAND 26

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45 WRITTEN IN STONE:
PLANT FOSSILS ARE
A TRIP BACK IN TIME



Plants are always on the move. They travel with the motion of the wind and the sea and with the migration of animals. People carry plants when they move from place to place. The more we know about plants, the less we think of them as stationary objects.

The earliest humans recognized the importance of plants for providing food, shelter and medicine. Long ago, our ancestors began selecting, moving and adapting plants to new growing environments as they settled new lands. Our survival has always been linked to our ability to surround ourselves with the right mix of plants, wherever we choose to live.

Our farms, gardens and neighborhoods are now filled with the plants our ancestors gathered from all over the world. Much of what we grow in the United States was brought here by Dr. David Fairchild, who spent his life on a worldwide search for new crops and landscape plants. Working for the U.S. Department of Agriculture, and later as the main provider of plants for our Garden, Dr. Fairchild scoured the globe for plants that would enrich and beautify our lives.

Today, we continue Dr. Fairchild's worldwide search, now working with our global network of collaborating botanists. In this issue of *The Tropical Garden*, we describe recent expeditions to Haiti, Costa Rica and Thailand, where we worked with our colleagues to obtain new species for Fairchild and, eventually, the South Florida community.

Over the years, we have worked with more than 15,000 plant species in our Garden, most collected from overseas. Incoming species go through a complex screening process, and only the best, most attractive, non-invasive species are planted in our Garden and shared with the community. From those, we may find the superstar plants that will become important elements of our society in the future.

This year, our flagship Fairchild Challenge K-12 education program is centered on the theme, "The Voyages of Plants." As part of that theme, we are encouraging students to think about how the movement of plants is connected to the past, present, and future of humanity.

We ask students to think about the plants that are important to our lives, where those plants originated and how those plants became integrated into human civilization over the ages. At the same time, we are asking students to consider the role of plants in our future. Working with scientists at NASA's Kennedy Space Center (see "From Earth to Space", p. 19), we are administering plant experiments in 124 local middle and high schools. The results of those student-led experiments may help identify the plants that will sustain human life in space, as astronauts begin traveling beyond Earth's orbit.

At our Garden we have inherited Dr. Fairchild's legacy of plant exploration. The movement of plants is an integral part of our story, and we are working to share that story with the world.

Best regards,

A handwritten signature in black ink that reads "Carl E. Lewis". The signature is written in a cursive, flowing style.

Carl Lewis, Ph.D.
Director



“What’s past is prologue.” So said William Shakespeare in his play, “The Tempest.” And while his declaration was intentionally foreboding, here at Fairchild, our past is a beacon of aspiration.

In each issue of *The Tropical Garden*, we work hard to bring you a good mix of articles that reflect our history as it informs our present-day and future programs. Like a compass, we use the work of David Fairchild—our namesake and chief among a storied list of explorers and scientists who helped establish Fairchild and its core principles—like a navigational aid: pointing us in the direction of new botanical and scientific discoveries. And as we dig deeply into our past, we come to appreciate how Fairchild is rooted in so much of South Florida’s history and the agricultural history of the United States.

Our Natural History Collection and Archive is a treasure-trove of historical recitations about the migration south to Miami by northerners who were lured by the romance of the tropics and its botanical richness; as well as by plant explorers who relished in the network of like-minded scientists eager to travel the world in an effort to introduce the United States to new and useful crops. Time after time, we find David Fairchild to be the binding thread weaving through many of these stories—stories that today allow us to project that past onto our future.

In this issue, you will read of several plant expeditions by our horticulturists and scientists as they explore for new plants and new uses for crops. We look back at the devastating hurricane (or “tempest,” as Shakespeare preferred) of 1935 and Marjory Stoneman Douglas’ description of how these types of storms helped shape South Florida. We celebrate the 75th anniversary of The Ramble, an annual garden fête that was started by a group of stalwart volunteers (led by Fairchild Founder Robert Montgomery’s widow, Nell Jennings) whose dedication continues to pulse through the Garden’s history; and, how our commitment to exploration is taking us beyond the constraints of Earth’s gravity into space with a budding partnership with NASA.

As you flip through the pages, you will find that we are indeed mindful of our foresight as a reflection of our hindsight. As we chart a course to the future, we applaud the efforts of our founders and past and current explorers, scientists, volunteers, supporters and many others who set us free to explore new endeavors. Who knows, perhaps we’ll soon explore the botany of distant planets.

Warmest regards,

A handwritten signature in black ink, appearing to read 'N. Zapata', written in a cursive style.

Nannette M. Zapata, MS/MBA
Chief Operating Officer and Editor in Chief

CONTRIBUTORS



MARILYN GRIFFITHS is the plant records manager at Fairchild. She is responsible for keeping the records of all plants up to date in the living collections database, preparing reports, mapping the plots and maintaining accession tags and display tags on plants. She has been with the Garden for 22 years.



JAVIER FRANCISCO-ORTEGA, PH.D. a plant systematist with a joint appointment between Fairchild and Florida International University, is a native of the Canary Islands. He has developed several research and educational projects with palms, cycads and tropical plants. His laboratory has a special focus on threatened species and island endemics.



JASON F. LOPEZ is Fairchild's living collections manager and has been with the Garden since 2005. He credits his parents for his green thumb and love of plants. They not only were once in the bromeliad business, but were Garden members from the late 1970s. In his youth, he spent many weekends at Fairchild discovering new things, and is proud to have a hand in the Garden's past, present and future.



BRETT JESTROW, PH.D. is Fairchild's herbarium curator, a position he has held since 2010. Using anatomical and molecular methods, Jestrow seeks to understand the Caribbean flora while actively collecting plants for both science and horticulture.

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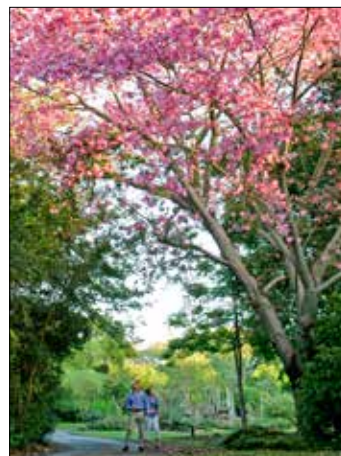
For weekday and weekend schedules, please visit
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FAIRCHILD TROPICAL BOTANIC GARDEN

ON THE COVER
Flamboyant fall foliage.

Ceiba speciosa
Silk floss tree
Photo by Gaby Orihuela/FTBG



the TROPICAL GARDEN

The official publication of
Fairchild Tropical Botanic Garden

EDITORIAL STAFF

EDITOR IN CHIEF

CHIEF OPERATING OFFICER
Nannette M. Zapata, MS/MBA

DESIGN

Lorena Alban

PRODUCTION MANAGER

Gaby Orihuela

FEATURE WRITERS

Georgia Tasker
Kenneth Setzer

STAFF CONTRIBUTORS

Richard Campbell, Ph.D.

Arlene Ferris

Erin Fitts

Javier Francisco-Ortega, Ph.D.

Marilyn Griffiths

Brett Jestrow, Ph.D.

Noris Ledesma, Ph.D.

Jason F. Lopez

Brooke LeMaire

Joyce Maschinsky, Ph.D.

Amy Padolf

Jennifer Possley

COPY EDITORS

Mary Collins

Rochelle Broder-Singer

Kenneth Setzer

ADVERTISING INFORMATION

Leslie Bowe

305.667.1651, ext. 3338

PREVIOUS EDITORS

Marjory Stoneman Douglas 1945-50

Lucita Wait 1950-56

Nixon Smiley 1956-63

Lucita Wait 1963-77

Ann Prospero 1977-86

Karen Nagle 1986-91

Nicholas Cockshutt 1991-95

Susan Knorr 1995-2004

Nannette M. Zapata 2005 - Present

The Tropical Garden Volume 71,
Number 4. Fall 2015.

The Tropical Garden is published quarterly.

Subscription is included in membership dues.

© FTBG 2015, ISSN 2156-0501

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Accredited by the American Association of
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is supported by contributions from members
and friends, and in part by the State of Florida,
Department of State, Division of Cultural Affairs,
the Florida Council on Arts and Culture, the John
D. and Catherine T. MacArthur Foundation, the
National Endowment for the Arts, the Institute of
Museum and Library Services, the Miami-Dade
County Tourist Development Council, the Miami-
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Cultural Affairs Council, the Miami-Dade County
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SCHEDULE OF EVENTS

November 2015 - January 2016



Festivals

FALL GARDEN FESTIVAL, FEATURING THE 75TH RAMBLE

Friday, Saturday and Sunday,
November 13, 14 and 15
9:30 a.m. - 4:30 p.m.

NELL'S TEA GARDEN

During the Fall Garden Festival.

Information, pricing and
reservations, at 305.663.8059 or
email mvalent@fairchildgarden.org



10TH ANNUAL INTERNATIONAL CHOCOLATE FESTIVAL

Friday, Saturday and Sunday,
January 22, 23 and 24
9:30 a.m. - 4:30 p.m.

Ticketed Events

HOLIDAY CONCERT AT FAIRCHILD

Sunday, December 13
6:00 p.m. Sponsorship information,
Pricing and RSVP at
305.667.1651, extension 3375.



SPLendor IN THE GARDEN

Thursday, January 14
10:30 a.m. Sponsorship information,
Pricing and RSVP at
305.667.1651, extension 3375.

GALA IN THE GARDEN

Saturday, February 6
6:30 p.m. Sponsorship information,
Pricing and RSVP at
305.667.1651, extension 3375.



Volunteer Information Days

Saturday, January 9
10:00 a.m. - 1:00 p.m.
Thursday, January 14
10:00 a.m. - 1:00 p.m.
RSVP and information, at
305.667.1651, extension 3360.

Fairchild Challenge Showcases



PARADE OF EVERGLADES

Animals and Performances

(Elementary Schools)
Saturday, December 12
2:00 p.m.

ART SHOW (Elementary Schools)

Wednesday, January 13
2:30 p.m.

ENVIRONMENTAL DEBATES

Feeding Our Planet

(High Schools)
Saturday, January 30
8:30 a.m.



Plant ID Workshop

Friday, November 6
1:00 p.m.
Register at
www.fairchildgarden.org/PlantID

Plant Show and Sale

SOUTH FLORIDA PALM SOCIETY'S FALL SHOW AND SALE

Saturday and Sunday,
November 7 and 8
9:30 a.m. - 4:30 p.m.

Tours

DAILY TRAM TOURS OF THE GARDEN

On the hour

WINGED WONDERS AND THE PLANTS THEY LOVE

Saturdays and Sundays
10:00 - 11:30 a.m.

EARLY-BIRD WALKS

Saturday and Sunday
Through November 29
7:30 - 9:30 a.m.

Tours Added Daily
Check the Information Desk
upon arrival.

Family Fun

FRIENDLY CREATURES OF THE NIGHT

Thursday, October 29
5:30 p.m.

HOWL-O-WEEN AT FAIRCHILD

Friday, October 30
9:30 a.m. - 4:30 p.m.

L.E.A.F. (Let's Explore at Fairchild)

Saturday and Sunday
November 21 and 22
January 9 and 10
10:30 a.m. - 2:30 p.m.

Concerts

SUNDAY SOUNDS

Live music performed by
students of University of Miami's
Frost School of Music, on select
Sundays in the Glasshouse Café.
1:00 p.m.
December 6, January 3
February 7, March 6, April 3

*This schedule of events is subject to
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The Travel Channel (2014); one of the **10 Best Public Gardens in North America** by *USA Today* (04/2014); and the **Number One Attraction in South Florida** by *The Miami Herald*, 2008;

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GET IN ON THE CONSERVATION



Tephrosia angustissima var. *corallicola*. Photo by K. Wendelberger

New Conservation Publications

Several new papers in research journals and chapters in books illustrate the diversity of Fairchild's conservation work and our strong collaborations. With Dr. Pedro Quintana-Ascencio of the University of Central Florida, Dr. Joyce Maschinski updated a chapter on population dynamics and metapopulation theory for the second edition of "Foundations of Restoration Ecology," which was published by Island Press. Former Fairchild field botanist Kristie Wendelberger and Maschinski published a paper titled "Assessing Microsite and Regeneration Niche Preferences Through Experimental Reintroduction of the Rare Plant *Tephrosia angustissima* var. *corallicola*" in a special edition of the *Journal of Ecology* that featured rare plant reintroduction. Along with multiple co-authors, including Dr. M. Patrick Griffith from Montgomery Botanical Center and former Fairchild field botanist Dr. Anne Frances, Maschinski contributed to a paper encapsulating an International Union for the Conservation of Nature Red List of Threatened Species assessment of cacti worldwide. This paper, "High Proportion of Cactus Species Threatened With Extinction," was published in the journal *Nature Plants* in October 2015.



Ph.D. candidate Nicola M.G. Ardenghi, Dr. Grazziano Rossi, and Dr. Joyce Maschinski at University of Pavia Botanical Garden

II International Plant Science Conference in Pavia, Italy

Fairchild's conservation ecologist, Dr. Joyce Maschinski, presented a keynote address entitled "Evaluating Conservation Options for Rare and Common Plant Species Threatened by Climate Change" at the II International Plant Science Conference at the University of Pavia in Pavia, Italy, in September. The conference featured botanical research centered on the themes of ecosystem services in agricultural landscapes, plant adaptation and mitigation in the face of climate change, as well as agro-diversity and its conservation. During a post-conference meeting, Italian colleagues Dr. Graziano Rossi and Dr. Thomas Abeli of the University of Pavia shared their active plant conservation activities, which are similar to Fairchild's South Florida conservation efforts.



Photo by E. von Wettberg/FTBG

Wild Chickpea

Dr. Eric von Wettberg, Fairchild researcher and assistant professor at Florida International University, recently traveled to Ethiopia to attend a United States Agency for International Development (USAID) project meeting for the Feed the Future Innovation Laboratory for Chickpea (see “Green Chickpeas: Coming of Age”, page 36). While in Ethiopia, he worked with colleagues on plans to utilize wild chickpea from Turkey in breeding new varieties of chickpea that are more resilient to the expected effects of climate change. In the picture, Dr. Dagnachew Bekele of the Ethiopian Institute of Agricultural Research (EIAR), Professor Doug Cook of University of California-Davis and Lijalem Korbu of EIAR examine a field trial of hybrid wild-crop chickpea being generated through this USAID-supported project.



Fairchild’s Summer Internships 2015: From High School Students to Geneticists in Six Weeks

For six weeks in June and July, 14 student interns collected and extracted DNA from *Encyclia tampensis* and *Cyrtopodium punctatum* and tested them for the presence of DNA base pairs that identified individuals within the orchid populations as part of The Million Orchid Project. The goals were to instill proficiency in molecular biology techniques, impart knowledge of conservation genetics and to give the interns the opportunity to submit a primer note to a peer-reviewed scientific journal. Specifically, the interns removed the DNA from the nuclei of the plant cells, prompted the DNA’s double helix to unwind and break apart, matched predetermined nucleotide base pairs (known as primer microsatellites) that reveal repeating motifs within the sample DNA and showed relatedness of orchid individuals. Then, they wrote about their methods and findings in a short paper, called a primer note.

Unanimously, the interns agreed that their favorite aspect of the program was the hands-on laboratory experience, specifically DNA extraction. “It’s a complicated process, but extremely interesting and satisfying once you see your final product,” said intern Frank Lopez. Intern Kelsey Peebles elaborated, “It’s so intriguing to see how part of a living thing can be broken down to a molecular level, all by my own doing, for the purpose of discovery.” Humorously, as intern Ebony Taylor put it, “Extracting DNA is like getting A’s...not always guaranteed.”

All interns gained field collection, laboratory and publishing experience at Fairchild this summer, helping guide them towards future careers in horticulture, engineering, botany or other sciences.



