Copernicia, MD: How a local doctor transformed his small yard into a garden of Cuban palms

THE ELUSIVE PLUMERIA

20/20 vision: Curing plant blindness

Winter in the tropics: A color wheel of blooms

REGISTER NOW FOR NEW CLASSES
The Shop
AT FAIRCHILD

Unique Tropical Gifts, Apparel, Home Décor, Gourmet Foods, Gardening Supplies, Orchids, Books, Accessories, Eco-Friendly and Fair-Trade Products, and much more!

9:00 a.m.–5:30 p.m. Open daily | store.fairchildonline.com
FEATURES

THE IMAGING LAB 28

IDENTIFYING AND NAMING A NEW SPECIES OF STOPPER 31

THE UNDERLINE PARTNERS WITH FAIRCHILD 34

CONTENTS

IN THIS ISSUE

4 FROM THE DIRECTOR
5 FROM THE EXECUTIVE EDITOR
7 CONTRIBUTORS
8 CONNECT WITH FAIRCHILD
9 EVENTS
11 NEWS
15 VOLUNTEERS IN ACTION
17 GARDEN WILDLIFE
19 CUISINE
20 WHAT’S IN BLOOM
23 EDUCATION
27 BOOK REVIEW
31 CONSERVATION
38 IN STORE
39 LANDSCAPES WE LOVE
45 WHAT TO DO IN YOUR GARDEN
48 WHAT’S IN A NAME
50 HOW-TO
53 FROM THE ARCHIVES
58 CLASSES AT FAIRCHILD
Fairchild’s plant collection was built over the last eight decades by incredible horticulturists who dedicated their careers to the Garden. Recently, two key members of the horticulture team retired, and we take this opportunity to not only celebrate their accomplishments, but to also look to the future.

Ricardo Aberle came to Fairchild in 1997. Since then, his artistic talent has influenced the development of our most beautiful landscape features, including the Richard H. Simons Rainforest and The Clinton Family Conservatory. He was mentored by Don Evans, Fairchild’s longtime director of horticulture, who passed along a deep understanding of the Garden’s landscape design. Ricardo is an accomplished artist and watercolor instructor, and his knowledge of Fairchild and South Florida horticulture is unmatched. He served as director of grounds and spent the last two years sharing his vision with Nat Cockshutt, who has now taken that position.

Dr. Noris Ledesma began as a volunteer in Fairchild’s herbarium. She was hired 19 years ago to work in our newly established Tropical Fruit Program, and she quickly became an expert on mangos and several other types of tropical fruit. Her knowledge and passion built a strong following in our local community and worldwide. She built and curated one of the world’s most valuable collections of mango trees, including traditional varieties, new hybrids, and rare species. Fairchild’s mango collection is now a goldmine that will support top-level scientific research and delight South Florida gardeners for generations to come.

Many gardens struggle to replace horticultural talent, but Fairchild is uniquely able to recruit from a pool of homegrown specialists. Long-serving horticulturists Don Evans, Mary Collins, and Marilyn Griffiths were all instrumental in the Garden’s development. They helped shepherd in a new generation of plant scientists, including Dr. Brett Jestrow, Dr. Chad Husby, and Yisu Santamarina, respectively. All three have degrees from Florida International University that included specialized coursework at Fairchild. Our current team honors the legacy of its predecessors, while bringing fantastic innovation to our collections.

There is an even larger wave of horticulturists-in-training on the horizon: the students currently in our K-12, college, and graduate pipeline. As Fairchild works with more than 350 local schools and several universities, we see a bright future for local talent in botany and horticulture. In particular, the botany high school program we have developed within BioTECH @ Richmond Heights 9-12, the only program of its kind in the world, is building a new generation of plant expertise beyond anything our region has ever seen. Mentored by our team of specialists, many of those students are eager to take on leadership roles at Fairchild and in our community.

We congratulate Ricardo Aberle and Dr. Noris Ledesma on their retirements. I hope you will join me in celebrating their legacy by supporting our efforts to train future generations of plant specialists.

Carl E. Lewis, Ph.D.
Director
BY THE TIME YOU RECEIVE THIS ISSUE OF THE TROPICAL GARDEN, WE WILL NOT ONLY HAVE RUNG IN THE NEW YEAR—we will also have started an entirely new decade.

New beginnings always conjure feelings of reflection and aspiration. As part of this reflection, I thumbed through Lucita Wait’s Fairchild Tropical Garden—The First Ten Years and again marveled at the tremendous accomplishments that occurred during the Garden’s adolescent years. (We’ve written extensively about those nascent years in The Tropical Garden, and a quick search on our website will bring up the articles.) As I contemplate those first 10 years and think about the last 10, I can’t help but compare how transformational both have been for Fairchild.

The 2010s saw us focus on capital and programmatic development that has empowered a generation of plant enthusiasts, botany students, citizen scientists, and people who love being outdoors. We created spaces that bring our critical work in the plant sciences out to the public—spaces that encourage you, our members and guests, to be part of our work and transformation. The DiMare Science Village is the personification of the transformation of our past 20 years. Here, in this beautifully-designed stone complex, nestled within the only tropical rainforest in the continental U.S., are the Burns Science Building, The Clinton Family Conservatory, and the Hsiao Labs, including the Microscopy and Imaging Lab, Baddour DNA Lab, The Million Orchid Project Lab, and the Vollmer Metamorphosis Lab. These spaces house many projects and initiatives. There is BioTECH @ Richmond Heights 9-12, the only botany high school in the world. The Million Orchid Project, where we grow the million orchids being reintroduced to South Florida, is here. In the Wings of the Tropics butterfly and hummingbird exhibit, we cultivate butterflies, hummingbirds, and other winged marvels for your enjoyment. Also here is the base of our Growing Beyond Earth initiative, in which students and volunteers conduct research for NASA as part of our Fairchild Challenge education programs. The DiMare Science Village is where our goal of connecting plants and people takes tangible form.

Fairchild was founded as a cultural institution. You can read many reports from those first 10 years about the various events and experiences that the Montgomerys, the Fairchilds and many others held here at the Garden for our small but growing group of members and supporters. During this past decade, we remained steadfastly committed to our founding principles, by creating a culture of garden and nature lovers, South Floridians who love outdoor living, and anyone who loves to be entertained. Our cultural programming has included new musical experiences, lectures series, art exhibits, wellness outreach, and many new events, including The NightGarden at Fairchild. The Adam R. Rose and Peter R. McQuillan Arts Center was inaugurated in 2014 specifically for exhibitions related to art, science, and cultural enrichment.

This past decade at the Garden also saw an increase in horticultural activity unlike any in previous history. Fairchild became the permanent home of the American Orchid Society, with the stunning AOS Library housed here on our grounds. We launched the National Orchid Garden, installed more than 40,000 new plants and orchids in the Garden, and introduced 200,000 orchids as part of our million-orchid goal for South Florida.

These last 10 years were possible because of the most transformative yet consistent factor: you. We are a garden fueled by citizen-scientists. All of our outreach—in the Garden, in schools, or in neighborhoods—is powered by regular people, members and supporters like you. We rely on people like you who value plants and want to be part of a community that reintroduces orchids, grows edible plants for space missions, creates plant corridors throughout South Florida, grows and plants some of the tropical world’s most endangered plants, volunteers as guides and storytellers, and simply wants to sit among one of the world’s most beautiful gardens.

These last 10 years have been a magnificent undertaking. I am overwhelmed by the work that you, our members and supporters, have done and the support you have provided for Fairchild. I’m excited to see what we will do together during the next 10 years. For now, I am delighted that our previous 10 years bookend so splendidly with our first 10, to which we celebrate for “Auld Lang Syne.”

Happy New Year,

Nannette Zapata, M.S./M.B.A.
Chief Operating Officer
EVERYTHING YOU LOVE ABOUT SOUTH FLORIDA IS HAPPENING AT FAIRCHILD

RENEW AND ENJOY ALL THE BENEFITS OF YOUR FAIRCHILD MEMBERSHIP

Free admission every day, including during events like the Chocolate Garden, Orchid Garden, Mango Garden, and more.

Subscription to the award-winning magazine *The Tropical Garden*

10% discount at The Shop at Fairchild

Reciprocal privileges at nearly 300 arboreta, conservatories, and gardens in North America, located more than 90 miles away from Fairchild

3 EASY WAYS TO RENEW

- Renew online at FairchildGarden.org/renew
- Call 305.667.1651, ext. 3301 or ext. 3373
- Bring your renewal notice in person
Javier Francisco-Ortega, Ph.D., is a faculty member at Florida International University (Department of Biological Sciences) with a research appointment at the Garden. He joined FIU and Fairchild in 1999 and has a broad interest in plant taxonomy, conservation genetics, molecular phylogenetics, and botanical history.

Jonathan Flickinger is a Ph.D. candidate in the Department of Biological Sciences at Florida International University, hosted by Fairchild. His research focuses on the diversity and classification of the myrtle family in the Caribbean islands. He received a B.S. in plant sciences from Cornell University in 2012.

Hedy Goldsmith, a two-time James Beard Award finalist for the nationally contested Outstanding Pastry Chef Award, is the executive chef at The Pérez Art Museum Miami (PAMM). Goldsmith has been featured multiple times on the Today Show and various Food Network programs, as well as in The New York Times, People magazine, Wall Street Journal, Wine Spectator, and Food & Wine magazine.

Jack Hahn has been a Miami resident for over 70 years. His lifelong interest in science and photography led him to volunteering in Fairchild’s Imaging Lab. His work provides microscopic images for scientific peer-reviewed articles by Fairchild scientists. His images are also used for botanical education, as well as field and microscopic images for the Garden’s botanical database.

Glenn Huberman grew up in South Florida and, after seeing his first hummingbird in 1995, began a quest to attract birds and butterflies to his yard. He became a master gardener and began volunteering at Fairchild in 2011, leading tours of the Lisa D. Anness South Florida Butterfly Garden on Saturdays, as day captain in Wings of the Tropics twice weekly, and as a birdwalking guide.

Julietta Jacob has been a volunteer at Fairchild for almost eight years—first as a Spanish tram guide, then as a tram plaza host, and currently in the volunteer services department, where she edits the quarterly Volunteer Views. Originally from Brazil, she has lived in different countries in Latin America and Asia. She first came to Miami in 2008.

Ron McHatton, Ph.D., has been growing orchids for more than 50 years and his private collection has numbered in excess of 2,500 plants. A Ph.D. chemist by training, McHatton is currently the American Orchid Society’s chief education and science officer, responsible for editorial content and layout of the society’s monthly magazine, Orchids.

Jemma Peterson has been the volunteer services database and communications coordinator for Fairchild since January 2018. With over 2,000 annual volunteers, she plays an active role in maintaining the volunteer database, running analytics, recruiting volunteers, and acting as liaison with local colleges. She also trains and supervises Fairchild’s Conservation Student Scholar teen program and supervises the community group volunteer horticulture program.

Nichole Tiernan is a Ph.D. candidate at Florida International University hosted by Fairchild. Her graduate research focuses on the genus Plumeria, commonly known as frangipani. Previously from the New York Botanical Garden, she has a great admiration for the opportunities gardens offer for exploring and conserving worldwide plant biodiversity.

Georgia Tasker is a Garden writer, gardens ferociously, and is particularly enamored with big-leaved tropical plants. Travel has been her late-life passion, which challenges her other long-term passion, photography. She was recently awarded an honorary doctorate from Florida International University.

Additional Contributors
Jose Albrite; Maria Camas; Raquel Chavarría; Jessica Colón; Meg Daly; John Geiger, PhD; Chad Husby, Ph.D.; Brett Jestrow, Ph.D.; Hong Liu, Ph.D.; Melissa McCartney, Ph.D.; Ianelle Núñez; Roberto Pereira; Jennifer Possley; Wendy Villavicencio.
VISIT US
10901 Old Cutler Road, Coral Gables, FL 33156
T: 305.667.1651 F: 305.661.8953
Daily 9:30 a.m. – 4:30 p.m. (except December 25)

Garden Admission: Free for Fairchild members and children 5 and under. Non-members: $25 for adults, $18 for seniors 65 and up, $12 for students (with ID) and $12 for children 6-17.
ftbg.org/tix to purchase tickets to the Garden

Eco-Discount: Walk, bike, or ride public transportation to Fairchild. Non-members receive $5 off an adult admission and $2 off children’s admission. Fairchild members receive a loyalty card to earn a gift admission after five visits.

Military Discount: We offer active military personnel and veterans free admission. Please present military IDs.

FAIRCHILD BLOG
Follow the Fairchild Blog at fairchildgarden.org/blog.

DONATE TO FAIRCHILD
Inquiries: 305.667.1651, ext. 3383
donate@fairchildgarden.org
fairchildgarden.org/give or text Fairchild to 41444 to donate.

BECOME A MEMBER OR RENEW YOUR MEMBERSHIP
Become a member and enjoy Garden benefits all year long. Join today: 305.667.1651, ext. 3373
membership@fairchildgarden.org
fairchildgarden.org/membership

VOLUNTEER
Volunteer today: 305.667.1651, ext. 3324
volunteer@fairchildgarden.org
fairchildgarden.org/volunteer

EVENTS AND PRIVATE RENTALS
Inquiries: 305.667.1651, ext. 3358
specialevents@fairchildgarden.org
fairchildgarden.org/specialevents

SHOP AT FAIRCHILD
305.667.1651, ext. 3305
Shop hours: 9:00 a.m. – 5:30 p.m.
store.fairchildonline.com

FOLLOW US
www.fairchildgarden.org
@FairchildGarden
**FAIRCHILD BOARD OF TRUSTEES**

Bruce W. Greer  
President

Louis J. Risi, Jr.  
Senior Vice President and Treasurer

Charles P. Sacher  
Vice President

Jennifer Stearns Buttrick  
Vice President

L. Jeanne Aragon  
Vice President and Assistant Secretary

Joyce J. Burns  
Secretary

Leonard L. Abess  
Tanya Acosta  
Alejandro J. Aguirre  
Anne Baddour  
Nancy Batchelor  
Norman J. Benford  
Faith F. Bishock  
Bruce E. Clinton  
Martha O. Clinton  
Swanee DiMare  
Kenneth R. Graves  
Patricia M. Herbert  
Robert M. Kramer  
James Kushlan, Ph.D.  
Lin L. Lougheed, Ed.D.  
Bruce C. Matheson  
Peter R. McQuillan  
Fernando Mejia  
Jennifer Moon  
W. David Moore  
Larry Pimentel  
John K. Shubin  
Janá Sigars-Malina  
Jason Stephens  
James G. Stewart, Jr., M.D.  
Vincent A. Tria, Jr.  
Angela W. Whitman  
Ann Ziff

Carl E. Lewis, Ph.D.  
Director

Nannette M. Zapata, M.S./M.B.A.  
Chief Operating Officer

**January through April 2020**

View our full calendar of events, buy tickets, or learn more about specific events at [fairchildgarden.org/events](http://fairchildgarden.org/events).

**CHOCOLATE GARDEN**

Friday, Saturday, and Sunday  
January 24, 25, and 26  
9:30 a.m. – 4:30 p.m.  
Free for Fairchild Members.

**EASTER EGGSPLORE AND EGGHUNT**

Sunday, April 12  
9:00 a.m. – 1:00 p.m.  
Free for Fairchild Members.

**MOONLIGHT TOUR**

Sunday, February 9  
Monday, March 9  
6:00 p.m.  
Free for Fairchild Members.

**ORCHID GARDEN**

Friday, Saturday, and Sunday  
March 13, 14 and 15  
9:30 a.m. – 4:30 p.m.  
Free for Fairchild Members.

**COMING THIS MAY**

**ROAR AND EXPLORE**

DINOSAURS IN THE GARDEN  
May 1 – July 31  
Free for Fairchild Members.
SPLENDOR IN THE GARDEN
Thursday, January 23
10:30 a.m.
Tickets start at $300.
For more information, please visit fairchildgarden.org.

GALA IN THE GARDEN
Saturday, February 1
6:30 p.m.
Tickets start at $1,000 per person.
For more information, please visit fairchildgarden.org.

LOVE IN THE GARDEN CONCERT
Friday, February 14.
Gates open 5:30 p.m. Concert begins at 7:00 p.m.
Tickets are $65 per person for members, $80 for non-members, or $285 per couple for the Between Us dinner package. For more information, please visit fairchildgarden.org.

SENDING EVENTs

SALES AT THE SHOP AT FAIRCHILD
Members receive an additional 10% off sales price.

FEeBRuARY
Storewide Sale
February 14 – March 1
Valentine’s Day Special
February 9 – 14
All jewelry and everything pink and red is 20% off.

Workshops

PLANT ID AND HORTICULTURE WORKSHOPS
First Friday of each month
January 3, February 7, March 6
1:00 p.m. – 3:00 p.m.
Bring an unknown plant(s) to Fairchild’s Herbarium for identification by our botanists. The workshops are free of charge. Registration details are at fairchildgarden.org/events.

TOuroS oF THE GARDEN

TRAM TOURS OF THE GARDEN
WEEKDAYS (M–F)
Every hour on the hour
10:00 a.m. – 3:00 p.m.

WEEKENDS
Every hour on the hour
10:00 a.m. – 4:00 p.m.

TOUrS EN ESPAÑOL
Sábados y Domingos
1:30, 2:30 y 3:30 p.m.

DAILY WALKING TOURS
November through June
(Upon volunteer availability)

Discovering the Tropics
10:15 a.m., 11:15 a.m.

Exploring the Rainforest
Fridays
12:15 p.m.

Palmetum: Walk and Talk
Saturdays
11:15 a.m and 1:15 p.m.

What’s Blooming at Fairchild
Alternated Saturdays
10:15 a.m. and 11:15 a.m.

South Florida Native Plants and Orchids
Sundays
1:15 a.m.

Early Bird Walks
February 8 – April 30
Saturdays and Sundays
7:30 a.m. – 9:30 a.m.

ONGOING TOURS (YEAR-ROUND)

Plants That Will Bring Butterflies and Birds to Your Yard
Saturdays
10:15 a.m. – 11:00 a.m.

Butterflies: Winged Wonders and the Plants They Love
Sundays
10:15 a.m. – 11:00 a.m.

Tropical and Rare Plants: Walk and Talk
Every other weekend
11:30 a.m. – 2:30 p.m.

Tours added daily.
Check the information at the Visitor Center desk upon arrival.

Tickets start at $300.
For more information, please visit fairchildgarden.org.

Membership receive an additional 10% off sales price.

Storewide Sale
February 14 – March 1

Valentine’s Day Special
February 9 – 14
All jewelry and everything pink and red is 20% off.

First Friday of each month
January 3, February 7, March 6
1:00 p.m. – 3:00 p.m.

Bring an unknown plant(s) to Fairchild’s Herbarium for identification by our botanists. The workshops are free of charge. Registration details are at fairchildgarden.org/events.

Every hour on the hour
10:00 a.m. – 3:00 p.m.

Every hour on the hour
10:00 a.m. – 4:00 p.m.

Sábados y Domingos
1:30, 2:30 y 3:30 p.m.

November through June
(Upon volunteer availability)

10:15 a.m., 11:15 a.m.

12:15 p.m.

11:15 a.m and 1:15 p.m.

10:15 a.m. and 11:15 a.m.

Sundays
1:15 a.m.