Páramo Plants Expert Visits from Colombia

In September, Fairchild helped host a visit by Dr. Santiago Madrinan. A professor of botany and systematics at the Universidad de los Andes in Bogota, Colombia, Madrinan is a recognized world leader in the study of tropical páramo plants—those in alpine tundra systems. Madrinan is also the new director of the Guillermo Pineres Botanical Garden (www.jbgp.org.co) in Cartagena, Colombia. During his visit, Madrinan worked with Dr. Kenneth Feeley, Fairchild conservation biologist and Florida International University associate professor on a study examining the distributions of Andean plants. Madrinan also met with the staff at Fairchild, as well as at nearly a dozen other botanic gardens in southern Florida, in order to learn about garden management and help establish what we hope will be long-term collaborations between Fairchild and the Guillermo Pineres Botanical Garden.

Cooking with Avocados



By Noris Ledesma, Ph.D.


Our Florida avocados have a different background than those you see in supermarkets originating from California or Central America: they are from lowland tropical America—west Indian and West Indian/Guatemalan hybrids that are dominant due to their superior adaptation to our climatic and edaphic (soil-related) conditions.

In 2004, Fairchild was awarded a grant to conserve West Indian avocados and plant a living clonal garden for South Florida and the global agricultural community. The grant allowed us to collect West Indian avocados in lowland Costa Rica, Nicaragua, El Salvador,

Guatemala and Panama. Two years later, the expedition expanded to Hawaii, Puerto Rico, Dominican Republic and Ghana. Today we have 150 new and different selections of West Indian avocado at The Fairchild Farm.

Due to development, deforestation and climate change, avocado breeds are disappearing more quickly than we can collect them, and many types could disappear before they are even discovered. Florida avocados face additional challenges. They have been attacked by a fungal disease introduced by the Asian ambrosia beetle (see “The Ambrosia Beetle: Lethal Weapon” in the

Fall 2014 issue of *The Tropical Garden*). The fungal disease is also killing swamp bay trees along Krome Avenue, between Kendall Drive and Tamiami Trail in Miami. We hope that some of the new selections we have collected will carry genes resistant to the lethal disease, as the industry will need to evolve for new, resistant, avocados.

Our Floridian avocados are lower in fat than the California and Central American avocados. They are very rich in vitamin E and can be eaten fresh with a little bit of salt, diced into salads, in guacamole, sliced in sandwiches, or made into milkshakes and ice cream. 

Avocado Mango Chicken Salad

Enjoy this symphony of flavors combining fresh, seasonal mango with cool, creamy avocados in chicken salad. It makes a perfect light dinner salad to enjoy in spring or early summer.

Ingredients

1 large head lettuce, washed, dried, and broken into large leaves
 4 cups shredded, cooked chicken (about 2 pounds)
 2 large fresh mangos, peeled and sliced into strips
 2 Florida avocados, sliced
 Coarse salt to taste
 Freshly ground black pepper to taste
 Chile pepper
 Extra virgin olive oil
 Good-quality aged balsamic vinegar

Directions

Mix all ingredients in a large bowl. Cover and refrigerate for at least 20-30 minutes to let all those yummy flavors blend together.

Serve on your favorite bread, crackers, pita pocket or on a bed of lettuce.





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BIG TREES BRIGHT BLOOMS

Text and photos by Marilyn Griffiths

Big trees. Fairchild has plenty of them. Have you stopped to think how lucky we are that so many of them have survived our severe storms? Many were planted at the inception of the Garden in 1938. Others were here before the Garden was conceived. Oaks, buttonwoods, fruit trees and mangroves have all been part of this landscape for a very long time. Over the years, our horticulturists have planted many stunning flowering trees from around the world. Here is a sampling of what is blooming in the fall.



Ceiba speciosa



Cordia alliodora, cypre or Ecuador laurel, is a timber tree native to tropical America. The

two lovely specimens of this tree in Plot 52 near the Tram Plaza are covered with clusters of white flowers tinged with pink. One was planted in 1940, the other in 1959. They both have magnificently tall trunks.



We're all familiar with the spectacular view from the Palm Glade railing, looking east over Royal Palm Lake. A

glance to the right towards the Richard H. Simons Rainforest reveals an ***Alstonia scholaris*** with a dramatic display of its own. This massive tree was planted as a seedling in 1958 and is covered with dense clusters of white flowers. A member of the Apocynaceae family, along with *Plumeria* and *Adenium*, it produces long double seedpods after the flowers have finished. With a circumference of 142 inches and a height of 67 feet, it has been given the title of Champion Tree by the Florida Forest Service.



Ceiba speciosa, floss silk tree, recently had its name changed from *Chorisia*. Walking down the brick path

from the Jean DuPont Shehan Visitor Center, you'll see two young specimens of this plant with very large spines all along their green trunks. As you go toward the Overlook, a very large floss silk tree will be on your right, in Plot 52. Planted in 1951, it has grown to tower over nearby

plants. It has a bottle-shaped trunk and the large branches will be covered with pink flowers. The resulting fruits open to reveal seeds embedded in fine silky fiber, used in some regions for stuffing pillows.



We're fortunate to have two specimens of ***Pachira aquatica***, Guiana chestnut, that provide


examples of an old, established tree and a younger one with low branches that give a better view of the flowers. In Plot 58, next to Pandanus Lake, a very large specimen has amazing buttressed roots. Fifteen seeds were wild-collected in Belize in 1959 and this tree grew from a seedling that was planted in 1961. At the eastern end of the Bailey Palm Glade, a younger tree has grown quickly since being planted in 1998. It was also wild-collected, this time in Mexico by a former staff member, Dr. Jack Fisher. The trees' long, narrow flower buds peel open to reveal a mass of burgundy-tipped stamens. Fragrant at night, these trees are pollinated by bats in their native Central to South American habitat.



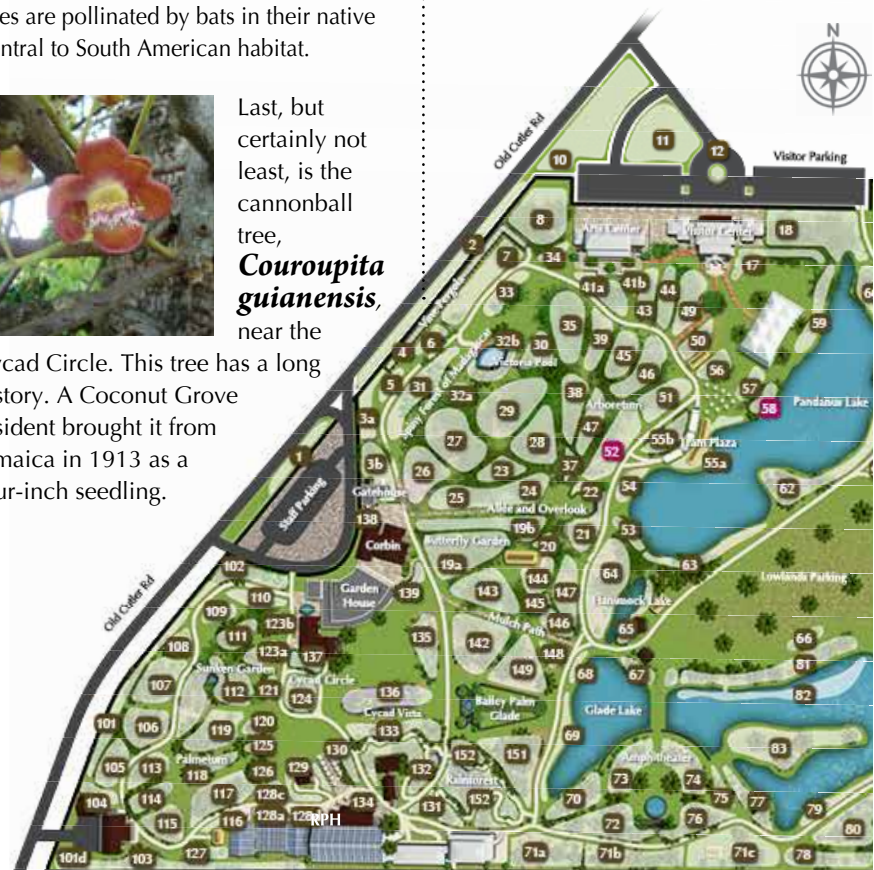
Last, but certainly not least, is the cannonball tree, ***Couroupita guianensis***,

near the Cycad Circle. This tree has a long history. A Coconut Grove resident brought it from Jamaica in 1913 as a four-inch seedling.

It was donated to the Garden in 1938 and bloomed after seven years. It has been blooming ever since.

The flowers are borne on specialized stems on the lower portion of the trunk. The fruit gives the tree its common name: it is the size of a cannonball. 

The Garden's Plot Map and What's Blooming List are available at the information desk at Shehan Visitor Center and at the South Entrance welcome booth. A list of the Garden's complete plant collection is also available at the Visitor Center information desk. Be sure to pick up both when you visit.



Visit www.fairchildgarden.org for the current list of What's Blooming in the Garden.



Rambling through time

By Georgia Tasker



The yellowed newspaper story began: “Nell Montgomery Jennings runs the classiest rummage sale in the country.” The article was about an early version of The Ramble, the Garden’s annual fundraiser, which took root back in the 1940s and this year celebrates its 75th anniversary.

The first “Ramble-a-Garden” was held at the home of Col. Robert and Nell Montgomery, just down the road from Fairchild Botanic Garden, which Col. Montgomery had founded in 1938 and which was in need of a truck. Invitations were sent out, noting that “well-informed guides” would be on hand. Dr. David Fairchild spoke in the morning and again in the afternoon; an auction of fruit was followed by free distribution of seeds. Admission was \$1.50. Riding on a Galapagos tortoise cost extra.

The following year, a hurricane damaged the Garden, and so another Ramble was held, once again at the Montgomery place. (Nell Montgomery disliked the term “estate.”) Thereafter, The Ramble moved into the Garden proper.

For many years, Nell personally greeted first-day Ramblers from a small platform in the center of the Garden House lawn. (Old timers knew the first morning was the time to go to scoop up the goodies, just as it is today.) Those were the days of fried chicken, black sapote bread baked from local fruit, plus jams and jellies made from tropical fruit by women who started the process as early as January for the December event, working as each fruit came into season. Offerings included Barbados cherries, jaboticaba jelly, Java plum jelly, lychee preserves and dozens more.

By 1979, long after the Colonel had died and Nell had married Alvin Jennings, The Ramble rummage sale had become threadbare. There was not enough staff to collect and store the bric-a-brac, and there was not enough room to hold the bric-a-brac once collected. Nell and the executive committee decided to change the event to “The New Ramble ‘80s.” Said Nell at the time: “People have jumped on me because of it and I have a stock answer. My stock answer is: ‘I don’t remember seeing you down there for days on end pricing someone else’s rummage.’”

The new Ramble focused on plants, educational exhibits, batik dying and papermaking. By 1981, the Garden’s scientists were persuaded to join the Ramble, giving presentations explaining their work. Donovan and Helen Correll showed how a flora was put together, as they had just completed the “Flora of the Bahamas.” Roger Sanders explained plant collecting and processing for the herbarium. Jack Fisher displayed tropical woods. Knut Norstog talked about tissue culture. Priscilla Fawcett demonstrated botanical drawing.

And so it went. Gradually, The Ramble became bigger and bigger. In 2014, it merged with the Fall Garden Festival, and became the Fall Garden Festival featuring The Ramble. Shards of the old Ramble still are to be found: antiques, rare and used and plants. But as with everything, change is the only constant. Nonetheless, The Ramble, once the first big event of the winter social season, has survived. Say Happy Birthday, Ramble!



Become a **Fairchild Volunteer**
and let a few hours of your
time **blossom** into a world
of new experiences!

Volunteer



Fairchild volunteers serve the Garden, the South Florida community and the world through their hands-on, interactive participation in Fairchild's programs and activities, while meeting others who share their interest in plants, people and gardens. Current volunteer opportunities include hosting, assisting in the Wings of the Tropics exhibit and guiding visitors.

To learn more about becoming a Fairchild volunteer and how you can help the Garden grow, come to one of the upcoming Volunteer Information Days.

Saturday, January 9, 2016 | 10:00 a.m. - 1:00 p.m.

Thursday, January 14, 2016 | 10:00 a.m. - 1:00 p.m.

To RSVP or for additional information, please call 305.667.1651 ext. 3360.

To learn more about becoming a Fairchild Volunteer, visit www.fairchildgarden.org.



Volunteers: The Heart of Fairchild's History

By Arlene Ferris. Photos by Fairchild Staff

For the past 75 years, The Ramble has been the symbol of South Florida outdoor living and volunteer dedication.



Dr. William Murphy and daughter Christine Bakker at the player side of the Waterpoorter, the Dutch street organ restored and maintained by Murphy and Joe Pommer. In times past, the melodious sounds from a street organ would attract villagers and passersby to a market or fair, and it is a popular attraction at the Ramble.



Dorothy Errera, who began volunteering at the Ramble six decades ago, presides over the Antiques and Collectibles sale. She and her committee work throughout the year to collect, clean, price, sort and pack treasures of all types to sell to eager Ramble shoppers.

For 75 years, The Ramble has been many new members' first introduction to the Garden, and there is no accounting for all the ways this once-a-year festival has fostered Fairchild's growth. And who has been behind the scenes making this beloved festival possible since 1940? The volunteers, of course! The Ramble, more than any other Fairchild festival, has depended on the support and generosity of volunteers.

The first volunteers, well aware that the fledgling Garden required money to operate, turned their ideas, time and energy into a fundraising event to help secure the Garden's successful future. Under the leadership of Nell Montgomery Jennings, civic-minded garden lovers

planned the first Ramble. They sold bric-a-brac and plants, and showcased the creative talents of members and friends willing to go the extra mile to raise money for the Garden: A 25-cent walking tour of the grounds, anyone? It was a combined country fair and garden party, with a rummage sale thrown in for good measure.

A review of "Fairchild Tropical Garden Bulletins" and newspaper clippings from the early years tell the story of an event that grew in reputation and popularity every year. Volunteers prepared thousands of jars of jams and jellies and baked fruit breads, cookies and pies for the sale; visitors came to see fantastic tropical flower arrangements; dedicated members donated family heirlooms to sell.



TOP

Louise Bennett, (second from right) co-chair of herbs, makes Ramble a family affair by inviting her daughter and granddaughters to sell herbs and vegetable plants on Ramble weekend. The three generations are shown left to right: Gingie Gardner, Madeline McCarthy, Louise Bennett and Courtney Gardner.

There is no way to recognize all of the individuals who have given their time generously over the last 75 years in support of the Ramble. Their energy, good will and teamwork helped to create an event that is uniquely Fairchild. In celebration of The Ramble's Diamond Anniversary, we recognize six Ramble committee chairs who have volunteered for more than 40 years: Dorothy Errera, Bev Murphy, Bill Murphy, Hélène Pancoast, Larry Schokman and Roberta Turner. Their personal dedication to this event is a true testimony to how much they value Fairchild and its mission.

A list of the booths from 1958 evokes the scene: Antiques, Aprons, Baked Goods, Books, China, Clothes, Draperies, Electrical Equipment, Furniture, Furs, Hats and Bags, Hobby Hut, Jewelry, Jellies, Kitchenware, Lamp Shades, Pictures, Plants, Records, Rugs, Seeds, Toys, White Elephants. There was no end of treasures sold at the Ramble. Nell and her husband, Col. Robert Montgomery, were always in attendance, as were Marian and Dr. David Fairchild. They would meet with old and new friends, share news about the latest plant introductions and watch visitors inspect their newly acquired treasures.

All of these volunteer-supported activities took many hours of work, and times began changing. Homemakers, who constituted the majority of volunteers in those days, had more options for their time and less time to volunteer. In 1980, it was decided to re-focus the Ramble to showcase plants and horticulture, and to eliminate the rummage sale, though to this day people reminisce about the weird and wonderful items that they acquired at the "old" Ramble.

Today's Ramble showcases more than 60 vendors selling items related to plants and gardening, more than 25 environmental and educational organizations and exhibits, learning and fun at the KidWay, fabulous food booths and the community's largest and most diverse plant sale. A contemporary DesignFairchild exhibit brings art to the Ramble, craft guilds showcase their wares and more.

But old Ramble traditions live on. The former rummage sale reappears now as the Ramble Antiques & Collectibles sale. Rare and Used Books, Herbs, Plant Consultants, Plant Sales and Valets, Nell's Tea Garden, Fairchild Food, Raffle sales, Tees and Totes, the Waterpoorter Dutch Street Organ—all of these are staffed by volunteers. Every year at the Ramble, volunteers greet people at admissions and membership tables, drive the shuttle and host visitors in Wings of the Tropics and at information kiosks throughout the Garden-making every visitor feel they are a special guest at a special garden party.

ABOVE

For years, The Rare and Used Books Sale was the first stop for many Ramble-goers and has long had a devoted following. Co-chairs Roberta Turner (top, center) and Stuart Debenham (lower right) collect and price books all year. At the Ramble, they are joined by volunteers Elaine Lynch and Diane Deleat (top left and right), as well as cashier Sandy Cummings (lower left).



From Earth to Space

Fairchild's Education Initiatives are Rooted in South Florida and Beyond

By Amy Padolf
Photos by Fairchild Staff



The Fairchild Challenge for middle and high schools continues to make real and authentic research accessible to every student. This year's Fairchild Challenge program is designed to help explore the deep connections among plants, people and the environment. We invite students to imagine themselves as explorers of the past and space travelers of the future, asking them to consider which plants would be the most important to take on a voyage to a new and distant land in order to sustain human life. This year's Challenge provides opportunities to conduct research with real-world implications, debate challenging subjects and creatively design a new world while learning about the importance of plants.

To make this year's middle and high school Fairchild Challenge even more exciting, we are partnering with NASA to build on the agency's current vegetable harvesting program called, Veg-01 (Veggie), which gave astronauts aboard the International Space Station (ISS) a chance to grow, harvest and eat produce in space for the first time ever on August 10, 2015.

Working alongside NASA scientists Dr. Gioia Massa, Veg-01 project scientist, and Dr. Trent Smith, Veg-01 project manager, we developed the Beyond the Earth Challenge with research protocols and resource materials that will give students an opportunity to test crop options that meet NASA's criteria for size and edibility. Students will mimic the environmental conditions aboard the ISS and test factors that may influence plant growth, flavor and nutrition. NASA will use the students' data to determine which food plants could be used on future missions.



TOP
Students work to install orchids in the trees at their school as part of the Million Orchid Project.

ABOVE
3-D Renderings of STEMLab: Botany on the Go Learning Lab, which is currently being designed by UM's School of Architecture.
Rendering by University of Miami, School of Architecture.

This year's Fairchild Challenge for elementary schools students are rooted firmly in the present. In partnership with the Everglades Foundation, students are exploring and learning about the Everglades, South Florida's most important ecosystem. The Fairchild Challenge for elementary schools program has been designed to work in tandem with the Everglades Literacy Program, giving learners the opportunity to explore, create and connect with this ecologically diverse and wondrous place. Our youngest students will learn why our local ecosystem is so important to the world.

Fairchild is also giving all of our visitors new and innovative opportunities to be involved in conserving the world of plants as The Million Orchid Project continues to grow and inspire. This conservation initiative began in 2012 with the goal of propagating 1 million rare and endangered South Florida orchids. Planned activities related to this project include having students who participate in Fairchild's field trip program, Explorer, take rare pine pink orchids to be planted at their homes or schools.

Fairchild Challenge for elementary schools students will also do their part to spread the word by creating designs that illustrate the importance of preserving these beautiful and environmentally significant native plants. We'll share the designs with thousands of visitors during our annual Orchid Festival, March 11-13, 2016.

Also this year, we partnered with the University of Miami (UM) to develop the world's first mobile tissue culture lab. The UM School of Architecture's Design/Build program has taken on the challenge of retrofitting a decommissioned school bus, donated to Fairchild by Miami-Dade County Public Schools, to create a micro-propagation lab similar to the one we have in the DiMare Science Village.

The new STEMLab: Botany on the Go Learning Lab will have lab-grade equipment, including two fully functioning laminar flow hoods, an autoclave and water purification system, all powered by generator or solar panels. Fairchild educators will take the mobile lab for regular visits to student scientists at local middle schools. The design and building is currently underway at UM, and we expect to have the lab on the road by fall 2016.

Combined, these innovative and groundbreaking programs give South Florida students an opportunity to participate in research that has practical importance and long-term ramifications on a global level and beyond! 



To learn more about Fairchild's education initiatives, visit www.fairchildchallenge.org.

EXPLORING THE NORTHERN LOWLANDS OF HAITI

BY
BRETT JESTROW
BRÍGIDO PEGUERO
P. ANGELO JOSEPH
WILLIAM CINEA
JAVIER FRANCISCO-ORTEGA



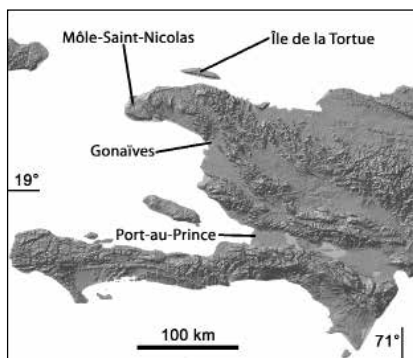
PREVIOUS PAGE

Plumeria subsessilis
reclaiming the old stone walls
near Môle-Saint-Nicolas.

ABOVE (L-R)

An individual of *Coccothrinax jimenezii* growing on exposed limestone.

A small stand of *Copernicia ekmanii* trees, among the last of their kind.



In 2013, botanists of the Jardín Botánico Nacional of the Dominican Republic described a new threatened species of Caribbean palm. This species, *Coccothrinax jimenezii*, was known from only two specific localities: one small population of less than 20 individuals in the Dominican Republic, and another known from a single herbarium specimen collected from Northern Haiti. No further information was available for the Haitian population, and this was the original impetus for exploring Haiti’s northern lowlands. Haiti’s Jardin Botanique Des Les Cayes (JBC), the Dominican Republic’s Jardín Botánico Nacional (JBN), Florida International University and Fairchild Tropical Botanic Garden developed a natural collaboration on the topic. With support from the Garden and The Mohamed bin Zayed Species Conservation Fund, administered through FIU by Dr. Javier Francisco-Ortega, researchers from the four institutions set in motion plans for an expedition, with the goal of developing a comprehensive conservation assessment plan that included ecological and molecular objectives.

In February, we embarked on this expedition to find the Haitian population of *Coccothrinax jimenezii* while exploring the flora of northwestern Haiti. After arriving in Port-au-Prince, Haiti’s capital, and renting the largest vehicle possible, we officially began the trip. With Brett (Fairchild) driving, Angelo (JBC) navigating and Brígido (JBN) keeping a keen eye open for plants, we made our way north to Gonaïves. The next morning we headed west along the coast from the city, and by seven in the morning, Brígido spotted the first *Coccothrinax jimenezii* palm. We were quite surprised! Being familiar with the difficulty of fieldwork, we

never expected to find the rare species so quickly—none of us had ever been so lucky. Scrambling across jagged dogtooth limestone, we counted the palms, 42 in all, and collected DNA samples for our current conservation genetic studies. Unfortunately, we saw no evidence of flowers or fruit and the palms appeared to be in poor condition. Further information on this Critically Endangered species and the continuing research can be found in this year’s September issue of the official journal of the International Palm Society: *Palms*.

A Second Sighting of a Rare Palm

After surveying the area for the palms, we met a local on the road and asked if he knew of more palms in the region. Indeed, he did, and with our new partner in tow, we continued driving up the road to locate different species. To our surprise, he led us to a previously unknown population of *Copernicia ekmanii*, one of Haiti’s most threatened palms. Thirty were found surrounded, not by seedlings, but by the stumps of dead palms. Speaking with the landowner, we learned he had been chopping them down for wood and thatch, not realizing their rarity. With the three of us as excited as we were and Angelo’s careful explanation of their rarity and importance to Haiti, the landowner quickly agreed to cut no more of the palms and was happy to arrange to send seeds when their fruit matured. We believe this remnant population was saved because of our trip, and Les Cayes Botanical Garden will now have a source of seed for this Haitian endemic palm.

BELOW (L-R)

Locals sailing to Île de la Tortue on a boat similar to the one used for the expedition.

Jatropha pauciflora ssp. *haitensis* flowering on the cliffs above Boucan Guêpes.






Colonial ruins of Môle-Saint-Nicolas with Morne Papaye in the distance.

With this sighting, we found ourselves ahead of schedule—a rare occurrence when doing fieldwork. We decided to take advantage of this by traveling to Haiti’s north coast. Our goal: sail to the small island known as Île de la Tortue (Tortuga Island), in order to investigate the current status of its vegetation for future joint conservation actions. Noted for its history as a pirate haven, the island also has a diverse flora that botanists had not explored in more than 80 years. Embarking on our ambitious plan, we spent the next day heading in that direction, traversing steep, rocky and winding roads to the northern coastal city of Port-de-Paix. After staying the night and organizing unexpected logistics, we found ourselves on a small sailboat slowly moving across the Canal de la Tortue (Tortuga Channel) towards Île de la Tortue—specifically, the small village of Boucan Guêpes. We chose this destination on the island because the village is situated below limestone cliffs known for many interesting plants.

After disembarking into a rowboat, getting our feet wet in the low surf and walking up the beach on the island, we immediately spotted red flowers on the rocks just behind the first house we encountered. After less than five minutes on the island, we had sighted *Jatropha pauciflora* ssp. *haitensis*, a plant we had hoped to find! Related to the popular landscape plant, *Jatropha integerrima*, this species has larger red flowers, a nice growth habit, and is likely salt-tolerant. Abundant across the limestone cliffs, the plants were in full flower and fruit. We quickly collected seed for *ex situ* conservation in our respective botanic gardens. We also collected specimens and seed of other species, but we had only a matter of hours and needed to hike to the neighboring town of La Valle, where we were to meet our sailboat crew for the return voyage.

Once back in Port-de-Paix, elated about our day on Île de la Tortue, we found ourselves still ahead of schedule. We quickly decided to again try our luck by exploring another area that botanists had not collected from in decades—in this case, since the 1920s. We went west along Haiti’s north coast, and while a handful of recent expeditions have traversed parts of this coast, we wanted to go all the way to the northwest point near the town of Môle-Saint-Nicolas. Columbus first landed at this curious town in December 1492. With its natural harbor, it soon grew into one of the most important cities in the Caribbean. Môle-Saint-Nicolas then began to decline in the early 1800s, becoming the quaint and quiet fishing town it is today. With multiple colonial forts, Môle-Saint-Nicolas is worth visiting in its own right, but we came to look for plants on the coastal mountain, Morne Papaye. The flora of the mountain is known only through the specimens of the great Swedish collector Erik Ekman, who, in 1925, hiked the same mountain we traversed. Much to our delight, we found quite a bit of the native flora still thriving. We were all surprised to find this and would love to see this mountain area become the first national park in the north of Haiti.

Much has been written about the devastation of Haiti’s lowlands, and while this certainly is true for most of the country, in the far west of Haiti, much of the flora remains. We ended our trip on the most positive of notes. Certainly, all is not lost, and the plants still exist and are continuing to grow. 

Angelo and Brígido inspecting a branch of *Lasiocroton bahamensis*, last collected from Haiti in 1925.



EXPLORING THE WONDERLAND OF PLANTS IN THAILAND

Fairchild's explorers bring
more than 250 plants
back from Thailand.

Text and photos By Jason F. Lopez

In June, several Fairchild plant experts traveled to Thailand in keeping with the tradition of plant discovery and exploration established by Dr. David Fairchild. Our focus was to find plants new, unseen or generally unavailable in traditional horticultural circles, and I am pleased to share that we were able to arrange and successfully complete a transformational plant acquisition expedition. We obtained from botanical gardens and nurseries via exchange and purchase; all were propagated from cultivation, not from the wild, and exported in accordance with both Thai and U.S. laws.

Early in the trip's planning stages, it was obvious that Bangkok was the best destination. Its location halfway across the world at least hinted at a selection of plants that are not available in South Florida. Heat, humidity and heavy rains are typical, much like what we experience here in South Florida. Also, the Thai people are master horticulturists with a great love of plants, so the many markets and nurseries would be ideal sources.







ABOVE
Flowering trees for sale
at the Jatujak Market.

RIGHT
Early morning at the market,
before it gets busy.



At Bangkok's Jatujak Market

Rumors about the Jatujak Market in Bangkok are true. It is most certainly a hub for tropical horticulture. On Wednesdays, and to a lesser degree on Thursdays, plants are the focus. Arranged in what is essentially a big circle, growers from all over the region offer their plants and related goods beginning at 6:00 a.m. Both sides of the road are lined with thousands of neatly arranged plants, literally pot-to-pot. A stall specializing in aquatics might be flanked by tropical flowering tree growers or tropical bulb suppliers. Activity at the market picks up quickly. Hot, humid air and smoke from the nearby grills constantly mix with chatter from every direction as shoppers dodge each other trying to get to the next plant. Vehicles line up, and wait for other vehicles to finish loading. Tropical fruit sellers and plant porters for hire weave their way around. This place is alive.

For some, the market is a weekly event, while others may only visit a few times a year, making for a unique inventory and experience every week. In our case, on the two Wednesdays we visited, it took a half day just to make it halfway around the circle of sellers. The best part was driving the loop afterwards, trying to remember which stalls we left our many new plants in and then trying to figure out a way to fit all of the plants (and us) into the van.



BELOW (L-R)
Tropical fruit ready to be eaten!

From left to right: Home Chaovanich, Brett Jestrow, Jason Lopez, Tiffany Lum, Chad Husby and Poonsak Vatcharakorn after a day of plant collecting.



Outside the City

Not everyone brings their plants to market. Sometimes you need to drive for a few hours to get to the best plants. An hour north of Bangkok, off a small side road in an area reminiscent of the Redland in South Florida, we arrived at a property lined with a tall concrete wall and all sorts of plants that didn't match any of the neighbors'. Inside, a passionate nurseryman with an eye for star plants welcomed us to his collection. From his private treasury, so to speak, we gleaned dozens of exciting new tropicals to try.

Driving southeast of Bangkok down the eastern coast of the Gulf of Bangkok, we headed for a specialty palm grower's nursery that couldn't be missed. Tucked away west of the town of Pattaya, it lies between fields of mangosteen, salacca and rambutan. For years, lore of this secret nursery and its incredible jungle plant collection has spread around plant circles in South Florida. With no presence on the Internet, its contact information and location are a mystery, unless of course you have friends who know the grower. Arriving at the palm nursery, we found that the famed owner/plant collector couldn't be a kinder man, and his love of and dedication to finding new plants is only rivaled by how rare and well-grown his specimens are.

We also visited Nong Nooch Tropical Botanical Garden, further south along the Gulf of Bangkok, where our hosts were also quite generous and welcoming. Its founder explained he was honored to have us, claiming Fairchild as the “mother” of his garden. Many of his first plants grew from Caribbean palm seeds collected at Fairchild 30 years ago. Nong Nooch is a garden like no other, comprised of thousands of playful animal-inspired statues, a fancy car collection, several themed gardens, an elephant show, restaurants, hotels and a botanical collection to rival any. We spent four days’ time wandering the garden, meeting new plants and people and learning different horticultural techniques, while also collecting seeds and cuttings in the garden and rooted plants from the nursery.


Back at Fairchild

It is safe to say that an assortment of plants like this has probably never arrived at the Garden all at once. More than 250 accessions are now in Fairchild’s nursery recovering from the shock of being shipped bare-root. The list is long and ranges from small herbaceous groundcovers to slow-growing, long-lived hardwood trees.

RIGHT
Need a ride around the market?
BELOW
A collection of understory palms.



From the market came recent hybrids of traditional Thai favorites like *Codiaeum* and *Aglaonema*, as well as new species of flowering trees from genera like *Brownea*, *Dillenia* and *Gustavia*. From one of the growers came a collection of carefully selected ornamental aquatics, highlighted by oddball *Lasia* and *Cyrtosperma* species, as well as several rare Southeast Asian trees and shrubs. Another grower supplied 19 new *Licuala* species for the Garden, along with many other forest understory treasures not available in the trade. Among the many plants that came to us from our friends at the botanic garden, including *Selaginella*, *Medinilla* and *Hoya*, came an exciting collection of plants from New Caledonia. This floristic region is underrepresented in South Florida gardens, and the varieties we do have seem to thrive, encouraging us to find more.