February 8 – April 30
Saturdays and Sundays
7:30 a.m. – 9:30 a.m.

Saturdays
10:15 a.m. – 11:00 a.m.

Sundays
10:15 a.m. – 11:00 a.m.

Every other weekend
11:30 a.m. – 2:30 p.m.

Tours added daily.
Check the information at the Visitor Center desk upon arrival.

For more information, please visit fairchildgarden.org.

For more information, please visit fairchildgarden.org.
NSF Funds Project to Engage Undergraduate Students With Plants

Since 2016, Florida International University faculty members have partnered with Fairchild researchers and horticulturists on an initiative to increase plant awareness among FIU freshmen. Recently, the National Science Foundation (NSF) funded an incubator grant under the Research Coordination Networks in Undergraduate Biology Education program. Through this NSF-supported project, the Garden will host a workshop involving prominent botanists and educators from several prestigious universities and botanic gardens in early 2020. This brainstorming event aims to further develop educational activities to alleviate plant blindness among undergraduate students in other higher education institutions.

The grant was funded under the leadership of FIU’s Dr. Melissa McCartney, who is the principal investigator, and co-principal investigators Dr. Hong Liu and Dr. Javier Francisco-Ortega, who are both FIU-Fairchild faculty members. The other FIU faculty members leading the plant-awareness initiative are John Geiger and José Alberte, who are working in partnership with Fairchild researchers and horticulturists Dr. Brett Jestrow, Dr. Chad Husby, Martin Feather, Sergio Gutiérrez, Jennifer Possley, and Jimmy Lange. In addition, FIU graduate students Nichole Tiernan and Jonathan Flickinger, as well as FIU undergraduate students Jessica Colón and Wendy Villavicencio have been actively engaged in this project. Additional support has been received from the FIU team that coordinates the teaching of introductory courses: Thomas Pitzer, Roberto Gutierrez, Janelle Nuñez, and Tamisha Guzmán. (Read more about how we’re working to cure plant blindness on page 23.)

Fairchild Challenge Students Recognized for Original Research

Three Fairchild Challenge high school students recently earned a special merit award for their original plant science research. Justin Sanchez, Jose Caballin, and Lazaro Pino from iMater Preparatory Academy High School in Hialeah earned the award at the American Society of Gravitational and Space Research conference, held November 23, 2019, in Denver, Colorado.

Led by Dr. Monique Salazar, an iMater science teacher, these students presented their research project, “Effect of Neighboring Plants on Production of Phenolic Compounds” to an international panel of space and plant researchers. The research was conducted as part of Fairchild’s Growing Beyond Earth project in partnership with NASA; the team tested the effects of monoculture growing on plant biochemistry. The results of the research could have a tremendous effect on how NASA grows plants for long-distance space travel to increase the health benefits for astronauts living in space.
FIU-Fairchild Graduate Student receives award from the Southern California Plumeria Society

In January of this year, the Southern California Plumeria Society (SCPS) awarded FIU-Fairchild graduate student Nichole Tiernan $1,500 for her Ph.D. research on *Plumeria* (Apocynaceae). In July, she traveled to San Diego to present some of her work at the society’s monthly meeting. She met with board members and presented to an audience of more than 200 *Plumeria* enthusiasts, giving an introduction to the extraordinary taxonomic diversity that this genus has in the Caribbean islands.

FIU-Fairchild professor Dr. Javier Francisco-Ortega is Tiernan’s major advisor in the Department of Biological Sciences. Her fieldwork has included collections from the Dominican Republic, Haiti, Cuba, and Jamaica, all conducted in collaboration with colleagues from these islands, Francisco-Ortega, and Dr. Brett Jestrow, Fairchild’s director of collections. Through her research, Tiernan aims to resolve the challenging taxonomy of wild-growing Caribbean species; it has aspects of systematics, phylogenomics, and ecology related to the genus. Tiernan is grateful to SCPS for inviting her and hosting her visit. (Read more about Tiernan’s work with *Plumeria* in the Caribbean on page 53.)

UM-Fairchild Graduate Student Royal Conducts Fieldwork in Puerto Rico

During June, University of Miami (UM)-Fairchild Ph.D. candidate Andrew Reeve traveled to Puerto Rico to collect Royal Palm (*Roystonea borinquena*) samples from several populations throughout the island for his dissertation research. Reeve, whose major advisor in the Department of Biology is Dr. Barbara Whitlock, is conducting DNA research that seeks to compare the populations of *Roystonea borinquena* on Puerto Rico to the ones growing on the nearby Caribbean island of Hispaniola. These were previously thought to be separate species (*Roystonea hispiniolana* L.H. Bailey), but were later combined into *R. borinquena* on the basis of morphology, the study of plants’ physical forms and external structures.

One of the aims of Reeve’s study is to understand if there are genetic differences between the palms growing in different locations or habitats within Puerto Rico. He collaborated with a professor in the University of Puerto Rico at Rio Piedras Department of Biology, Dr. Eugenio Santiago-Valentin, spending two weeks traveling around the island and collecting leaf samples from 50 individual *Roystonea borinquena* trees. They targeted five unique populations, spread throughout Puerto Rico, including wet and dry environments in mountainous, coastal, and lowland habitats. To sample the leaves of a royal palm, which may be more than 70 feet off the ground, they used a large slingshot to reach the canopy from the ground. They also enlisted help from an experienced arborist, Manuel Mercado of Puerto Rican NGO, Para la Naturaleza (For Nature), who climbed some of the trees to cut down entire fronds for herbarium specimens. Duplicates of five *Roystonea borinquena* specimens will be stored in both the herbariums at Fairchild and the Botanic Garden of the University of Puerto Rico at Rio Piedras.

Reeve would like to thank both the American Society of Plant Taxonomists Graduate Research Award and the University of Miami Biology Department Evoy Fund for supporting this fieldwork.

---

New Grant to Fund Research in Fairchild’s Seed Lab

The Association of Zoological Horticulture awarded a new, $7,500, grant to Fairchild’s South Florida Conservation Team. Fairchild’s seed lab manager, Dr. Sabine Wintergerst, secured this funding through her proposed study, “Unlocking the Secrets to Germinating our More Challenging Rare Species of South Florida’s Pine Rocklands and Sharing This Information With the Conservation Community.” Wintergerst will work with volunteers and interns to research germination of pine rockland species and to share results online.
Fairchild and Zoo Miami Partner to Save Native Butterflies

Fairchild’s Connect to Protect Network and Zoo Miami recently embarked on a new collaboration that promises to be not only fun and exciting, but also to make a positive impact on Miami’s butterflies. This collaboration is the brainchild of the Zoo’s conservation and veterinary services manager, Dr. Frank Ridgley, who has frequently worked with the South Florida Conservation Team. Ridgley recently hired a butterfly lab manager, Tiffany Moore, who is already shifting operations in the Zoo’s “Butterfly Bunker” into high gear.

In a nutshell, Zoo Miami staff will rear native butterflies, and then the Connect to Protect Network will facilitate finding homes for pupae in the gardens of CTPN member families and schools. Zoo Miami staff are working in close collaboration with Dr. Jaret Daniels at the University of Florida’s McGuire Center for Lepidoptera and Biodiversity to guide their progress. The goal is to start with common species (first up: the Atala hairstreak) and transition to much more rare species, in order to reverse South Florida’s steep decline in butterfly diversity.

The project will also include surveys in local preserves for naturally occurring larval host plants and an increase in larval host plants available at Fairchild plant sales. Our Wings of the Tropics butterfly exhibit in The Clinton Family Conservatory may be part of the excitement too, because it is the perfect place to release non-native butterflies that are closely related to our rare species and experiment with methods to develop protocols before working with rare natives.

FIU and Fairchild in Joint Publication Initiative Focused on Society and Climate Change in Latin America and the Caribbean

The journal Hemisphere devoted its latest volume (Number 28) to “Society and Climate Change in Latin American and the Caribbean.” The journal is the flagship publication of the Kimberly Green Latin America and Caribbean Center, which is one of our main partners at Florida International University.

Hemisphere Editor in Chief Dr. Frank O. Mora was kind enough to invite FIU-Fairchild faculty member Dr. Javier Francisco-Ortega and FIU faculty member Dr. David B. Bray (of FIU’s Department of Earth and Environment) to be guest editors for this issue. Several Fairchild researchers authored articles in this journal issue: our director of collections, Dr. Brett Jestrow; FIU-Fairchild graduate student Haydee Borrero; and FIU-Fairchild faculty member Dr. Hong Liu.

The 10 articles cover topics pertinent to marine and terrestrial environments and include a broad range of issues. Some relate to collaborations, such as partnerships between universities and botanic gardens, joint conservation efforts between Cuban and American botanists, and Mexican community forests and mitigation of climate change. Other topics include coral reef conservation challenges, strategies to save Caribbean parrots, coastal invasion by brown algae in the Caribbean, biodiversity conservation in natural habitats of the Bahamas, rivers as centers for biological and cultural diversity, soil management in the Americas, and disaster-risk reduction in urban settlements under climate change threats.

Through this issue, the Latin America and Caribbean Center also recognized the import role Fairchild plays in providing local and international avenues to increase awareness about climate change and its mitigation.
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, guiding students on field trips, and gardening on a horticulture team.

To learn more about becoming a Fairchild volunteer, please visit us at fairchildgarden.org/volinfo to register for a volunteer information session or call 305.667.1651, ext. 3324.
Judy Stewart has been a volunteer at Fairchild for almost 27 years. She is the first person in Fairchild’s history to cross the mark of 10,000 total volunteer hours, and her remarkable dedication to the Garden has been recognized on several occasions. She received the Volunteer of the Year award three times, and in 2018 she was honored as the volunteer with the most hours (828) during the Volunteer Appreciation Brunch.