The next step in the process is to grow our acquisitions back out to stages where they can be tested and eventually planted in the ground at Fairchild. For some species, the process will be quick; for others, it could take decades. If all goes well, years down the line the details of this fantastic trip across the world will be the lore that helps fuel the joy and excitement over new plants for South Florida gardens. 



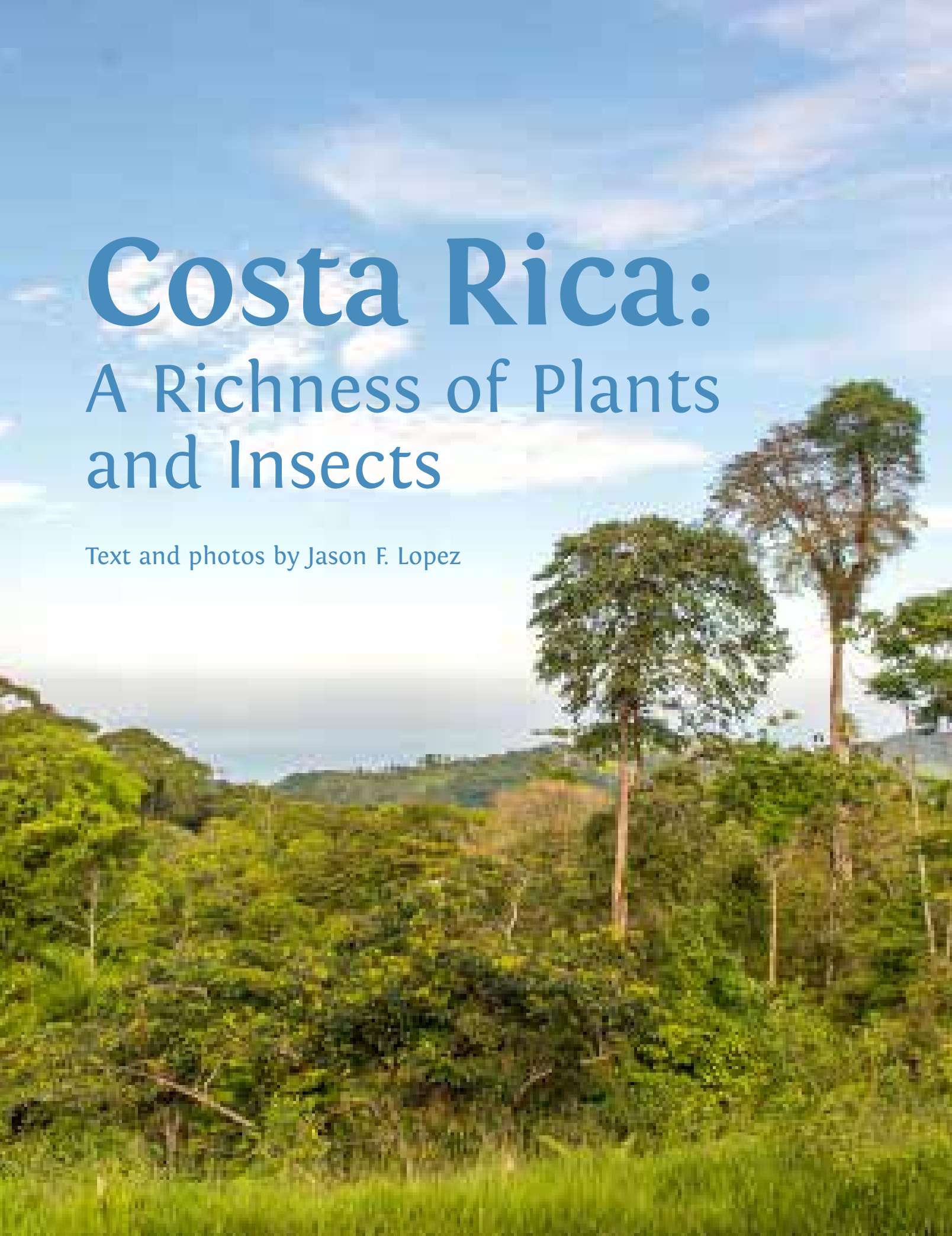
ABOVE (L-R)
 An aquatics vendor at Jatajuk.
 Brett Jestrow, Tiffany Lum and Jason Lopez
 in a van full of plants.
 Photo by Chad Husby/FTBG

In accordance with best practices, all plants obtained were from botanical gardens and nurseries via exchange and purchase; were propagated from cultivation, not from the wild, and exported in accordance with both Thai and U.S. laws

Costa Rica:

A Richness of Plants and Insects

Text and photos by Jason F. Lopez





TOP
A new species of *Psychotria* for the Garden. It has large bracts and almost black fruit and may prove useful in the Wings of the Tropics exhibit.

ABOVE
Close-up of *Psychotria*.

Martin Feather and I traveled to Costa Rica in May, by invitation of the Boracayan Wildlife Refuge, to conduct preliminary studies on the site’s insect diversity. We also had the opportunity to collect new plants for the Garden’s plant collection.


The reserve is actually a collection of properties mostly in La Florida de Baru, just inland from Dominical. A couple of decades ago, several smaller properties were purchased and combined into one large tract of land, with the intention of protecting the plant and animal diversity found within. Through time, most of the refuge has been logged, burned, farmed or developed—now it is finally being allowed to regenerate. Primary forest still found on the steep slopes of the mountains provides a native seed bank that gives hope for this goal.

The main challenge faced while surveying Boracayan is access to the interior’s undisturbed land. Heavy packs, daily rains and steep terrain make for slow going. Most of the work conducted was near roadsides or on relatively easy-to-reach trailheads and was completed in daylong intervals.

Insect collecting happens at night, though. A traditional system comprised of a simple white sheet hung vertically, illuminated by a 400-watt mercury vapor bulb and a powerful black light, brought an assortment of winged creatures out of the forest for the researchers to document. Sphingid (hawk), saturniid and arctiid (wasp mimics) moths came to the lights, along with mantids, scarab beetles,

cockroaches, wood-boring cerambycid beetles and lots of real wasps. Daytime forays down two-tracks and open trails provided glimpses of heliconiid, sulphur and swallowtail butterflies, while inside the forest in light gaps, mechanitis, glasswings and morphos fluttered around. Also seen were the fungus-farming leafcutter ants, the pack-hunting army ants and the well-respected bullet ants.

When it was time to collect plant specimens, most of the focus went to finding plants that would enhance both the Rare Plant House and the Wings of the Tropics exhibit in The Clinton Family Conservatory. Along with traditional collections like aroids and palms, lesser-seen species of plants like *cyclanths* and *melastomes* were collected for their dramatic foliage. Wild plants associated with butterflies were of highest importance, though. Collecting highlights included a few species of hot lips, *Psychotria* spp., new to cultivation, along with several other members of the family Rubiaceae. Propagations are currently pushing new growth in our nursery and will begin to be planted out by the end of next summer.

Plans to return to Boracayan are underway. Getting out further into the bush and surveying new areas will help the refuge understand which areas are of the most importance and where to allocate the few resources it currently has available. 

BELOW
Katydid and friends.

BOTTOM
Nocturnal biodiversity! A standard sampling method that includes a white sheet, ultraviolet light and a high-power mercury vapor bulb.



Native Ferns: Edging Out the Competition

By Jennifer Possley



LEFT: This photograph taken in a Florida state park in 2002 shows how Old World climbing fern can swallow an entire forest. Thanks to integrated management methods, including herbicide, fire and biological control, scenes like this are less common today.

Photo By Sam Wright/FTBG

ABOVE: The *Lygodium defoliator* moth (*Neomusotima conspurcatalis*) is one of the biocontrol insects that is part of a multi-agency integrated management program. The moth's tiny larvae eat Old World climbing fern, and nothing else.

Photo by Jeff Hollenbeck.


During the past decade, Fairchild has worked with Miami-Dade County to increase our conservation collections of endangered native ferns. Today, we have well over a dozen species of threatened and endangered native ferns in our care. We use these plants primarily for wild reintroductions, spore production for long-term storage and display plantings at the Garden.

Another unanticipated use of our collection has been to provide material for testing biological control agents that might be used to suppress the spread of Old World climbing fern (*Lygodium microphyllum*)—one of the most damaging invasive plants that Florida has ever seen.

Scientists responsible for developing biological control agents for Old World climbing fern are housed at the U.S. Department of Agriculture/Agricultural Research Center's Invasive Plant Research Laboratory in Fort Lauderdale. Staffers there travel to an invasive plant's area of origin (in this case, Asia, Africa and Australia), identify insects that eat the

weed in question and bring those insects back to the Fort Lauderdale lab for testing. The tests involve years in quarantine, during which the insects are presented with closely related plants to determine whether they might choose to eat other species, if given no other option. In the case of Old World climbing fern, the USDA must test its biocontrol agents on native ferns to rule out any off-target damage.

Rare ferns, as you might guess, are extremely hard to come by, because they are not available for sale and cannot be collected from the wild. But Fairchild has made our collections available to the USDA in order to further this important research.

To date, the USDA has released three moths and one mite that have passed through screening. Testing continues on two more insects: another moth and a sawfly. If these insects refuse to eat any Florida native ferns, then they, too, may be released to help curb the spread of Old World climbing fern in Florida. In a very real way, Fairchild's endangered native ferns are taking an active role in preserving the rapidly disappearing habitat they so desperately need. 

GREEN Chickpeas: Coming of Age

Bringing Florida a New Vegetable from the Semi-Arid Tropics

By Chris P. Krieg, Simone Jimenez, Daniella Vargas,
R. Varma Penmetsa, and Eric von Wettberg, Ph.D.



Chickpea, also known as garbanzo bean, is the second-most economically important food legume in the world. Chickpea seeds are important dietary components in places including South Asia, East Africa and the Middle East. In these and other locations where it is consumed, chickpea serves as a significant source of vitamins (B1, B2, B5, B6), minerals (zinc, calcium, magnesium, manganese) and carbohydrates. It is one of only two legume crops that provide all essential amino acids (the other is soybean).

In addition to being nutrient-rich, Chickpea is beneficial to farmers. Like other legumes, it forms symbiotic relationships with nitrogen-fixing bacteria, giving it access to a form of nitrogen not available to other plants. Some of this nitrogen ends up in the seeds or other harvested organs of our crop legumes. Some of the nitrogen remains in the legume, and is returned to the soil as biologically active nitrogen—which other plants can use—when roots and shoots of the legume senesce (the process of aging in plants and animals). Consequently, legumes that occur in natural ecosystems, or that are used in crop rotations with non-legumes, provide a natural source of nitrogen fertilizer, reducing the need for man-made fertilizer and providing residual nitrogen to subsequent crops. This carryover nitrogen can lower farmers' costs and reduce ecological impacts of fertilizer use, such as runoff polluting waterways. Additionally, chickpea can be further improved by pairing it with nitrogen-fixing bacteria that are better adapted to both their plant host and the soil. These cultured bio-inoculants can be sold to growers at a much lower price than fertilizers. These nutritional and ecological benefits, and potential economic gains, make chickpea particularly attractive as a major crop in agronomic systems worldwide.




Consuming chickpeas while they are still green improves the legume's already high nutritional value.

In the West, we largely know chickpea as the primary ingredient in hummus, or as a whole seed used in salads or cooking. In South Asia, East Africa and Southern Europe, chickpea is widely used as flour, as well as a whole seed. In places including Turkey, Ethiopia and the Indian subcontinent, it is also consumed while still green, before it has fully matured. The chlorophyll in chickpea seeds and pods degrades as they transition to seed maturation. During maturation, seeds also lose many vitamins, minerals and metabolites needed for a functioning photosynthetic cell. Consequently, consuming chickpeas while they are still green improves the legume's already high nutritional value.

Freshly harvested green chickpea progressively turns yellow from natural aging. To slow this process and ensure the marketability of green chickpea, it may be brought to market soon after harvest, or it may be stored in chilled or freezing conditions. The frozen green chickpeas now available at some natural-food-oriented retailers are harvested and processed this way. However, some rare varieties of "stay-green" chickpea retain their chlorophyll (and their green color) after maturation. This implies that such



persistently green varieties of chickpea are likely to retain their color when harvested as fresh vegetables, which would prolong the period during which they retain appeal to consumers. In other crops, some stay-green varieties, in addition to their higher nutrient levels, show improved drought tolerance, raising the possibility that similar tolerance may exist with green-seeded chickpea. These characteristics are likely beneficial in many places, from semi-arid regions of East Africa and South Asia to here in Florida, where seasonal conditions swing from heavy rains to periods of prolonged drought.

With their high nutritional benefits and long shelf life, green chickpea varieties have great potential as a vegetable crop. Yet, no national market has developed in the U.S. Recognizing the opportunity to introduce and improve upon a favored form of chickpea from the wider world, we have also begun work to test green chickpea varieties for Florida's market. Furthermore, we are exploring possibilities of testing these green-seeded varieties as a fresh vegetable with partners in India (which accounts for much of the world's chickpea consumption). We have also begun growth trials and assessment of agronomic potential at the Center for Tropical Plant Conservation at Fairchild. We hope this work stimulates interest in the production, marketing and consumption of green-seeded chickpeas in South Florida and beyond. 

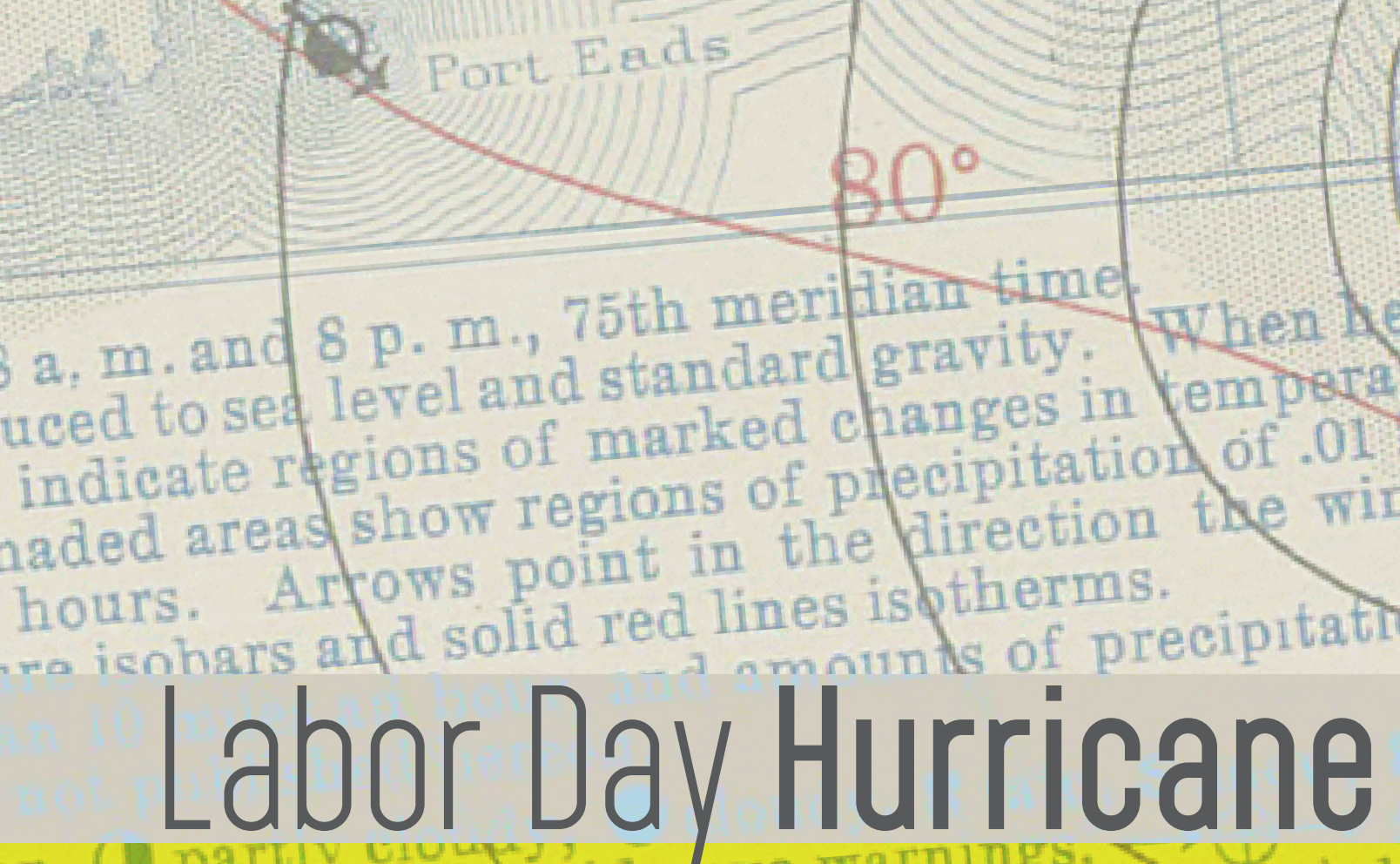
ABOVE

UC Davis Ph.D. student Alex Greenspan purchasing green chickpeas from a street vendor in Mardin, Turkey.

LEFT

Chickpea farmers from Shewa province, Ethiopia, sampling green chickpea seeds from their fields.

Photos by Eric von Wettberg/FTBC



Labor Day Hurricane

On September 2, 1935, the United States saw its first recorded Category 5 hurricane. A storm swept clean a 40-mile-wide band in the Upper and Middle Florida Keys, from just south of Key Largo to north of Marathon. Known simply as the Labor Day Hurricane of 1935, it led to more than 400 deaths and destroyed most man-made structures in its path, including the Florida East Coast Railroad tracks that connected the Keys with the mainland.

It was a sneaky but howling monster, full of windy fury and watery vengeance, that struck swiftly on a day meant for leisure from the drudgery of work. Its sudden, one-day explosion of power swept clean a 40-mile-wide band of islands over which it roared, pushing up the sea into a wall of water 20 feet high. Nothing like it had ever been seen in the United States: a Category five hurricane.

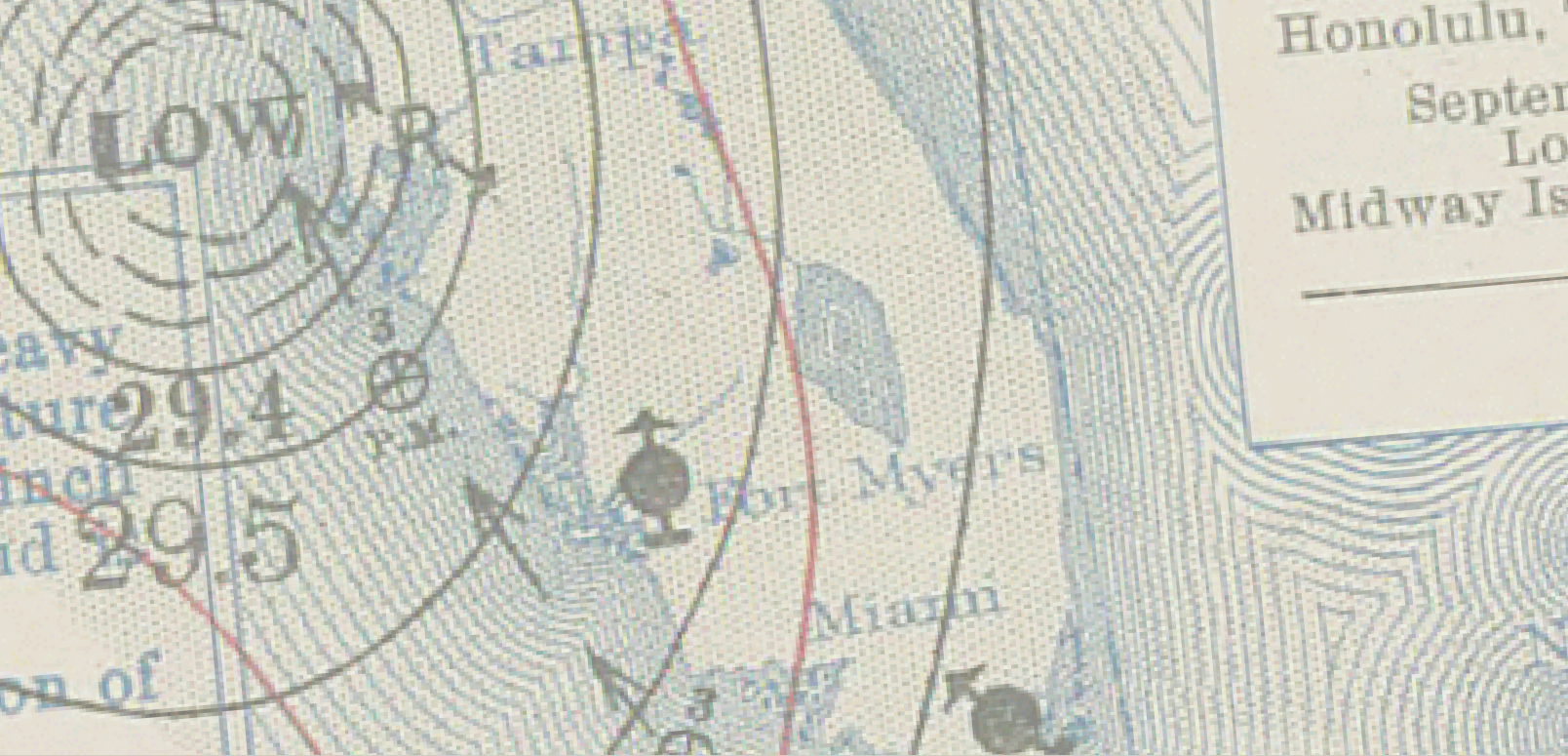
Monday, Labor Day, September 2, 1935

Barometers dropped; palm fronds flew flag-like; glass in the Alligator Reef light shattered. The ocean went from blue and green to gray to black, foaming with rage. First discovered on August 31 northeast of Turks Island, by the time it reached Andros Island, a killer storm raged through the Atlantic.

In the Florida Keys, houses were “battered up” and families gathered together—except for some 716 World War I veterans who worked for \$1 a day in the Keys. They were building bridges where ferries

once were used to connect islands via the original vehicular Overseas Highway. The vets lived in three camps of tents and flimsy structures. Some 350 of them had gone to Miami for a Labor Day ball game. Others packed up Camp 3, huddled together by a railroad embankment and waited for a train to take them to safety.

From Miami, a train headed backward down the tracks to pick up the veterans so it could head out quickly without turning around. However, it was late leaving Homestead, and then it became ensnared in cables on Windley Key (then north of Islamorada and today part of the city). It reached Islamorada at 8:15 that night. Keys historian Jerry Wilkinson says the hurricane’s tidal wave hit at 8:20. All cars but the heavy steam locomotive were blown off the tracks even before the storm surge hit. Bodies of the waiting veterans were found hung up in mangroves, buried in debris, covered with sand. Many people were never found. One woman was blown 40 miles away to Cape Sable, where she lived long enough to crawl on the beach toward mangroves. Many victims were cremated on the islands.



Survivors

By Georgia Tasker

Photos: Courtesy of Keys History & Discovery Center
in cooperation with the Jerry Wilkinson Collection



TOP

"Labor Day hurricane 1935-09-04 weather map" by NOAA Central Library, Silver Spring, Maryland - NOAA Central Library Data Imaging Project.
www.commonswikimedia.org

ABOVE

The Hotel Matecumbe was one of only four buildings to survive on Islamorada after the Labor Day storm.

"The weather bureau didn't think we'd get the storm at first," says Joe Pinder. "But at noon [on September 1], Daddy came home. He was manager of the Millionaire's Club, and he shut it up on Sunday. We packed up and left late that afternoon." In Islamorada, 14 people in the Pinder family crowded together in a wooden house built on the Atlantic side of the key for breezes and fewer mosquitoes. When a living room shutter blew in, the dining room table was nailed over the opening. Water began to rise, and all 14 people headed to the back door. Just then, "The house went to pieces," says Pinder, who was five at the time. "I was wrapped around my dad's neck. A mattress went by and dad put me on it."

Charles Pellicer, now 87, went with his family to a friend's house in Tavernier. "During the height of the storm, something hit the back end of the house," he says. "Four men went outside to see what had happened. There was a cesspool that was not covered over and the guy who said 'Don't fall in' fell in it. The house behind us had floated up against ours. We didn't have it near as bad in Tavernier as [in] Islamorada."

Everett Albury, who is also 87, recalls: "The house we were in floated up against the railroad track and it had a foot of water on the floor. The front door blew open, and someone nailed the door closed. On the other side of the house, we took a broom handle to see how deep the water was. We didn't know where we were till we were against the tracks."

A refrigerator fell on Jimmy Woods' mother. He grabbed his baby sister and ran from the house, but something struck her in the head and killed her. Then a water tank hit Woods.

Scorching winds of 185 miles an hour, gusting to more than 200 miles an hour, blew the clothes off people. It blew off their skin, too.

Joe Pinder's sister Alma Pinder Dalton was 11. When her uncle Fred said he couldn't hold her up any longer, he put her on some floating debris. Alma's dog "wanted to get in the weather, so I tied him to the bumper of the car." She doesn't remember anything being left of the house on the beach, the car or the dog. "I had one of my sister's dresses and that's all we had," she says.



TOP
Bodies in wooden coffins were stacked up awaiting transport.

ABOVE
Standing: Everett Albury.
Seated from left: Charles Pellicer, Alma Pinder Dalton and Joe Pinder.

Older generations of Pinders, Alburys and Russells had homesteaded on Islamorada. They had land grants of 130 acres, but paper proof of their grants was lost. When an undertow sucked things back to the ocean, Alma and Joe Pinder's mother was swept with it and became wedged beneath the beam of a house. Still alive, but severely injured, she could not be pulled out, so her daughter Dolores held a coat over her face to protect her from the rain. Men got saws and worked until they finally could hold up the house so her husband could pull her out. He put her in the back seat of a bus, where she stayed for a day until a boat could take her north of Snake Creek, where the bridge had gone out. From there, an ambulance met her and took her to the hospital in Miami, where she was treated for a broken back, broken ribs and two broken collar bones. She wore a brace and survived until 1968, says Alma.


"There were 14 of us," says Joe Pinder. "Of the 14, four were killed. Uncle Fred and aunt Hilda lost two of their four children. Aunt Camille and Sophie were under the refrigerator. Charles, a cousin, never was found." The day after the hurricane, Tuesday, it rained all day. There was almost nothing left on Islamorada. Alma says, "We ate pickles and peanut butter and sodas we found on the ground outside a grocery."

A man was found, still alive, but with a two-by-four run completely through his body. Before he would let anyone pull it out, he asked for two beers, saying once it was out, he would die. He drank the beer, the plank was pulled out and he died. "Dad helped carry out the dead," Pinder says. Eventually the Pinders arrived at Coconut Grove, staying there until April of 1936. "Daddy came down and worked weekends," Alma says.

Alma Pinder Dalton, Joe Pinder, Everett Albury and Charles Pellicer still live in the Florida Keys, although Albury and Pellicer both have motor homes they drive to the same RV park in Franklin, North Carolina, every summer, and Joe Pinder goes north as well. Pellicer, who worked in construction from Labor Day 1946 until 1999, wouldn't think of moving anywhere else. "When you've got the best, why leave it?" he says.

Although born in Key West, Albury still lives in Tavernier, "within [the same] three blocks, all my life," he says. He was the town's postmaster from 1953 to 1983. When he retired from the post office, he went to work as a field agent for the Internal Revenue Service. Albury doesn't stay in the Keys for hurricanes anymore. He says his father's house "floated off a second time in hurricane Donna [in 1960]. He called and said, 'Guess what. The house is in the middle of the road again.'"

Alma still lives in Islamorada. "I moved to Deland for six years, but came back," she says. Prior to Hurricane Donna she put up shutters on her house, "but didn't do a good job of it," and had four feet of water. "Donna tore the place up," she says. In the event of another hurricane, "I would stay with my daughter and granddaughter on Plantation Key," she says.

Aside from too many people and too much traffic, which has lengthened the drive from Islamorada to Key West to two and a half or three hours now from one, these hurricane survivors still love the Keys. Albury maintains, "It's still better than big cities." 

How storms shaped our history

By Georgia Tasker



“As the hurricane coasts have been filled up and crowded with people, the ruin of a single storm has mounted. People have been forced to face the facts of them by loss and suffering and death. ... It is time to realize what part these astonishing storms have played in all our history. ...”

“Hurricane”
Marjory Stoneman Douglas

Marjory Stoneman Douglas maps the geography and history of the West Indies and the North Atlantic, from the early voyages of discovery to 20th-century New England, as having been shaped by tropical cyclones in her 1958 book “Hurricane.”

Pelagic birds (those that spend the majority of their lives on the open ocean) survive in the storm’s eye; small birds take shelter on the lee of trees. The 1935 Labor Day Hurricane in the Florida Keys was thought to have destroyed the Cape Sable sparrow. Yet, years later, seven colonies were “found hidden among the swamps at the headwaters of some West Coast rivers, south of the Tamiami Trail,” Douglas wrote.

Douglas mines the accounts of storms throughout history, from Columbus to Shakespeare (who wrote “The Tempest” about a hurricane that hit Bermuda), from the hurricane that helped the Spaniard Pedro Menéndez de Avilés take Florida from the French, to the way the sugar planting season in the Caribbean was worked around hurricane season.

Douglas, in her inimitable way, looks tangentially throughout and finds tantalizing tidbits. The deadliest Atlantic Hurricane on record, for example, was an October 1780 hurricane with 200-mile-per-hour winds that killed 4,500 in Barbados, 6,000 in St. Lucia and 9,000 in Martinique.

She discovers for us that the word Ozarks, referring to the highlands covering 47,000 square miles in the center of the U.S., can be traced to the use of “aux arcs” by French cartographers; it means “of the arches” and references the region’s natural bridges. She shares that Benjamin Franklin first described the Gulf Stream and that William Redfield of Middleton, Connecticut, was the first to “discover and state that the movement up and down of mercury in a barometer is caused by the varying weight of the atmosphere.”

Englishman Henry Piddington, curator of the Calcutta Museum (now known as the Indian Museum), coined the word cyclone, meaning “the coils of a snake.”

French physicist G.G. Coriolis “proved that the rondure of the earth and its rotation deflected the course of cyclones north and south of the equator toward the east,” in what is now known as the Coriolis Effect. Father Benito Vines, a Jesuit priest who went from Paris schooling to Cuba in the 1870s, set up a network of weather stations in the Caribbean that laid the groundwork for a hurricane warning system. In 1870, the United States Weather Service was organized.

In 1906, a Keys hurricane killed 124 men working on Henry Flagler’s railroad to the sea. But work continued on rock embankments to hold up the railroad, which reached Key West in 1912. In 1926, Miami was hit, with 114 dead. Douglas wrote of the aftermath of that 1926 hurricane: “The city built on wild promises and hopes, paper and unchecked speculation, like the acres of shacks and flimsy building and billboards, was gone.” Some 25,000 people were left homeless.

The 1928 hurricane that swept from Palm Beach west across Lake Okeechobee blew the northern lakebed dry and spilled water across a small mud dike, over the towns of Belle Glade and Clewiston, all the way to the Gulf of Mexico. Douglas wrote that at daybreak on September 17, after the hurricane had passed through, “Bodies of the drowned began to float to the surface with the bodies of cattle, hogs, chickens. Rafts of bodies extended among the drying wreckage.” Afterwards, an 85-mile rock levee, 34 to 38 feet high, was built along Lake Okeechobee’s south, southeast and southwest shores.

The 1935 Labor Day Hurricane led to the abandoning of Flagler’s overseas railroad. The channels that had been blocked by embankments were opened, and a new road was built over bridges.

It wasn’t until 1950 that storms began receiving names. Then, they were given the same women’s names several years in a row. Finally, different names were chosen in the early 1950s, and men’s names were included beginning in 1979.