Tell me how and when you became involved with Fairchild.
I first visited Fairchild with my husband and our three children in the late 1960s. A TV show called “Gentle Ben” was being [filmed at the Garden], and we watched for a while. Several months later, we saw that show on TV.

In 1972, we moved to the area and my mother-in-law worked in the Ramble Herb Booth. Then, in 1985 she asked me to help, and since then, I’ve been volunteering. I have been co-chair of the Herb Booth at Ramble for about 10 years, along with Louise Bennett. Then, I joined the Garden Groomers and the Herbarium in July 1999. I enjoy gardening, and the Herbarium seemed quite interesting and something new to learn.

I changed over from the education department to the Wings of the Tropics Conservatory when it opened on December 1, 2012, as I love butterflies.

You currently work in the Wings of the Tropics, the Herbarium, and with the volunteer group Garden Groomers. Can you describe your responsibilities?
With Garden Groomers, I manage a group of nine volunteers. We weed and trim shrubs and trees every Thursday morning.
In the Herbarium, I mount specimens gathered from all over the world on acid-free paper and then store them in file cabinets. Specimens come from different botanists who collect plants they’re interested in or from locations they want to explore. Dr. Brett Jestrow, director of living collections and the Herbarium curator, has collected specimens from many areas, including Hawaii and the Canary Islands. They get accessioned, scanned, and input into a computer database that can be accessed by the public online.

On Friday mornings in the Wings of the Tropics, Ann Vaske and I deadhead plants, install new plants and perform other tasks that Martin Feather, Fairchild’s butterfly exhibit manager, needs done. After that, we change clothes and go to work as hosts.

What do you find the most fascinating and challenging about your work?
That is a really tough question. I think everything I do at Fairchild is fascinating and sometimes challenging. The challenge is trying to remember names of so many plant species.

Do you have a favorite spot or plant in the garden?
My favorite spot in the Garden is the Richard H. Simons Rainforest. I used to take third graders through there, showing them how some of the trees are very beneficial in the way of medications. We particularly enjoyed showing the tagua nut palm as it produces a nut that greatly resembles ivory and can be carved into many designs. I have several carvings, including a turtle, an elephant, a sloth in a tree, and a double stingray.

Do you have a garden at home?
I do have a garden at home, and I usually try to work in it at least once a week. I like to grow plants that attract butterflies and hummingbirds. I also have a fairly large collection of bromeliads. When I lived in Alabama, my grandfather introduced me to growing flowering plants when I was seven years old and gave me a whole plot to plant whatever I wanted as long as I put in some four o’clocks, his favorite plant.

Last but not least, what do you like to do outside your role of volunteer at Fairchild?
I enjoy scrapbooking and working jigsaw puzzles.

Interested in volunteering at the Garden?
Contact the volunteer department at 305.667.1651, ext. 3324, or volunteer@fairchildgarden.org.
Or visit fairchildgarden.org/volinfo.
BATS!

By Jemma Peterson

Bats are America’s most misunderstood mammal. In fact, they are the world’s largest group of mammals at over 1,300 species, and the only mammal that flies. In Florida, we are lucky to have 13 recognized native bat species, and they live all around us. More specifically in Miami, we are home to one of the most exciting North American bats: The endangered Florida bonneted bat.

Unfortunately, bats get a bad reputation. They are often associated with rabies, or worse, bloodthirsty tendencies in the dead of night (think vampires). However, not one of the three blood-sucking species of bat (out of more than 1,300 found in the United States) resides here in Miami. As for rabies, any mammal can carry the disease, but you are far more likely to get rabies from a cat or dog in the U.S. than from a bat. That being said, it is recommended that you never approach a wild animal, especially if it appears sick or injured. The recommended approach is to call a wildlife rehabber for help.

Bats provide incredible benefits worldwide, especially for a tropical paradise like Miami. Florida’s native bats are all insectivores, which is good news for those of us that do not like mosquitos. Some bats can even eat their entire body weight in bugs in just one night. In an area that relies so heavily on agriculture and tourism, fewer bugs is certainly welcome. Not only that, but here’s, eh, a scoop on poop: bat guano is highly valued worldwide for plant fertilizer.

Here at Fairchild, we not only love our nocturnal flying friends, we are also actively researching our resident species. Bat Conservation International Research Fellow Dr. Melquisedec Gamba-Rios, who is currently based at Zoo Miami, has partnered with Fairchild to monitor our bats. He installed a recording device in a key location hoping to capture the sound our bats emanate. From these recordings, Gamba will learn more about which species we have here in the Garden, by using recorded data from all over Miami to compare our species’ sounds with others’. Conservation is crucial for these keystone species, and by studying their locations, vocalizations, and behaviors, we can gain important insight.

So next time you see a bat, think flying puppy and not vampire. ☀️
THOUSANDS OF SPECTACULAR BUTTERFLIES AWAIT

Exotic butterflies like Heliconids, Morphos, and owl butterflies from Central America and South America will be performing their aerial displays of wonder all around you as you stroll through the meandering paths.

Open Daily
9:30 a.m.–4:30 p.m.
Very year in the restaurant and out in the field, I use a truckload of vanilla beans. To me, they are as important as flour, sugar, butter, and eggs in baking. I consider the vanilla bean the fifth essential ingredient.

So imagine gallons of ice cream flecked with pounds of vanilla beans. Yummers! And how about custards by the kilo with an equal amount of this decadent vanilla sprinkled through every last bite?

So what do you do with pods that have served their duty, sometimes even double duty? I could throw them away, but that wouldn’t be prudent. They are extremely expensive and too special to sit in a landfill somewhere in Florida, never really enjoying the fruits of their labor.

A lightbulb recently went off in my brain. No, not the same magical 100-watt summoning to life the Easy-Bake Oven of my childhood, but a bigger and brighter newfangled one. I realized if I washed the used pods and dried them slowly in the oven on very low heat, I could grind them in a spice or coffee grinder and have the most wonderful vanilla dust.

I’ve been adding this dust to cookie dough and cake batter, and sprinkling it over hot chocolate and cappuccinos. If you mix the dust with sugar, the options are limitless. You could even rim a cocktail or martini glass with vanilla sugar.

Vanilla Dust

**Preheat** the oven to 200 degrees F.

**Place** washed and dried vanilla bean pods on a baking sheet and **bake** for about one hour or until crisp. Once the beans have cooled, **grind** them in a coffee grinder and then pass them through a fine sifter. If you find any large pod pieces after sifting, grind them again.

Store the dust in an odor-free airtight container at room temperature.
What’s in Bloom presents a tiny sample of the multitude of plants blooming (or fruiting) around the Garden by month. Of course, this is a variable, general guide as plants may flower earlier, later, and across more months than listed.

(Tacca chantrieri)

(Please note some potted plants, such as hanging orchids, may not be on display at all times).
JANUARY

*Clusia lanceolata*, porcelain flower  
Plots 41, 49

*Aloysia virgata*, sweet almond Bush  
Plots 33, 49

*Solandra maxima*, golden chalice vine  
Psychotria poepigiana

FEBRUARY

*Freycinetia cumingiana*  
*Scutellaria havanensis*, Havana skullcap  
*Seemannia sylvatica*, Bolivian sunset  
*Adenium arabicum*

MARCH

*Euphorbia punicea*, flame of Jamaica  
Plots 8, 41, 50

*Hibiscus fragilis*, mandrinette  
Plot 33

*Senna polyphylla*, desert Senna  
Plot 51

*Pseudobombax ellipticum*
Celebrate your special event at Fairchild

Engagement or Rehearsal Dinner, Bridal Shower, Wedding Ceremony and Reception, Post-Nuptial, Baby Shower, Bar/Bat Mitzvah, Anniversary, Birthday or Graduation Party, Communion or Confirmation Celebration, Family Reunion, Sweet Sixteen or Quinceañera Celebration, Holiday Party, Concerts, Brunch, Corporate Meeting, Conference or Retreat, Memorial Ceremony or Celebration of Life, or just make up your own party!

For more information, please go to fairchildgarden.org/wedding-private-rentals or contact Lori Sellers at 305.667.1651, ext. 3358 or at lsellers@fairchildgarden.org.

@FairchildGarden
A CURE FOR PLANT BLINDNESS?

Teaching techniques to connect biology undergrads with plants

By Javier Francisco-Ortega, Ph.D.; Nichole Tiernan; Jonathan Flickinger; Wendy Villavicencio; John Geiger, Ph.D.; Brett Jestrow, Ph.D.; Chad Husby, Ph.D.; Roberto Pereira; Janelle Núñez; Jose Alberte; Jessica Colón; Hong Liu, Ph.D.; and Melissa McCartney, Ph.D.
During the last 80 years, teams of professional botanists and horticulturists have gathered for the Garden one the world's best collections of tropical plants, ensuring that the Garden is a celebration of the beauty and adaptations of plants throughout the tropics. These collections have also given professional educators an extraordinary opportunity to increase plant awareness among students, mostly from within our community.

Fairchild's educators are engaged with students from elementary to college levels.

Starting in summer 2016, a group of Florida International University (FIU) faculty members and Garden botanists joined forces to implement an educational initiative that targeted freshmen enrolled in FIU's General Biology courses. They come to the Garden once during the semester for a three-hour experience exploring Fairchild. During their visit, they are exposed to our living collections, research laboratories, and conservation programs. So far, during 9 consecutive semesters, a total of 1,500 students have been engaged through this venture.

One important goal of this project is to alleviate plant blindness: the tendency of humans to recognize, memorize, and distinguish animals' attributes much better than those of plants.

This under-appreciation of plants is particularly relevant today, as plant awareness among the public is important in order to design and implement comprehensive conservation policies. Most students in college biology programs in the U.S. want to develop careers in health-related disciplines. Therefore, they often feel botany subjects are irrelevant and even a burden for their professional paths. Our educational initiative specifically targets these particular students, as we believe that medical professionals have the potential to become the best ambassadors for plants because of the broad community that they reach through their work.