The Shop at Fairchild's Top Holiday Picks

By Erin Fitts, Photos by Rey Longchamp



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Member price, \$28.80



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Member price, \$13.45



Winter Surprise Bowl
Regular price, \$50.00
Member price, \$45.00



Party Animals Set
Regular price, \$55.00
Member price, \$49.50



Hummingbird Fantasy Glass
Regular price, \$19.95
Member price, \$17.95



Hibiscus Blossom Tray
Regular price, \$29.95
Member price, \$26.95



Succulent Bowl by Emilio Robba
Regular price, \$145 - \$295
Member price, \$130.50 - \$265.50

Geologic History of Florida: Major Events That Formed the Sunshine State

Albert C. Hine
University Press of Florida, 2013

By Kenneth Setzer



Available at the Shop at Fairchild
Price, \$39.95
Member price, \$35.95

An approachable book for non-geologists to understand why Florida exists as it does. If you are curious about nature at all, this will prove an engaging read.

Naturalist W.H. Dall declared, “The Floridian peninsula is a region where geological action has been gentle, slow and very uniform,” which may lead one to believe that Florida geology is dull, flat and featureless.

Hardly. If you are reading this in Florida, you are sitting atop an ancient, separated piece of what’s now northwest Africa. Much of southern Florida covers what’s called the “Boulder Zone,” a deep (1,800 to 3,000 feet) saltwater-filled cavern into which we pump treated sewage. Repeated oceanic flooding and desiccation helped create the ground we walk on. That’s pretty fascinating.

Albert C. Hine’s “Geologic History of Florida” narrates the voyage of Florida’s basement rocks from within the ancient supercontinent of Pangea to their current location. He also explains how carbonate deposition created the 3-mile-thick sedimentary Florida platform that stretches into the Atlantic, and even further into the Gulf.

Along the amazing journey, Hine uses Florida geology to explain larger concepts like Milankovitch cycles and plate tectonics, while also focusing on the immense life-sustaining Floridan Aquifer beneath our feet, and revealing how the Appalachian Mountains helped create our beautiful white sand (mostly quartz) beaches. 



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WRITTEN IN STONE

Plant Fossils are a Trip Back in Time

Text and photos by Kenneth Setzer



Fossils are nothing short of extraordinary. Ponder them for a while—you hold in your hand the remains of something that lived and died perhaps hundreds of millions of years ago, and subsequently managed to become preserved and quite literally weather through eons and ice ages and catastrophic asteroids. It's a wonder any fossils exist at all.



Otozamites

This cycad-like plant lived alongside the very first mammals in the Triassic Period, during the rise of the dinosaurs. The foliage so closely resembles a cycad, that it requires a microscopic look at the stomata to tell them apart. Their reproductive structures are also distinct from cycads, and previously led researchers to consider them ancestors of flowering plants, but this is no longer the case. Cycadeoids such as this disappear from the fossil record during the Cretaceous Period.

Triassic Period, 195–225 million years ago

Florissantia

Amazingly, something as fragile as a flower can fossilize. This flower, *Florissantia*, survived the cooler, more arid conditions developing after the Eocene Epoch, while avoiding browsers like the extinct horse *Mesohippus*. Some *Florissantia* fossils have even been dissected to reveal their preserved reproductive structure.

Upper Eocene/Lower Oligocene Epoch, approximately 34 million years ago



Lepidodendropsis

This bark impression belongs to *Lepidodendropsis*, a form genus of a tree-like lycopod. Lycopods, including modern-day *Selaginella*, fall within the oldest-known division of extant vascular plants. A defining characteristic of lycopods is microphylls—leaves containing a single vein each. Compare that to the complex venation of just one maple leaf!

Lower Carboniferous Period, 325–345 million years ago

A recent donation of dozens of plant fossils to Fairchild by Dr.

David Lee, Florida International University professor emeritus of biology, has allowed us to add to the fossil specimens already stored at our Herbarium. We can now learn more about life forms that lithified so long ago as to really be a bit beyond human comprehension. “I’ve always been interested in the evolutionary history of plants and the fossils that help tell that story,” Lee says. “I donated [the fossils] to FTBG because I thought their educational potential might be put to good use.”

The collection also includes fossils from Dr. Patricia Gensel, a professor of biology at the University of North Carolina at Chapel Hill and one of the world’s experts on Devonian plants. Lee spent some time with her. “That meeting led to her donation of most of the fossils you have seen,” he explains, “but with a few from collections I’d pulled together for teaching at FIU.”

Lee’s relationship with Fairchild goes back decades: He helped establish the original partnership between the Garden and FIU. “I have had a long and friendly relationship with the Garden, some 35 years,” he notes. Indeed, among Lee’s publications is “The World as Garden: The Life and Writings of David Fairchild,” a unique anthology of Dr. David Fairchild’s writing.

Holding these fossils leaves me longing to glimpse a time of giant millipedes, massive dragonflies and the tropical river delta that was Illinois. In these pages are just a few of the remarkable remains we have explored in Lee’s donation.



Calamites trunk

Calamites were giant horsetails that developed hollow trunks. After the plant's demise, sediment could enter and preserve a cast of the trunk's interior, like this pith cast. The living trunk was much thicker. Picture a giant *Meganeura* dragonfly, with a wingspan of more than two feet, alighting on one of these.

Upper Carboniferous Period, 280–325 million years ago



Carboniferous seed ferns

Fossils from the Llewellyn Formation of eastern Pennsylvania coal deposits are known for the pleasing contrast created by the pale fossil set against a darker matrix. The plant in the center is a species of *Alethopteris*, a seed fern (also known as a pteridosperm). Although it resembles modern ferns, it reproduced by means of seeds, not spores. Other visible species are of *Neuropteris*, another seed fern. Both *Alethopteris* and *Neuropteris* are abundant in Upper Carboniferous Period deposits.

Late Middle to Upper Pennsylvanian Epoch, 300–310 million years ago

Annularia

This *Annularia* fossil represents the foliage of *Calamites*, a genus* of huge (up to 100 feet tall) plants resembling living horsetails. They belong to the relict class Equisetopsida, represented today solely by the genus *Equisetum*.

Upper Carboniferous Period, 280–325 million years ago

**A note on names: the fragmentary nature of fossils means it is sometimes impossible to be certain how fossil plants looked in their entirety, and consequently how they are related to contemporaries and/or their descendants. As a result, paleobotanists may rely on names that are based on only a portion of a plant—for example, Annularia is a form genus based solely on foliage. This may result in different names for what's believed to be the same plant.*



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A Tranquil Hum: THE EDIBLE HONEYBEE GARDEN

A natural fit for South Florida, the honeybee garden can fill an urgent need, and attain a level of productivity far superior to edible gardening alone. But this complex garden will take commitment and learning.

By Richard Campbell, Ph.D.


Unless you have spent the last 20 years or so on the North Pole or under a rock somewhere, you have probably heard about butterfly and edible gardening in the home landscape. Both of these activities are noble, indeed, and can add considerable quality of life. Yet, there is more that can be done in the home landscape, the empty lot, the city park or wherever there is room to plant. I am addressing, of course, the honeybee garden, a natural fit for South Florida and one that fills an urgent need for our planet.

The honeybee garden is a hybrid that incorporates many elements of the butterfly garden and edible garden. It requires nectar, pollen and diversity spread over the year. It supports trees, shrubs and groundcover. And it can be wonderfully edible. In fact, due to its complexity, the honeybee garden can attain a level of productivity far superior to the edible garden alone. Creating one, though, will take a commitment to learning, a change of view and possibly an addressing of unfounded fears.

The first task in the honeybee garden is to identify which food sources the honeybees want. Honeybees are quite sophisticated in their preferences, and these preferences change throughout the season. Honeybees will feed on almost any flowering plant that produces nectar or pollen, but they move to plants of preference. For instance, the honeybee will feed on the mango in your garden until your neighbor's lychee comes into bloom. Then, like magic, the mango will be ignored—shunned so completely that production may suffer or even be nonexistent.

A honeybee garden should combine native and exotic plants attractive to the honeybee and to the gardener as well. There is a wide palate to choose from. Plant for aesthetics, tastes and even architecture. Be careful to choose as well for the entire year. Native trees like wild tamarind and gumbo limbo tend to bloom over a long season and often have multiple blooms. Fruit trees typically have a short and intense blooming season and weedy shrubs and trees may bloom throughout the year. The successful honeybee gardener has to fit these pieces together. But, fret not over this most difficult of tasks, for the honeybee will forage in a two-mile radius of its hive; so even if you do not have a particular tree or time of the year covered, the honeybee can fly afar and achieve its needs.

A vegetable garden can fit into this picture. Heirloom cultivars and old standards have great honeybee status. Honeybees will perish if you use agri-chemicals in the garden. The honeybee is an effective and humbling bellwether for the home gardener. Follow its lead and you can reap the harvest of the edible garden.

The home gardener must also address the fear of bees. Honeybees do not “attack” while foraging for food. In fact, they do not attack at all; they defend their home or sting when being killed. Life with a honeybee garden is not to be feared—it is to be admired and celebrated. The gentle, soothing hum of the honeybee garden is the best therapist one can find. It takes away stress and heals the gardener. Then, the gardener has the opportunity to harvest the bounty and revel in the simplicity that is South Florida. 



Container Gardening: Make Your Own Hypertufa Pots

Text and photos by Kenneth Setzer

“Where are you going to put all your plants?” It’s a question every gardener has been asked at one time or another. You can’t ever have too many plants, but you can run out of space for them in the ground. Containers are an answer, allowing you to move plants around and better maintain soil quality. Here’s a method for making your own pots and garden ornaments, exactly as you want them, for very little cost.

Hypertufa is a material meant to simulate tufa, a type of limestone often carved into troughs, pots and ornaments. Hypertufa can be molded to just about any shape, is strong and fairly light, plus it can be fashioned or stained to look like natural, hewn stone. The basic ingredients in hypertufa are Portland cement, peat moss and perlite, though many variations exist.

Supplies

- Portland cement
- Perlite
- Peat moss
- Container to mix the ingredients
- Plastic wrap
- Plastic trash bag
- Wood dowels
- A mold (see below)
- Paint stirrer or something similar for mixing
- Disposable gloves
- Dust mask
- Wire brush or metal file

All of these are available at your local home improvement store.

The Mold

Hypertufa mixture needs to dry on, or inside, a mold. There are numerous possibilities, like covering the outside of an upside-down plastic bowl, or filling the space inside a box. I’m taking the box approach to yield a trough-shaped planter using an old plastic bin as the mold.

Molds can be made of cardboard, plastic or wood. Cardboard is cheap, and easy to work. It also tends to bulge out slightly due to the weight and moisture of the hypertufa mixture, which I feel gives the pot a more rustic, handmade look. You also need to place something *inside* the box mold to form what will be the cavity of the planter. Use a smaller box or make one from cardboard. Styrofoam also works. The floor and walls should be at least one-inch thick; the larger the pot, the thicker they should generally be.

You may drill drainage holes through the bottom of the pot after the mixture cures, but I prefer to place wood dowels (covered in plastic wrap) or plastic plugs at the bottom of the mold. These can be removed or more easily drilled through after the pot hardens.

I cut the dowels to one and a half inches long; they then serve as a depth guide when adding the mixture to form the bottom of the pot.

Line the mold with plastic wrap to ensure easy removal. It also helps hold in moisture necessary for the curing process.

Steps



1

First, spread newspaper or a dropcloth to protect floors from spilled cement. The mix will need to remain in place for at least 24 hours, untouched and out of the sun.



2

Combine the dry ingredients—Portland cement, perlite and peat moss. The simplest proportions are: one part cement, one part perlite, one part peat. Sift out any large chunks of peat.



3

Wearing gloves, mix with your hands until the dry ingredients are thoroughly distributed.



4

Pour in a small amount of water at first, maybe a cup, and mix thoroughly. As you slowly add more water, wait for the peat to absorb what you've added before adding more. Slowly pour in more water and stir until the mixture is like moist cookie dough—it should hold its shape when squeezed, but not be dripping wet.



5

Add this hypertufa mix to your mold to form the floor. Use the wood dowels as depth guides. You may reposition them as they will shift when adding hypertufa.



6

Place the inside section of the mold—which will form the cavity—atop the hypertufa floor you just poured. Now add the remaining mix to form the walls. Add a little at a time, alternating your way around all four sides to ensure thorough distribution. Use the stirrer to help push the mix down all four sides and to smooth the top edges.



7

Cover the entire mold with plastic. A trash bag works well. It needs to dry slowly, so mist twice a day, keeping the mold wrapped in plastic and out of direct sun. (I added a brick to the inside of the inner box to prevent it from collapsing.)



8

24 to 36 hours later, the hypertufa should be hard enough for you to remove the mold, cutting away the cardboard if necessary.



9

Now is the time to carefully texture the outside with a wire brush or file to simulate chiseled stone, and to smooth and round the top edges.



10

Let the pot sit in the shade for about 30 days for the final cure. Keep it wrapped in the plastic bag and moist the entire time. Before planting, your pot will need to be fully cured and free of excess lime, which can harm plants.

A Note on Curing

Although the hypertufa will feel hardened after only a day or two, the full curing process takes about 30 days. There are a few methods to help the cure go well. Some people submerge the piece in water during this time to leach out the lime and ensure the cure goes slowly.

However I thoroughly hosed down my pot and placed it inside a plastic bag to ensure high humidity. Keep it out of direct sun while curing. After 30 days, I hosed the piece thoroughly every day for a week to ensure it was not too alkaline for plants.

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Teatime with Earthworms

By Braian Tomé

As a little boy, I enjoyed climbing trees, having conversations with cows (or so my mom says) and playing with earthworms that had surfaced after the rain. Today, I still do all these things, but my relationship with earthworms has changed. I now utilize their abilities to keep soils and plants healthy.

The earthworm is considered the engineer of soil. This is due to its locomotive nature, because it creates tunnels that allow for better aeration of soil. Earthworms' fecal matter (or castings) is rich in nutrients, more so than topsoil, and is also rich in biological activity. It contains high levels of nitrogen, phosphorus and potassium, plus plant-accessible micronutrients from the grains of sand and rock that earthworms digest. In addition, earthworm castings have a high humus content, which gives them a high water-retention capacity, minimizing the need for watering.

Keeping a worm management system (vermiculture) at home is one more way to lead a sustainable lifestyle. Earthworms will eat some of your food scraps, which will keep them from going to the landfill. And if you already have a compost pile, it is a great way to diversify your sources of natural soil fertilizer.

Worm castings can also be used to create a magic potion called worm tea. The process of preparing this tea, which involves actively brewing the castings in water via an air pump that forces oxygen into the mixture, leads the microorganisms in the castings to reproduce exponentially. And you can tweak the recipe to create either a bacterially dominant environment (which annuals prefer) or a fungally dominant environment (which perennials prefer). This tea can also be used as a pesticide; it contains chitinases, which are enzymes that degrade chitin, the main component in the exoskeleton of bugs. 

Braian Tomé is a former horticulture intern at Fairchild.

Building a Vermiculture System

A vermiculture system can be built in any size bin of a long-lasting material (wood or plastic) with a lid. Holes at the bottom and/or sides of the box are needed for air circulation. A fine plastic or metal mesh can be used to line the inside of the box, keeping animals out. **The first layer** of organic matter in the system is the bedding. This can be shredded coconut coir, brown leaves or paper products without toxic chemicals. The bedding must be thoroughly moistened. One of the objectives is to add little-to-no additional water hereafter. **The second layer** of the system is the food scraps. Earthworms are selective eaters, and are able to eat half their weight per day. They only eat plant-based foods and are not keen on citrus, onions or garlic. Finally, **the third layer** of the system is a thin layer of brown leaves, which mimics the natural environment of the earthworms, protects them and keeps the smell of decomposing food to a minimum.

This system must be maintained at the right temperature, moisture and pH. The temperature should range between 60 degrees and 80 degrees Fahrenheit. To achieve this, the bin should be kept covered with a lid, and placed in shade. Also, food should be replenished at the same rate that it is consumed; too much food (which is rich in nitrogen) mixed with the brown materials (which are rich in carbon) will cause microorganisms to start decomposing it, release heat and raise the temperature as a result. The layers of materials should remain moist, but not waterlogged, allowing the worms to move through the soil, yet providing enough air for them to breathe through their skin. Decomposition might make the environment slightly acidic; adding eggshells (which are alkaline) should neutralize the pH.