MAKING THE MOST OF GARDEN TIME

At its foundation, this program is aimed at bridging the content and scope of the Garden's living collections with the material covered during the students’ biology lectures and laboratories. We explored Fairchild extensively as we prepared the curriculum for the visits, and we drew on our own experience as FIU educators. For the last 20 years, FIU educators have used the plants in the FIU Nature Preserve and across the main campus to teach portions of the General Biology laboratory courses.

Our experience has led us to believe that there are three key strategies that will help these students to understand, value, and appreciate plants during a short Garden visit:

1. Cover a limited scope of plant examples. Based on our experience, students disconnect from plants the moment they are bombarded with scientific jargon or with many cases of plant adaptations and features. In our educational tours, we cover
only three case studies per hour and they all relate to topics taught in class. The time that students have to “ramble” through the Garden during their visits is also highly valuable and relevant to our goal of alleviating plant blindness. Therefore, we do not rush as we walk between each of the case-study plants.

2. **Follow a critical-thinking approach.** As the tours are delivered, we allow students to discover by themselves how each case study’s concept layers relate to topics covered in class. Our critical-thinking approach follows a Socratic method based on asking and answering questions in order to stimulate ideas and arguments that help the students understand and value particular plant traits.

3. **Focus the learning content on exceptions to biological rules.** We are convinced that students can really understand how biological processes operate through cases that highlight exceptions displayed by plants. Exceptions trigger students’ curiosity and lead to discussions on why a particular trait of a plant does not follow the biological rules taught during the lectures.

We share these three strategies with the students before their educational tours began. We have found that understanding this approach at the very beginning of their visit lets students know that their minds will be challenged through their own discoveries. All pedagogical studies show that the component that students value the most from learning is having their intellect challenged. We took this to heart.

One important lesson from previous pilot educational visits is that students will only truly participate in this kind of initiative if they receive academic recognition for doing so. Because this activity takes place outside the FIU campus, student participation is voluntary, and without rewards, attendance is poor and students are not terribly engaged with the tour content. We have set up a reward system that allows students who participate in the Garden visit to earn a certain number of extra credit points towards one of the laboratory course quizzes. At the end of each tour, students have taken individual tests to evaluate the concepts they learned during the visit, earning extra credit points based on their answers. These tests also have questions related to students’ perceptions of botany, and we also asked those questions of students who did not attend the tours. These tests have been critical in evaluating the impact of these visits on student plant blindness.

**WHAT WE STUDY**

The student visits cover three Caribbean palm species, one cycad species, the cannonball tree, the ceiba tree, orchids, and the Wings of the Tropics butterfly exhibit in The Clinton Family Conservatory. Our discussions include biological exceptions such as: Why do plants have amino acids that are not made to build up proteins? Or, why do some plants exhibit branches that look like roots and therefore do not grow up but down?
In order to broaden students’ perceptions of plants and their relevance to humans, we discuss the importance of plants in the history of religions and the way most civilizations have used them as connection elements with their deities or supreme beings. We emphasize that plants are much more than sources of food and oxygen for humans, and within this context we use Fairchild as an example of how gardening and landscaping can lead to artistic creativity and beauty. Finally, we highlight plants as systems in order to understand the basis of biological processes related to organisms’ adaptations to different environments. For example, while examining the cannonball tree, students discussed hypotheses about mechanisms to regulate cell division during development of pollen, hormone activation of reproductive tissues, and allocation of resources to produce energy-rich sugar compounds in different parts of the plant.

**DID THESE VISITS ALLEVIATE PLANT BLINDNESS?**

Our team is currently analyzing the data from these visits, but our preliminary and initial results suggest that students who joined the Garden tours developed a much more positive perception of plants than those who were only exposed to the botany content covered in the lab or classroom components of this course.

We are working with a National Science Foundation (NSF) Incubator Grant, funded from the Research Coordination Networks in Undergraduate Biology Education (RCN-UBE) program. Through this NSF-supported project, in early 2020 the Garden will host a workshop involving prominent botanists and educators from several prestigious universities and botanic gardens. This brainstorming event aims to further develop educational activities to alleviate plant blindness among undergraduate students in other higher education institutions.

**AUTHORS**

All of the contributors have been actively engaged either in design of the educational curriculum, the student mentoring strategy, or evaluation of the outcomes of this educational project. The NSF grant process was led by Dr. Melissa McCartney, assistant professor in FIU’s Department of Biological Sciences and STEM Transformation Institute (principal investigator); Dr. Hong Liu, FIU and Fairchild Tropical Botanic Garden research ecologist (co-principal investigator); and Dr. Javier Francisco-Ortega, FIU-Fairchild professor in the Department of Biological Sciences and International Center for Tropical Botany (co-principal investigator).

**ACKNOWLEDGEMENTS**

We are grateful to Amy Padolf, Fairchild’s director of education, and Dr. Carl Lewis, Fairchild’s director, for supporting this educational activity centered in the Garden. We are also grateful to Tom Pitzer, coordinator of FIU’s General Biology courses; Dr. Marcy Kravec, associate chair of FIU’s Department of Biological Sciences; and Dr. Steve Oberbauer, chair of FIU’s Department of Biological Sciences, for their academic support.
Perfector, one day, when palm fanciers can freely travel to Cuba, Paul Craft’s wonderful book, *The Palms of Cuba*, will be in every traveler’s backpack. I know I could have used it on my visits. Cuban belly palms, royals and species of *Copernicia* were easily recognized, but low, there are two different species of belly palm, 22 species of *Copernicia* and five of *Roystonea* (royals) native to Cuba.

With Craft’s book, identifying them will be much easier. In fact, this is the first book to include all of the palms native to that island, with descriptions of each, maps of where the palms may be found, pronunciations, habitat, and conservation information.

But since so many of Cuba’s palms are well-suited to South Florida, this is a book to be used by every gardener here who admires palms, from the majestic *Copernicia gigas* to the squat *Coccothrinax borhidiana*.

Craft is a horticultural consultant and familiar figure in palm circles. He has owned both retail and wholesale nurseries, as well as landscape design and landscape contractor businesses. He is a past president of the International Palm Society and has served on the board of that group. In preparation for this book, he made about 18 trips to Cuba and worked with botanists throughout the island. I enjoyed reading their included photos and biographies.

Of the 85 endemic palms that are found only in Cuba, only about 20 were cultivated outside the island until the 1990s. Because more are finding their way into gardens, this book is a timely addition to your horticulture library.

Cuba has many differing habitats, from mangroves to mountains, from mogotes to savannas. Craft has included descriptions of soils from sands and limestone rock to serpentine soils lacking the normal nutrients of nitrogen, potassium, and phosphorous but full of nickel, cobalt, and chromium. So, if you fancy serpentine growers such as *Coccothrinax moaensis* or *Coccothrinax cowellii*, expect to tax your growing abilities, but thank Craft for giving you a heads-up.

Likewise, he says, *Gaussia* and *Pseudophoenix* are genera that need well-drained soils so they never receive too much water. Craft also offers design advice for these palms. *Gaussia princeps* and *G. spirituana* require large landscapes where they can be planted in multiples, whereas *Pseudophoenix sargentii* is suited for small landscapes as a solitary specimen or in a larger group.

When the book gets into the nitty-gritty of palm descriptions, Craft really reveals the depth of his knowledge. The descriptions include technical terms (the book has a glossary of such words), along with each palm’s local names, uses, and helpful notes. *Acrocomia crispa*, for example, is a palm with the local name of corojo. While it commonly is called a Cuban belly palm, so is *Colpothrinax wrightii*. No one has come up with set-in-stone answers as to why these guys have bulges partway up their trunks.

The genus with the most species in the Caribbean is *Coccothrinax*, and Cuba hosts 40. Photos of each of the palms in habitat, as well as images of identifying features, such as the silver underside of *Coccothrinax yuraguana* leaf or the rose color of the ripe fruit of *Coccothrinax miraguama* subspecies *roseoparpa*, are wonderfully helpful. Craft notes that *Coccothrinax* and *Thrinax* species may look very much alike. One way to distinguish between them: the leaf base of *Coccothrinax* is solid, whereas in the *Thrinax*, it is split like an upside down V.

The Bailey palm, *Copernicia baileyana*, that is so widely admired in South Florida gardens resides in Cuban savannas and open woodlands that can become inundated for short periods during the rainy season. Craft includes the Bailey among the “magnificent three” along with *C. fallaensis* and *C. gigas*, all giant palms that can only inspire awe.

*The Palms of Cuba* is available in person or online at The Shop at Fairchild $34.95; Members: $31.45.
“This looks amazing—like something from another planet” is an expression I have heard several times from visitors and Fairchild staff members looking over my shoulder at the computer monitor in Fairchild’s Microscopy and Imaging Lab, inside the Hsiao Laboratories in the DiMare Science Village. They’re marveling at the gigantic images on my screen.

The actual objects that evoke this expression of surprise are, in nature, microscopic. They may measure from 3 millimeters to less than 100 microns in length. All of these images are from plants growing in the Garden, but their very small size makes them hard—if not impossible—to observe while walking through our living laboratory.

Dr. David Fairchild knew the importance and appreciated the beauty of the very small living things in our world. He was a big fan of using a hand lens in the field.
to magnify the small things that may otherwise go unnoticed. He wrote in *The World Was My Garden* (page 10): “All my life it has seemed strange to me that the vast majority of human beings are content with only hearsay accounts of the wonders found ‘through the microscope.’ It is a breath-taking world, filled with myriads of strange and fascinating objects which the naked eye could never see.”

One purpose of our Imaging Lab is to share those microscopic wonders—which research scientists may view every day—with a broader public. Today’s modern equipment allows us to magnify these images many times and digitize them, and we will soon publish them on our website for all to see.

However, in the early 1900s, Dr. Fairchild, his wife Marian, and his assistant Wills faced significant technical challenges when they devoted considerable time and effort to photographing very small insects (the photos were later published in *The Book of Monsters*). The lighting and physical size of the camera they used provided images five to 25 times their normal size. The pictures they produced were first published in 1914 by *National Geographic*.

The Imaging Lab is just one way the Garden continues Dr. Fairchild’s practices. Over the years, it has been supported by significant contributors such as Dr. Jack Fisher, our resident botanist from 1973 to 2010. In addition to bringing some new microscopes to our lab, Fisher made significant contributions to the field of tropical botany; in 2003, the Botanical Society of America honored him as a Distinguished Fellow, the highest honor it bestows.
When the Paul and Swanee Dimare Science Village was constructed, Fairchild Director of Collections Dr. Brett Jestrow championed the ongoing heritage of our Imaging Lab. He saw to it that part of the new construction included a dedicated space where images could be produced to support our tropical botanic research. The lab’s location in the Garden allows us to make images from colorful, fresh specimens that more realistically represent the true nature of the thousands of plants we have available to us.

We continue to generate new and fresh microscopic images in our lab today from specimens introduced to the Garden by Dr. Fairchild, Fisher, and Jestrow, as well as many other contributing researchers. The images created in our lab help scientists and the public better visualize the small, beautiful structures that can be found in our living laboratory.

Humans are visual creatures, and what we see with our eyes profoundly affects how we understand our relationship with our environment. I hope that the images we produce at Fairchild’s Imaging Lab continue to expand the knowledge of researchers, students, and visitors.

The images created in our lab help scientists and the public better visualize the small, beautiful structures that can be found in our living laboratory.

Read more about Dr. David Fairchild’s explorations under the microscope at www.fairchildgarden.org.

Read The Book of Monsters at the Gutenberg Project at www.gutenberg.org.
Identifying and Naming a New Species of Stopper

An FIU-Fairchild Ph.D. candidate helps complete a 63-year journey that included multiple collections, amateur and professional botanists, and persistent research.

By Jonathan Flickinger

recently had the privilege of naming a new plant species from Anguilla, a small, low-lying island located at the northern end of the Lesser Antilles. Though I wrote the description for this new species of stopper, I did not discover it. In fact, I have never been to Anguilla. My work, like that of many botanists, was based on pressed and dried plant specimens collected decades ago.

First, some background: Stoppers are species of small trees or shrubs that share fragrant, evergreen leaves arranged in pairs along the stem and clusters of little, white, four-petaled flowers that ripen into red or purple berries. Most stoppers belong to the genus *Eugenia*. Stoppers and their relatives in the Caribbean, including guava and allspice, are the subject of my dissertation as a...
Ph.D. candidate at Florida International University (advised by Dr. Javier Francisco-Ortega, FIU-Fairchild faculty member, and hosted by Fairchild). The goal of my research is to describe the diversity of the myrtle family (Myrtaceae) in the Caribbean and classify its members according to their evolutionary relationships.

As part of this effort, I identified an undescribed species of stopper from Anguilla. The first known collections of this species were made by a French Roman Catholic priest and botanist, Père Casimir Le Gallo, who visited Anguilla during 1955. Le Gallo encountered the plant around a church in the island’s capital. He recognized it as a member of the myrtle family, but without flowers or fruits, its precise identification was uncertain. Thirty years later, two botanists from Harvard University’s Arnold Arboretum, Dr. Richard Howard and Dr. Elizabeth Kellogg, visited Anguilla and searched for Le Gallo’s mystery myrtle around the church. Although their search was unsuccessful, they did discover Rondeletia anguillensis during their visit. This species is a critically endangered spiny shrub in the coffee family and is only found on Anguilla.

It took another 10 years before Le Gallo’s plant was found again—this time with flowers and fruits—by American amateur botanist Mary Morris Walker (1923–2012). Walker relocated this small-leaved shrub in the dry evergreen forest of a nearby sheltered valley while studying the flora of Anguilla. She made two collections of the species, which she recognized as a stopper, and sent her specimens to Harvard for identification by Howard, who was a noted expert on Caribbean plants. Walker’s two specimens remained at Harvard, unidentified, until I was fortunate enough to come across them in the course of my studies. With the help of Howard’s Flora of the Lesser Antilles, I was able to determine that Walker’s unknown stopper was the same as Le Gallo’s mystery myrtle—a new species to science.

The procedure to officially name a new plant requires the publication of three basic elements: a description or short statement that tells how a new species differs from similar ones, a selection of a single preserved specimen to serve as a standard for identification, and creation of a two-part Latin
name. In recognition of her key collections and devoted efforts to document the flora of Anguilla, I decided to name this new stopper *Eugenia walkerae* after citizen-scientist extraordinaire Mary Morris Walker.

This discovery and identification highlights the indispensability of collections for botanical research, the contributions non-professionals make, and the continued need for exploration. The present status of *Eugenia walkerae* in the wild is unknown. One of only two plant species unique to the island of Anguilla (along with *R. anguillensis*), it is probably vulnerable to extinction on account of its restricted range.

Now, however, with the recognition afforded by a name, steps can be taken to conserve this unique part of the natural heritage of Anguilla.

*Eugenia walkerae* was published in the December 2018 issue of *Harvard Papers in Botany*. Research was conducted with support from an FIU Presidential Fellowship and a Botany in Action Fellowship from Phipps Conservatory and Botanical Gardens.

Jonathan Flickinger is a Ph.D. candidate in the Department of Biological Sciences at Florida International University sponsored by Fairchild. His research focuses on the diversity and classification of the myrtle family in the Caribbean islands. He received a B.S. in plant sciences from Cornell University in 2012. Before coming to Miami, he worked in plant curation and record keeping at public gardens.

STOPPERS

South Florida is home to six species of stopper. Four members belong to the genus *Eugenia*, while Simpson’s stopper, also known as twinberry (*Myrcianthes fragrans*), and long-stalked stopper (*Mosiera longipes*) are members of the same botanical family and are named for their close resemblance. All can be observed growing at Fairchild. Worldwide, there are more than 1,100 species of *Eugenia*, making it one of the largest plant genera. Most of these species are found in tropical America, and more than 200 are found only in the Caribbean islands.

To read Flickinger's complete research paper about *Eugenia walkerae*, please go to: huh.harvard.edu/files/herbaria/files/23_2_213_flickinger.pdf.
More than six years ago, when The Underline was just a crazy idea after I had a disabling bike accident, we knew it could be one of Miami-Dade County’s greatest opportunities to bring nature to the urban core. Our idea was to create a linear park on 120 acres of land below Metrorail’s tracks, spanning from the Miami River to the Dadeland South Metrorail station. It would repurpose an industrial, blighted expanse of land into an inviting, people-friendly space that celebrates nature, culture, and community. The project was inspired by New York’s High Line—a linear nature park on a decommissioned railroad line that is a focal point for art installations, community gatherings, and outdoor fitness.

The Underline’s master planner is a landscape design team led by James Corner Field Operations of New York, which also designed the High Line. But the designers knew that Miami’s hot, humid conditions needed expert advice in local horticulture and inspiration. It was natural for The Underline team to turn to Fairchild for expertise. That early engagement has resulted in a rich partnership that will benefit our community for generations to come.

During both the master planning and the design for The Underline’s first phase, in the Brickell neighborhood, The Underline team met with Fairchild scientists and horticulturists for input on plant selection and more. The group reviewed the beautifully drawn plans and discussed plant choices, their survivability, and resilience issues.

They gave consideration to plant ecosystems for pollinators and bees, drought- and water-tolerant species, and native plants from pines to oaks, determining what would work best for each location. Through this process, some species were eliminated when Fairchild advised that they might not fare well for one reason or another.
(“that one grows too tall,” or “that one always gets a fungus on its leaves”), while other species were added (“native stoppers require almost no maintenance and make an excellent screen”). We also identified two Fairchild programs The Underline can collaborate on: The Million Orchid Project and the Connect to Protect Network.

The Million Orchid Project seeks to saturate the limbs of Miami’s trees with 1 million native orchids—species such as butterfly, clamshell, cowhorns, pine pinks, and Florida Oncidium. In addition to existing healthy trees, The Underline will add 4,000 native trees to the corridor and provide a 120-acre canvas for the project. The students and citizens who are the driving force behind The Million Orchid Project will help to install plants on The Underline, and will be able to visit the fruits of their labors.

Fairchild’s Connect to Protect Network (CTPN) is a citizen science initiative that encourages South Florida homeowners and schools to plant native plants in their yards. Linear planting areas like The Underline, which can connect many isolated CTPN plantings, are a dream come true for the program. Importantly, The Underline’s plant palette includes a whopping 80% native species, many of which were specially chosen for their butterfly-attracting features. This translates to thousands of native plants being installed, which will in turn boost butterfly populations.

The Underline team is proud and thankful for this deep partnership with Fairchild. Together, we can improve the quality of life for everyone in Miami—humans, wildlife, and plants too. We look forward to growing our relationship as construction continues in Miami, Coral Gables, and South Miami during the coming years.