Red wigglers (*Eisenia fetida* and *Eisenia andreii*) and red earthworms (*Lumbricus rubellus*) are the earthworms commonly used in temperate and Mediterranean climates, and can adapt to our tropical climate. However, African nightcrawlers (*Eudrilus eugeniae*) and Indian blues (*Perionyx excavates*) are better adapted to the tropics. These can be purchased from bait shops around town, or if you prefer to be sure of what type of earthworm you are getting, there are several earthworm farms that sell their products online.



Heritiera littoralis

Riding ocean currents around the world, the fruit of *Heritiera littoralis* may wash ashore with sea beans, nicker beans and other living rafts from foreign lands. Its sail is like a great dorsal fin on a humpback whale. Then, when the seed finds just the right spot, the bottom splits to allow a root to emerge. *Littoralis* means of the seashore.

How plants package their SEEDS

Text and photos by Georgia Tasker

Momordica balsamina

Momordica balsamina pods are like small, warty, orange cucumbers. The fruits of this bitter melon are produced on vines that quickly become weedy. The pods split from the bottom to entice birds with fleshy red seeds.





Nelumbo nucifera

If you catch a developing lotus pod with the sun behind it (something not easily done), you will find the interiors of the pod's receptacles are golden and the nut-like seeds are blue. *Nelumbo nucifera* has many charms, including this aggregate fruit.



Fragaria x ananassa

Strawberry, *Fragaria x ananassa*, is a fruit that develops its seeds on the outside. The seeds are achenes, or dried fruits that don't open but are held on the outside of the berry. The fruit itself forms from tissue that contains the ovary, which makes it technically not a berry but an accessory aggregate fruit—none of which matters when biting into strawberry shortcake.

Triphasia trifolia

Triphasia trifolia's epithet tells you the leaves form in threes. The common name is lime berry, but the fruits are red. The fruit technically is a hesperidium, or modified berry. A member of the citrus family, *Triphasia trifolia* has tiny transparent glands in the leaves, a common family trait that provides a characteristic aroma. Hold a leaf to the light and you will find them.




Clerodendrum speciosissimum

Clerodendrum, *Clerodendrum speciosissimum*, pops up here and there, flowers and then forms panicles (loose, branching clusters) of black, four-lobed drupes (a type of fruit) on red calyxes. In the mint family, Lamiaceae, the shrub originated in Java and one of its common names is Java glory bower.



Stephanotis floribunda

Don't be impatient with *Stephanotis floribunda* seed pods. It takes a year for the seeds of bridal wreath to mature inside each green pod. Eventually, the pod shrivels, turns brown and splits along a single seam, releasing slender brown seeds attached to silken hairs that float on the wind and land gently with the aid of their delicate parachutes. 



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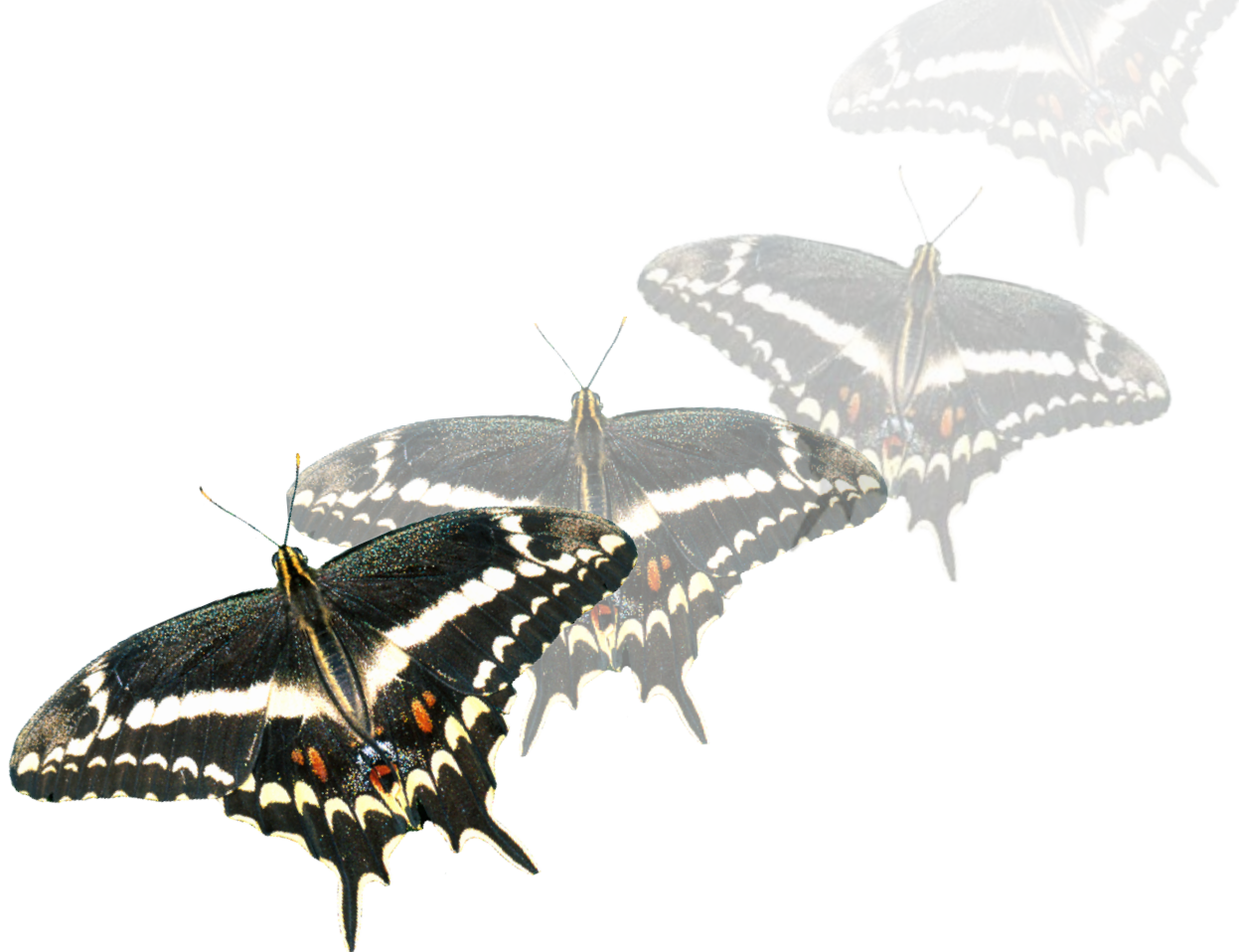
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From Krome Ave.: East onto 248th St.; Right onto 162nd Ave.; Right onto SW 256th St. We're at the end on the right.



ECLIPSING EXTINCTION: WILL THE SCHAUS SURVIVE?

Tracking the population of a federally endangered butterfly in the company of birds, deer flies, lookalike butterflies and more in north Key Largo.

BY GEORGIA TASKER

PHOTOS BY GEORGIA TASKER
AND THOMAS C. EMMELL, UNIVERSITY OF FLORIDA

In north Key Largo in early May, when I joined a group surveying Schaus swallowtail butterflies, birds dominated the wildlife fauna. The black poll warbler, black and white warbler and beautifully marked northern parula were still darting through this fragile forest on their return from winter feeding grounds. Vireos called, a cuckoo said “cuckoo” and tree snails remained dormant and glued into place on tree trunks until the return of rain.

A month later, when I joined another survey group, deer flies were unhappily abundant in sunlit areas, and more than abundantly annoying. Hats with mosquito nets obscured our vision, so the netting mostly was draped on our hat brims. It’s hard enough to find a Schaus swallowtail butterfly with sweat dripping in your eyes—much less with netting over them. Swatting and fanning seemed the only solutions to the deer flies, until rain ran them off.

The federally endangered Schaus adults appear only between April and the end of June, if they appear at all, and annually volunteers try to spot and count them. Schaus adults live only three weeks. Habitat loss, mosquito spraying, hurricanes and droughts—as well as illegal collection—continue to imperil this large and handsome insect that lives in the confines of South Florida’s tropical hardwood hammocks on

Key Largo and islands of Biscayne Bay. I joined a sampling of surveys in North Key Largo to see how they are carried out. It was literally a walk in the woods.

Schaus swallowtails look almost like giant swallowtails, except they are darker brown and their tails, while outlined in yellow, lack the bright yellow dots apparent on the giants. Let me vouch for how tough it is to find that identifying difference when a butterfly comes winging past. Fortunately, more seasoned surveyors were with me. Linda Evans, Jim Duquesnel, Susan Kolterman, Bunny Bradov, Bill Shores and Mary Ann Clark helped guide me. About 30 volunteers signed up this year, according to survey organizer Scott Tedford with the Florida Park Service, but a core of about seven to 10 individuals did most of the surveying, he says.

Host plants for the Schaus include thorny wild lime, *Zanthoxylum fagara* and, more frequently, torchwood—*Amyris elemifera*—with its characteristic three leaflets and yellow petioles. In one area, many saplings of torchwood have been planted to increase the host plant numbers. Wild lime is more abundant in some areas than others. Survey team leaders keep track of the weather, what’s in bloom (lancewood, willow bastic, cinnamon bark) and even herbivory on host plants indicating larvae may have been there.



During the early summer drought, tree snails remained inactive in the woods of North Key Largo.





A concrete bunker from the era of the Cuban missile crisis and a ruddy daggerwing butterfly (right) share the forest.




Early in the May survey efforts, we tallied queen butterflies, giant swallowtails, lovely julias, Florida purplewing skippers and mangrove skippers, along with a few zebra longwings. We also tallied many CBs—shorthand reporting for cassius blues. The rule is to count everything when walking in one direction, but avoid counting anything when returning by the same trail, to prevent counting the same butterflies two or three times. It actually gets easier the more you do it, and soon you discover a few secrets: Anything bright orange is a Julia. Zebras tend to loll about rather casually, often above your head. Queen butterflies have more dots and fewer black markings than monarchs. Florida purplewings rest on the sides of tree trunks and twigs. (In one area, these skippers are so abundant that the trail has become known to surveyors as the purplewing trail.) Large orange sulphur butterflies love the upper canopies of trees and never seem to rest. Gulf fritillaries flash silver undersides. CBs are faster than speeding bullets.

In June, along with deer flies, ruddy daggerwings were plentiful. These beautiful butterflies are orange with thin black stripes running diagonally on their wing tops. They have long, dagger-like extensions on their hind wings. Twice, bird-sized black witch moths were scared up and flapped away

with wing strokes like small bats.

In one area of North Key Largo, you can find abandoned bomb shelters from the days of the Cuban Missile Crisis. A lot of discarded metal and wire left over from these 1960s missile sites has yet to be hauled away, but a condition of the federal recovery plan for the butterfly is not to disturb its habitat. You're likely to see discards of other eras as well, such as old beehives and weathering queen conch shells confiscated during raids of illegal collecting. Once upon a time, before these woods were protected, they were used as dumping grounds for just about anything from refrigerators to bedsprings, not to mention drug drops, but that mostly has stopped. Now, endangered Key Largo wood rats collect bits of colorful debris to build their nests, sometimes within sight of idle feral cat traps.

All told, 60 Schaus adults were counted this season. And while that's certainly an improvement over the 2012 count of four, it shouldn't be classified as high because butterfly populations naturally fluctuate, Tedford says.

But finding even one, and photographing it, is a surprisingly uplifting experience, sending your spirit soaring to know that at least this one small creature hangs on. 

SOME EYE-CATCHING GEMS AROUND THE GARDEN

As cooler weather sets in during the winter months ahead, a number of plants might catch your eye as you stroll through the Garden. We look at where a few of them got their names.

Text and photos by Georgia Tasker

What's in a name: The human effort to bring order to the natural world is an enterprise that dates to ancient Greece. However, it wasn't until the 18th century that classification was tamed. That's when Swedish botanist and zoologist Carl Linnaeus refined a binomial, or two-word, system for naming plants and animals, creating well-defined hierarchies to describe their relationships.



Alcantarea imperialis



Cananga odorata



Clusia lanceolata





Gmelina philippinensis



Neomillspaughia emarginata



Orthosiphon aristatus



Cordia goeldiana



Turnera ulmifolia

Alcantarea is a genus of bromeliads named for Dom Pedro d'Alcântara, second emperor of Brazil (1840-1889), who renounced the throne to marry Countess Elisabeth Dobrzensky de Dobrzenicz from Bohemia. *Alcantarea* bromeliads are Brazilian, and *Alcantarea imperialis* lives up to its name. It once was in the genus *Vriesea*.

Cananga odorata is the ylang-ylang or perfume tree. *Cananga* may be from the Malay word "kenanga," one species of which yields macassar oil. Macassar oil was wildly popular in Victorian times to tame men's hair, and the antimacassar is the cloth placed on the back of overstuffed chairs to prevent the oil from staining the upholstery. Today, cananga oil is harvested in Madagascar for perfume. There are several ylang-ylang trees in the Garden, beginning with one in Plot 17.


Clusia lanceolata, the "porcelain flower," is a small tree named for Charles de l'Ecluse (1526-1609, Latinized as Carolus Clusius), a 16th-century Dutch botanist. Lanceolata means lance-shaped. Look for the plants in Plot 49 just beyond the Visitor Center heading straight to the Garden.

Cordia goeldiana, from the Brazilian Amazon, is used for cabinetry, furniture, paneling and even rifle butts. It is sometimes called Jennywood or Brazilian walnut. Emil Goeldi was a Swiss-Brazilian naturalist who reorganized the Para Museum of Natural History and Ethnography in the Brazilian state of Para, city of Belem. He worked in Brazil from 1885 to 1905, returning to Switzerland because of his health. A number of species are named for him, including a marmoset, ant bird, frog and *Philodendron goeldii*.

Gmelina philippinensis, in the mint family, is sometimes called parrot's beak and is native to the Philippines, Thailand, Cambodia and Vietnam. At Fairchild, the shrub is located in Plot 51 across from the Tram Plaza. Carl Linnaeus created the genus *Gmelina* to honor Johann Georg Gmelin (1709-1755), an 18th-century German naturalist who traveled to Siberia and the Russian peninsula Kamchatka (where in June one of the area's many volcanoes sent ash 29,500 feet into the air).

Neomillspaughia emarginata has round leaves with a notch at the apex. This plant is related to sea grape and hails from the Yucatan peninsula. The genus was named for Dr. Charles Millspaugh (1844-1923), first curator of botany at Chicago's Field Museum, who also collected plants on the Yucatan peninsula and in the West Indies. Emarginata means having a shallow notch at the apex. Find it in the Garden in Plot 25.

Orthosiphon aristatus (which also goes by *Orthosiphon stamineus*) is known as cat's whiskers. Ortho is from Greek, and means upright or straight; siphon is Greek for tube. Aristatus is bearded. Look for it in Plot 49 when looking for the *Clusia lanceolata*.

Turnera ulmifolia is named for another 16th-century character, William Turner (1508-1568), a physician and naturalist who is called "the Father of English Botany." *Turnera ulmifolia* is yellow alder, and has "leaves like an elm." It is found throughout the Caribbean Basin (of which South Florida is a part). 

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PLANT COLLECTIONS

EPIC phytes

TEXT AND PHOTOS
BY MARILYN GRIFFITHS



Epiphytes can be seen almost everywhere in South Florida. Clinging to palms, hanging from oaks or nested in the crotch of any large tree, the epiphytic plant is a marvel of natural engineering.

An epiphyte is a plant that uses another plant for mechanical support but not for nutrients. There are approximately 25,000 species of vascular (having specialized cells for conducting nutrients) epiphytes. Orchids, ferns, bromeliads and aroids make up a large majority of the epiphytes we see growing in our South Florida landscapes. Many are propagated by birds eating and dispersing the fruit on branches. Others have fine hairs attached to their seeds, which get caught by the wind and find the perfect crevice in a tree's bark to germinate and thrive.