Meg Daly is a full-time volunteer and founder of Friends of The Underline, a 501(c)(3) nonprofit partnering with public and private entities to build, conserve and program The Underline (theunderline.org)
Inspired by the “Organic American Style” of Frank Lloyd Wright, architect Chayo Frank designed a home and garden that is a “Sanctuary Paradise” that is unique and extraordinary in every aspect. Located in the coveted neighborhood of Ponce-Davis, in Miami, Florida, the home was created to facilitate a tropical living style, rather than an aesthetic design. Surrounded by a sunken private garden, it boasts an extensive collection of some of the world’s rarest exotic tropical plants including a Weeping Ficus brought from Indonesia by Dr. David Fairchild in 1940. A juxtaposed structure of steel beams and columns encased in California Redwood, with large expanses of sliding glass walls, 25’ foot volume ceilings and a natural coral rock wall that delineates interior and exterior atmospheres, it allows for a connection and flow between the inviting interior spaces and the extraordinary landscape of the surrounding gardens. A two-story open space floor plan is airy, comfortable and unrestricted. Meandering pathways, subterranean grottos, and a pool overlooking tropical waterfalls create a private Sanctuary Paradise that is great for entertaining or a serene lifestyle retreat. The design and use of natural materials found in this natural landscape transcends the norms of traditional architecture. This “Private World” resonates with an atmosphere of beauty and tranquility. Indeed a Sanctuary Paradise! Offered for sale. Price upon request.

www.thesanctuaryparadisehouse.com
The Sanctuary Paradise House
4895 N. Kendall Drive, Miami, FL 33156

3 Bedrooms + Studio | 3 Bathrooms | 4,632 Square feet | Lot: 33,715 Square feet | 25’ Volume Ceilings
Rare exotic Tropical Botanical Garden
IN STORE

Top Picks this Winter

1. Assorted Kids Pendants $9.99 each
2. Bunny Friends Bag $22.89
3. Suncatcher $29.99
4. Assorted Socks $9.99 each
5. Coconut Bowls $18 each
6. Water Bottles $39.99 each
7. Keiko’s Ikebana $17.95

Members receive 10% off list price

See more at store.fairchildgarden.org.
Wayne and Rosemary Goldin own a 1¼-acre property in Palmetto Bay that once belonged to nurseryman Henry Coppinger Jr., a famous croton hybridizer. With the help of Dr. David Fairchild, Coppinger also collected cycads and palms.

After Coppinger, the property’s next owners were William and Gretchen Tunkey, who retained the late architect and landscape architect Lester Pancoast to design the house and landscape.

The Goldins purchased the home 17 years ago. Several years later, in 2005, when he was in The Shop at Fairchild, Wayne Goldin picked up a copy of my book, Enchanted Ground, and thumbed through it.
“I said to my wife, ‘Don’t these pictures look familiar?’” Wayne explains. Sure enough, on page 95 is my photo of several drought-tolerant *Leucothrinax morrisii* palms that Pancoast had planted in a rock substrate more than a quarter century earlier. Those *Leucothrinax* had become the Goldins’. Today, they are nearly as tall as the house’s second-story roof. And, while the substrate now is brick instead of rock, the good care the Goldins (and the Tunkeys) have taken of the grounds during all these years is more than apparent.

What led me to revisit this garden was a call from Jody Haynes, a cycad expert and horticultural consultant with Signature Palms, whom Wayne hired to produce a tree survey. I have known Haynes for many years, and he, in turn, told Wayne that we are acquaintances.

On my return visit, I learned how Wayne Goldin cares for his treasured plants. And these plants are treasured. In addition to the now-towering *Leucothrinax*, another example of his care is the grouping of *Cycas rumphii*, queen saggos, in the rear of the garden. They have branched and become marvelous serpentine creatures, worthy of inclusion in any museum. Of the saggos, Haynes noted in his survey report: “These signature cycads are not only large but are in surprisingly
good health, considering the vast majority of queen sagos in South Florida were killed 20 years ago by an invasive insect known as Cycad aulacaspis scale.” Furthermore, he wrote, the Goldins control these insects organically—with no use of chemical pesticides.

To keep his plants in such good condition, Goldin uses a product that combines molasses, seaweed, apple cider, compost tea, and liquid fish. For controlling cycad scale, he adds orange oil (D-limonene extracted from orange peel).

The Goldins’ garden contains other wonders as well. There is a 14-foot Dioon spinulosum in the side yard, near the largest Florida champion tree of Saraca indica, the asoka or sorrowless tree; the asoka is documented by the Florida Forest Service. A 50-foot royal palm inhabits the front yard, along with a kapok tree that soars to 75 feet. There is a robust clump of travelers palms, two royal poincianas that reach 40 feet and 50 feet, as well as a long list of other unusual palms and trees.

Great care and design can produce remarkable gardens and keep them that way.
Big Palms for a Small Yard

Laz Priegues has turned one-third of an acre into a palm haven, creating one of South Florida’s best collections of Copernicia.

Text and photos by Georgia Tasker
P

hysician and palm collector Laz
Priegues says he was at Fairchild
when he “saw the most beautiful
palm. I ran up and hugged it and
looked at the tag and it said ‘Cuba.’ I was in
love.” It was a *Copernicia*.

Priegues was born in Havana, Cuba, in
1956 and arrived in Miami at the age of 3.
After studying medicine in New York City,
he returned to South Florida. Today, he is a
doctor of internal medicine at Mercy Hospital
and lives in the Miami neighborhood
of Shenandoah. “I realized I’m living in
paradise,” he says. “My grandmother was a
gardener. I studied biology before I became a
doctor.” And he has a deep love of plants.

He has turned his one-third of an acre into
a 21st-century palm haven, extending,
tentacle-like, into surrounding swales and
neighboring yards. The result is one of
the best collections of *Copernicia* palms
in South Florida. It boasts 22 species of
Cuban *Copernicia* palms, including several
surrounding Priegues’ home.

The most stunning of the Cuban *Copernicia*
palms is the *C. fallaensis*, an enormous
specimen dominating the area like a
lighthouse on a cliff. It rises majestically, as if
launched rocket-like from the ground, and it
holds a crown that is unmatched in glorious
strength. Its huge leaves are not round, but
elongated and orbicular, solid until the halfway
mark, where they become segmented.

*Copernicia cowellii* is another of Priegues’
prizes. “It is the rarest of the genus,” he says.
Only one foot tall, it has been in the ground
for 16 years. Three more small specimens
have been planted in front of his 1926 home.

In his book *The Palms of Cuba*, Paul Craft
writes: “*Copernicia cowellii* is the smallest
but may also be considered one of the most
beautiful species in this genus.” [Editor’s
note: See our review of *The Palms of Cuba*
on page 27.]

There are more: The Bailey palm, *C.*
*baileyana*; the Cuban petticoat palm *C.*
*macroglossa*; *C. brittonorum* (just two years
in cultivation); and *C. hospita*, a palm from
the heavy-metal serpentine soils of central
Cuba. Look to your left when you pull into
Priegues’ drive and you confront *C. rigida*,
whose wedge-shaped fronds seem to be
pressing themselves into a rugby scrum.

Oh, and don’t forget the really slow-growing
*C. gigas*, another species with wedge-shaped
leaves that Craft, in his book, includes among
the “magnificent three” Cuban *Copernicia*,
along with *C. baileyana* and *C. fallaensis*. 
So yes, the palm bug has definitely infected Priegues. He began buying rare palms when the Palm Society of South Florida had shows and sales at Fairchild. More recently, he says, Ron Croce from Sherwood Forest finds them and plants them. His palm bug will not be satisfied with run-of-the-mill arecas or coconuts or palmettos. He seeks out *Basselinia pancheri*, a small palm from New Caledonia with a black crownshaft and dark trunk; *Coccothrinax moaensis*, which some experts say is a synonym of *C. miraguama*; *Coccothrinax borhidiana*, which grows on cliffs near the shore in Matanzas and keeps its nearly circular old fronds next to its trunk like the Cuban petticoat palm; and *Coccothrinax viridescens*, only known from cultivation in South Florida (three are located at Zoo Miami) but believed to have originated in Cuba.

Drive through the Shenandoah neighborhood and you can find species of *Copernicia*, flowering trees such as royal poincianas, and sennas that Priegues has planted in the swales. He waters and fertilizes them. And he convinced the city to create two pocket parks on abandoned lots.

"Why not have a botanical garden in our midst?" he asks. "My dream is to create an urban botanical garden so that folks can walk down the street and read the tags."
Here in South Florida, so many different types of creatures visit our yards. Some we try to attract, like birds and butterflies. Others we don’t want, but are unfortunately attracted to us—such as mosquitos, alligator-sized iguanas and peacocks, and palmetto bugs large enough to pay property taxes. The list is endless.

With so much of our natural habitat being replaced by concrete, those of us fortunate enough to have yard space can do our share by turning our yards into habitats for all kinds of wildlife, and the strategies to do so can be quite rewarding. Here are just a few ways to welcome wildlife into your yard.

**ATTRACT Butterflies**

Butterflies generally lay eggs on a particular plant, known as a host, that is specific to that butterfly. The caterpillars that emerge will feed on that plant. You can attract a number of butterflies with just a few host plants:

- Corky stem passion vine (*Passiflora suberosa*), a South Florida native, is the host for three butterflies: the zebra heliconian (our state butterfly), gulf fritillary, and Julia. This plant gives you three for the price of one.
- Monarchs lay eggs on milkweed, notably tropical milkweed (*Asclepias curassavica*), as do queen butterflies. And, I suggest planting giant milkweed (*Calotropis gigantea*) in larger yards—monarchs love it. South Florida monarchs don’t migrate, so they may visit your garden all year.

Have a bit of yard space? Turn it into a habitat for desirable wildlife and help balance out South Florida’s natural spaces, even as so much habitat gets turned into concrete. Your reward: beautiful butterflies, birds, and bees.
• Giant swallowtails use citrus and wild lime as hosts.
• Members of the sulfur family lay eggs on various Cassias and Sennas.
• Grow cootie (Zamia integrifolia) and maybe you’ll be lucky enough to attract the pretty atala.
• Finally, if you have a chain link fence you need to cover, grow Aristolochia littoralis, with its unique calico flower, and the polydamas swallowtail might find you.