Many epiphytes are used by animal populations, mostly insects. Ants receive nutrients from some, while simultaneously protecting them from other insects. The "vases" of bromeliads can hold water, providing a home and food source for many small insects and amphibians.






At Fairchild, epiphytes have been an unofficial part of our collections for many decades. Native ferns, bromeliads and orchids have found homes in our stately old oaks. In recent years, we've developed a system to track epiphytes that have been mounted on trees and palms. It is possible now to cross-reference the epiphyte with the tree it was mounted on. Our database has 380 recorded epiphytes at this writing.

In 2012, Fairchild received the American Orchid Society's collection of orchids. This was an incredible addition to our epiphyte collection. Many of these orchids can be seen mounted on trees in the Richard H. Simons Rainforest and set out for temporary display as they flower.

A recent horticulture intern made it her project to obtain and mount native Florida epiphytes in the large oak near the Phillips-Atwater Gatehouse. There are 37 plants there, including 27 species in 11 genera and five families. Look closely, as some of the smaller plants are nestled among our native resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*).



The Tropical Plant Conservatory is also a hotspot for epiphytes, since the regular irrigation and humidity provide an ideal environment for many types. The cork bark tree in the lower room is filled with plants large and small, from huge bird's nest anthuriums to tiny-flowered orchids.

Virtually every humid tropical rainforest contains epiphytes, which contribute to the varied and complex biome of the tropics. Fairchild is fortunate to have the climate to grow these special plants, providing our visitors with a glimpse into the rainforests of the world. 



1. Bird's nest *Anthurium psilotum*
2. *Platyserium* sp.
3. *Encyclia tampensis*
4. *Tillandsia* and resurrection fern on *Bucida*
5. *Cyrtopodium punctatum*



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South Florida Palm Society's Fall Show & Sale to Spotlight Palms of Madagascar

By Leonard Goldstein



What a fascinating place Madagascar is! The fourth-largest island in the world, it possesses some of the most challenging topography anywhere. It is also home to some 200 palm species, practically all of them native nowhere else. Remarkably, close to half were undescribed botanically before 1986. Lamentably, more than four-fifths are rated by the International Union for Conservation of Nature (IUCN) as "Threatened." Time is running out, and efforts within Madagascar to conserve the island's unique palm species are unlikely to outpace the population pressures that threaten the plants.

Because of that fragility, the South Florida Palm Society chose "Palms of Madagascar" as its theme for 2015. In connection with our 35th Fall Palm Show & Sale at Fairchild on November 7–8, the Society's electronic Palm Report will complete its two-part survey of Madagascar's palms, highlighting the species of the huge genus *Dypsis* which backyard and commercial growers have found perform best in southern Florida.

The South Florida Palm Society will offer a large array of palms from around the world for sale. For the first time in many years, the Society will have "Plant A Palm" bumper stickers to give away and SFPS T-shirts to sell. And, as usual, visitors to the information table will be able to seek advice on raising palms and take home free palm seeds. Come see us in November!

For more information, including the dates of SFPS general meetings, call 305.873.4105.

Participants in a wintertime tour of the palm collection are dwarfed by an as-yet trunkless *Corypha* palm.



Don't miss the South Florida Palm Society's Fall Show and Sale at Fairchild
Saturday and Sunday, November 7 and 8
9:30 a.m. - 4:30 p.m.



The 23rd International Mango Festival

More than 10,000 mango fans gathered at Fairchild in July for the 23rd International Mango Festival. This year featured the delicious mangos of Jamaica, from the spicy 'Julie' to the tart 'Bombay' varieties. The sweeping Mangos of the World Display showcased more than 200 cultivars grown at The Fairchild Farm, which were sold to the highest bidder at the world's only Mango Auction. Guests enjoyed the mango tasting room, live Caribbean music, food vendors, cooking demos and the one-of-a-kind Mango Brunch.

The Buzz on Honeybees

In September, it was all about "The Buzz on Honeybees" and raising awareness of these pollinators and their importance to our ecosystems. Families learned how to help protect honeybees, how to become an urban beekeeper (see "A Tranquil Hum: The Edible Honeybee Garden", on page 49), enjoyed demos, came face-to-face with active beehives and browsed honeybee products and byproducts for sale. Kids continued to delight in the Let's Explore at Fairchild (L.E.A.F.) Program, which featured all bee-related activities.





The 77th Members' Day Plant Sale Featuring the 6th Annual Bird Festival

In October, we celebrated the 77th Annual Members' Day Plant Sale and Sixth Annual Bird Festival. Fairchild horticulturists grow plants throughout the year for the Members' Day Plant sale, and staff and volunteers distribute and sell them to members. This year's plants included native South Florida plants, butterfly attractors, fragrant varieties and more. That same weekend, both migratory birds and birding fans flocked to Fairchild. James A. Kushlan Keynote Speaker Kenn Kaufman, a lifelong birder and author of "Kingbird Highway: The Biggest Year in the Life of an Extreme Birder," amazed visitors with his stories of global travels documenting bird species. The top 20 photos from Fairchild's "Birds of South Florida" Photo Contest were on display throughout the weekend, and the top three entries were announced. Guests also had the opportunity to participate in on-site and off-site birding tours through some of the best birding hotspots in South Florida.



Plants and People Horticultural Therapy Program

Fairchild's complimentary program for individuals living with Alzheimer's and their caregivers connects participants with the beauty of the Garden. You'll experience the scent of allspice leaves, blooming flowering trees, birds, butterflies and much more while enjoying an interactive guided tour of the Garden and a delicious lunch. We also offer a complimentary program for children with Autism and their families, which includes a children's tour, activities, and a snack. Both programs conclude with a special butterfly release in the Wings of the Tropics exhibit.

For information or to RSVP, please call 305.667.1651, extension 3366 or email ahartstack@fairchildgarden.org.

Upcoming dates for the Plants and People Horticultural Therapy Program

Alzheimer's Program

Wednesday, January 6, 2016
 Wednesday, February 3, 2016
 Wednesday, February 24, 2016
 Thursday, March 24, 2016
 Thursday, April 7, 2016
 Saturday, April 23, 2016
 Saturday, May 14, 2016

Autism Program

Saturday, February 6, 2016
 Saturday, March 5, 2016
 Saturday, March 19, 2016
 Saturday, April 2, 2016
 Saturday, May 28, 2016

IN MEMORIAM



CLIFFORD WADE MEZEY

March 23, 1929 - July 7, 2015

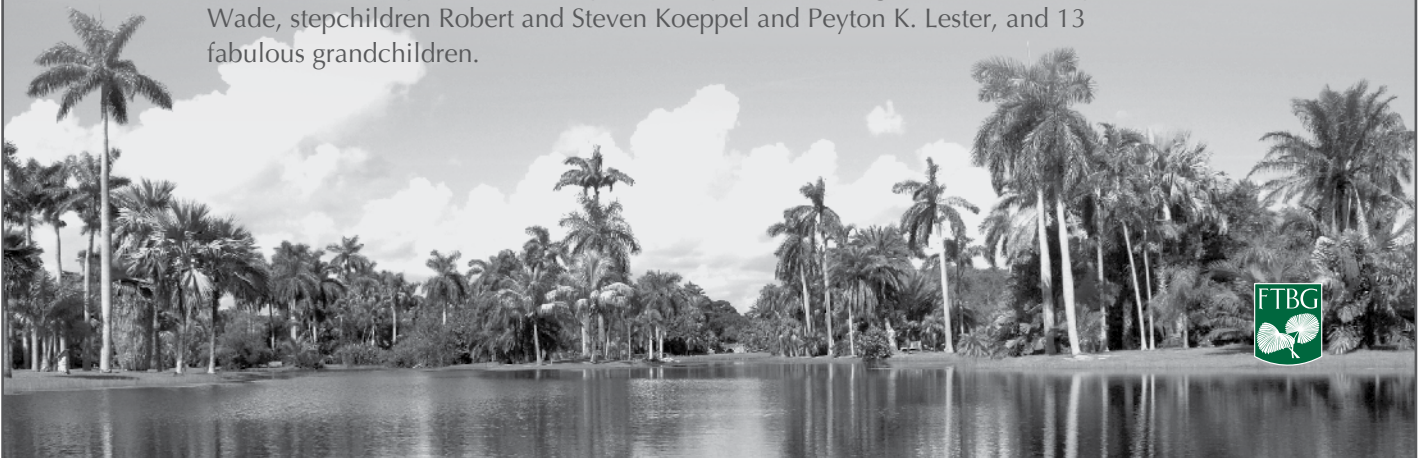
Clifford Wade Mezey was born in Detroit and raised on Long Island while his father was with General Motors. He graduated from Northwestern University in 1949. A highly decorated Naval Officer, he served during the Korean War as a carrier pilot aboard the *U.S.S. Kearsarge* 1950-55.

Cliff was a dedicated member of the Fairchild Board of Trustees for decades, serving in many capacities including the finance, executive and investment committees. He spearheaded various programs—most recently as head of the specification and acquisition team for the current tram fleet.

In life, Cliff was gentleman who loved his large family deeply. He also loved sports, specially skiing and golf, and had a killer “lefty” swing. He was also on the board of the Friends of Miami Marine Stadium and a member of the Riviera Country Club (his second home), Biscayne Bay Yacht Club and the Landings Country Club in Jefferson, North Carolina. He served as president of the Beach Colony Club, Miami’s oldest social club.

He loved people and was in a “people” business: a successful sales and manufacturing company serving the automotive industry. Cliff was instrumental in developing the one-piece headliner found in most of today’s cars. Family, friends and good food were his passions; blue eyes and a ready smile were his trademarks. He was a generous, intelligent person and will be missed by all who were fortunate enough to know him.

Cliff is survived by his wife of 36 years, Petsy Gautier, daughter Marne Prouty, son Wade, stepchildren Robert and Steven Koeppel and Peyton K. Lester, and 13 fabulous grandchildren.



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Leo Baekeland and David Fairchild

By Janet Mosely

Photos: Archives/FTBG



“David Fairchild has a genius for friendship, and meets everybody and everybody remembers him.”

—Liberty Hyde Bailey

ABOVE

Leo Baekeland and David Fairchild on Sands Key in Biscayne Bay. May 28, 1935. Baekeland holds a branch of *Salicornia*, a succulent that grows on beaches and in mangroves. According to the photo notes written by Fairchild, Baekeland liked to stew it like spinach. In “The World Grows Round My Door,” Fairchild wrote, “He enjoyed the chemistry of cooking and experimented with ways of cooking the akee and the sea purslane, and he liked to explore the little uninhabited keys off the coast.”

David and Marian Fairchild’s gift for friendship is well known, and they counted among their many close friends Leo and Celine Baekeland. Dr. Leo H. Baekeland (1863-1944), a brilliant chemist from Belgium, came from humble beginnings, but his scientific genius was recognized early. He graduated with honors from Ghent Municipal Technical School and received a scholarship to study chemistry at Ghent University. He received his Ph.D. magna cum laude and began teaching. His wife Celine (1876-1957), also from Belgium, was the daughter of Leo’s chemistry professor, Theodore Swarts.

They immigrated to the United States in 1897 when Leo was offered a research and development position with a photographic supply company in New York. During his time with that company, he developed Velox, a photographic paper that is still sold today. In 1907, Leo Baekeland invented Bakelite, the first fully synthetic plastic that could hold its shape after being heated. Bakelite helped revolutionize many industries, especially automotive, radio, aviation and electrical. Baekeland became wealthy from his many inventions and bought Snug Harbor, a large home in Yonkers, New York, as well as his beloved 70-foot yacht, *Ion*.

David Fairchild and Leo Baekeland knew each other as acquaintances in Washington, D.C., where they were both involved in similar scientific societies. It was in 1927, when the Baekelands purchased a winter home in Coconut Grove, that their close friendship began. According to a 1946 “Biographical Memoir” written by Dr. Charles Kettering for the National Academy of Sciences, “in his personal life Baekeland liked simplicity. He




ABOVE

Leo Baekeland and Andrew Brant onboard the *Ion* on Biscayne Bay. April, 1931. Baekeland is wearing a sponge as a cap. It is unknown who Andrew Brant was. If you know of him, please contact us at library@fairchildgarden.org.

rose early and retired early. He worked hard and made heavy demands on his physical and mental energy. He was an excellent conversationalist and greatly enjoyed associating with congenial people." He shared these qualities with Fairchild, as well as a lifelong love of photography and the benefits of a happy marriage to a supportive and talented woman. According to Kettering, Celine "was skilled in music, gifted as a painter, a charming hostess, as well as one who assisted her husband mightily in all his endeavors. Baekeland so valued the assistance and inspiration of his wife that he once said he "never would have amounted to anything but for her help.'" Marian and Celine, meanwhile, developed their own friendship—based not only on their mutual interest in art but also their similar qualities and relationships to their husbands.

The two families shared many interests, including the cultivation of tropical plants. Baekeland was particularly interested in the akee, and Fairchild helped him with its cultivation. They both also liked to cook using the plants of the tropics, and regularly shared recipes.

As Fairchild shared his botanical knowledge, so Baekeland shared his knowledge of chemistry in attempting to solve Fairchild's "Problem of the Labels." Fairchild had an ongoing quest for long-lasting informational labels for the plants at the then-newly formed Fairchild Tropical Garden. He experimented with materials such as wood, zinc and copper, looking for the one that would last the longest in the tropical weather. It was Baekeland who suggested they experiment with his plastic. The correspondence between the two men details Fairchild's trials and his questions to Baekeland about chemistry concerning varnishes and Bakelite plastics. In "The World Grows Round My Door," in the chapter entitled "Keeping Their Names Straight," Fairchild wrote of making labels from plastic: "Should they stand up as they now promise to do, labels that will last ten or twenty years may be expected in our parkways, following the experiments now in progress in the Fairchild Garden."

The Baekelands and Fairchilds also enjoyed motoring trips and sailing on Biscayne Bay together on the *Ion*. Some photos of trips on the *Ion* have been recently scanned and indexed as part of the decade-long, ongoing project in the Fairchild Archive to make all images easily searchable. 

RIGHT

This photo appears on page 258 of "The World Grows Round My Door" with the caption: "On Mrs. Brett's 'Far Away Island' one Sunday afternoon, Mrs. L. H. Baekeland stood, back to the beach, under the mangroves, painting the portrait of a beautiful sea grape tree."



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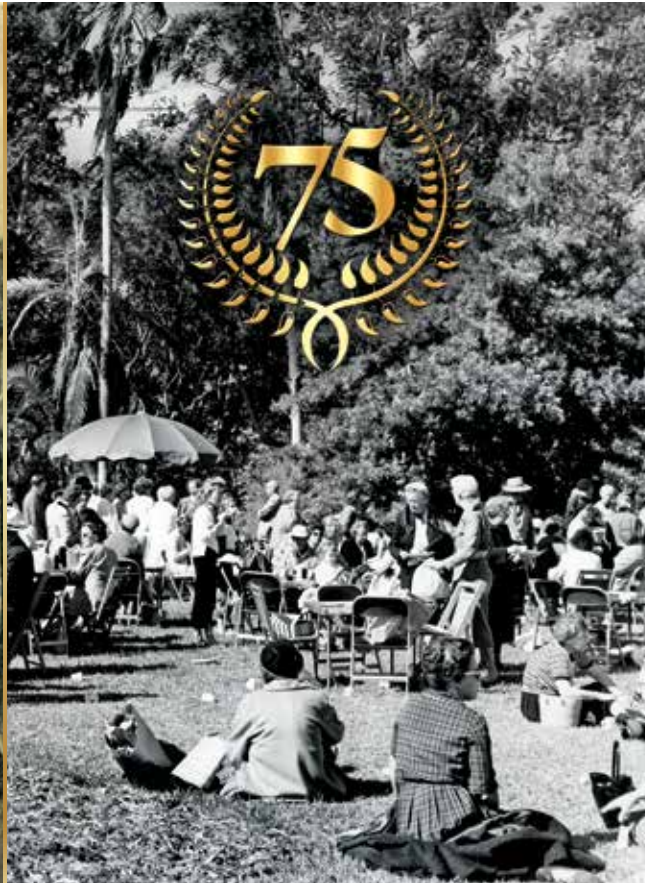


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