As you see, just a few plants can supply a number of butterflies, but in order to keep the butterflies happy and hanging around, you need to feed them. That’s where nectar plants come in.

**GROW Nectar Plants**

Several years ago, a visitor to Fairchild mentioned that he saw lots of butterflies in his yard, but they never stayed. He said he had no flowers. Well, you can’t invite someone to dinner without serving food, right? Butterflies only need a few types of nectar plants to keep them around.

• One of my favorite nectar plants is chaya, or Mayan spinach. All types of butterflies adore its white flowers, and if you’ve visited Wings of the Tropics you’ve seen this for yourself.
• Ruby red pentas are another favorite, as are our native lantanas, involucrata, with their white flowers, and depressa, with its yellow flowers.
• Various porterweeds, including the native blue (Stachytarpheta jamaicensis) and the pinks and purple varieties, attract many butterflies.
• Atalas love sweet almond (Aloysia virgata) and butterfly sage (Cordia globosa).

There is no shortage of nectar plants that can feed your winged visitors. And speaking of nectar plants, bees also need them.

**INVITE Bees**

Many native American bees and honeybees are in trouble, and we can help them by growing some of their favorite nectar plants.

• In addition to the nectar plants that butterflies enjoy, add tickseed (Coreopsis leavenworthii), our state wildflower, which is most common in South Florida.
• Spanish needle (Bidens alba), also known as Beggar’s Tick, is one of the most important nectar sources for bees in the Florida. While many consider it a weed because a single plant can produce 3,000 to 6,000 needle-like seeds, it is one of the most important nectar sources for pollinators you can grow. Set aside an area where it won’t spread, and the bees will love you. Its pretty, daisy-like leaves, by the way, are edible.
• Add black-eyed Susan (Rudbeckia hirta) and you’re in business for the bees.

**GROW Bird Food**

Many of our birds eat berries and seeds. Black mulberry (Morus nigra), red mulberry (Morus rubra), our native firebush (Hamelia patens), Simpson stopper (Myrianthes fragrans), wax myrtle (Myrica cerifera), marlberry (Ardisia escallonioides), and American beautyberry (Callicarpa Americana) are just a few of the many fruit-producing trees you can plant to attract mockingbirds, cardinals, and blue jays.
**DON'T CUT That Tree**

Dead trees are another great way to attract birds. They provide homes where woodpeckers and owls can raise their young, including insects to feed them. Parrots and starlings also use dead trees for homes. In Fairchild's Lowlands, there is a dead palm we call a birdie bed-and-breakfast. We also point it out during our birdwalks—one week, blue and gold parrots were in it, another week starlings or orange-winged parakeets, and woodpeckers, too.

If you're game, you can place an owl nesting box up in a tree and maybe attract eastern screech owls. Owls eat rats and mice, and their trills and whinnies in the middle of the night are a real treat to hear, if you’re awake in the middle of the night.

**INSTALL Bird Feeders and Baths**

Want to up the number of birds that visit? Put up a feeder or two. Hang them on poles or trees (use baffles to keep away pesky squirrels), fill them with white millet or black oil sunflower seed, and you’ll have cardinals and other birds checking them out in no time (squirrels, by the way, don’t eat safflower seed, but cardinals love it). There are a number of feeders with smaller openings to keep out the bullying blue jays and grackles, and others that are weighted to prevent the heavier birds from feeding. Maybe, if you're lucky, painted buntings and goldfinches will find you during migration season.

Birdbaths are another attractant. Place a birdbath away from the feeders and plant a shrub next to it so the birds can check out the surroundings in safety before testing the water. Birds don’t only drink or cool off in a birdbath—they also use the water to clean their feathers of parasites, dirt, and other debris. You’ll have lots of enjoyment watching their goofy antics. Many people are hesitant to put up bird feeders if they have outdoor cats. If you are one of those people, put a bell on the cat's collar to warn the birds they’re around. Although cats can keep rodents away from feeders, it’s estimated they kill over a billion birds annually in the United States. Birds enjoy feeding first thing in the morning, late in the day, and right after it rains, so those are the best times to keep your cats inside.

---

**Did you know Fairchild’s Connect to Protect Network helps homes and schools create garden wildlife refuges using native pine rockland plants? For more information on this free program, visit fairchildgarden.org/CTPN.**

The plants listed in this article are just a sampling of the types of flora that you can plant in your yards. We are very lucky to live in a part of the world where so many different plants flourish, and placing just a few well-chosen shrubs and trees in any space you have will hopefully attract creatures that will make the time you spend outside even more enjoyable and entertaining. So, go and plant, fellow gardeners, and then sit back and enjoy the fruits of your labor. Pun intended.
What's in a Name

Winter flowers are usually thought of as poinsettias, bougainvilleas, Chinese hat plants, and Euphorbia leucocephala, the little Christmas flower. But there are plenty of other plants that flower for us here during the winter-through-spring season. Here are some of the names that you may look for this season.

Meet South Florida’s Winter Blooms

By Georgia Tasker

Winter flowers are usually thought of as poinsettias, bougainvilleas, Chinese hat plants, and Euphorbia leucocephala, the little Christmas flower. But there are plenty of other plants that flower for us here during the winter-through-spring season. Here are some of the names that you may look for this season.

Red mulberry, Morus rubra
Morus is the Latin name and rubra means red.

Firebush, Hamelia patens var. patens
The genus remembers an 18th-century French writer, Henri Louis Duhamel du Monceau, who covered a wide range of subjects, including fruit and forest trees. Patens means spreading, according to Stearn’s Dictionary of Plant Names for Gardeners.

Coral bean, Erythrina herbacea
Erythrina is Greek for red, while herbacea means just that: herbaceous.

Photo by Keith Bradley, Institute for Regional Conservation.
Wild lime, *Zanthoxylum fagara*
Stearn's says the genus is from the Greek *xanthos* for yellow and *xylon* for wood. Its heartwood may be yellow. *Fagara* is beech.

Wax myrtle, *Myrica cerifera*
The genus name is from the Greek *myriké*, meaning tamarisk, and this plant is related to tamarisk. *Cerifera* means wax-bearing.

Marlberry, *Ardisia escallonioides*
The genus name means pointed, “in reference to the spearhead shaped anthers,” according to *The Plants of the Kampong* by Larry Schokman. The species epithet is for Antonio Escallon, an 18th-century Spanish traveler and plant hunter, according to David Gledhill in *The Names of Plants*.

Photo by George Gann, Institute for Regional Conservation.

Cocoplum, *Chrysobalanus icaco*
*Chryso* is Greek for gold and *balanos* means acorn, referring to the yellow fruit of some species.

Photo by George Gann, Institute for Regional Conservation.
GROWING ORCHIDS ON TREES

By Ron Mchatton, Ph.D.

Orchids can be cultivated on trees in Hawaii, the Caribbean, and elsewhere in the subtropics and tropics. In Florida, they enhance gardens in the Keys, those situated inland along the state’s east coast north to West Palm Beach, and those along its west coast to Ft. Myers. In California, many orchids are hardy as far north as Santa Barbara; with protection during the winter, some survive as far north as San Luis Obispo. They can even be found farther north, inland near bodies of water, where microclimates remain slightly warmer during cold snaps.

1. MATCH THE ORCHID TO ITS ENVIRONMENT

Orchids originate in diverse habitats, from treetops in full sun to shaded swamps. Evaluate your garden’s exposure, and select species and hybrids that match your environment. In sun, consider vandas. In lower light, try species of Oncidium, Phalenopsis and Cattleya. Many varieties are suitable for intermediate conditions. A local orchid nursery can help make selections.

2. CHOOSE A TREE THAT ADMITS ADEQUATE LIGHT

Oaks, citrus, bottlebrush (Callistemon viminalis, C. citrinus), palms, schefflera (Brassaia actinophylla), and the less-common calabash (Crescentia alata) are prime candidates. Ficus often casts too much shade. Rough bark is an asset, though not essential for success.
3. TRY SEEDLINGS, DIVISIONS, OR ESTABLISHED PLANTS
The back bulbs of cattleyas rapidly adapt to life in a tree, as do cuttings of those vandaceous orchids that produce roots freely along the stem; the opposite is true of those that root only from the base of the stem.

4. BEGIN WHEN ROOT ACTIVITY STARTS
This is usually the orchid’s regular potting time. Many orchids, such as those in the genera *Vanda* and *Phalaenopsis*, produce roots year-round (or at least as long as the weather is warm), so they can be established on trees during almost any warm month. Other orchids root only at very specific times in their growth cycles. For example, because *Guarianthe* (*Cattleya*) *skinneri* roots and flowers in March and April, set it on trees in January or February. Late summer is appropriate for *Guarianthe* (*Cattleya*) *bowringiana*, because new roots emerge in early autumn, just after blooming ceases. Bifoliate species of *Cattleya* are very intolerant of repotting unless actively growing roots are visible—often at or just before flowering—so make sure that these plants are not placed in your trees too early.

Members of the *Oncidium* Alliance generally root from growths that are several inches tall, when the new pseudobulb is beginning to plump up. Resist the urge to attempt mounting these in trees until you are sure new roots are beginning to grow.

5. SET THE PLANT DIRECTLY ON THE TRUNK OR LIMB
Do not apply a pad of sphagnum moss, osmunda, or other medium. Doing so may keep the surface too wet and induce rot. And, roots may grow into the medium, but not onto the tree, reducing their ability to cling to the tree. If you can, position the orchid so the flowers will be enjoyed from a patio, walkway, or inside the home. Match aesthetics with cultural needs.

6. ATTACH YOUR ORCHID WITH COTTON STRING
It will eventually decompose and not harm the environment. It fades in a few weeks, blending in with its surroundings, and the plant will have rooted in place by the time the fibers deteriorate after a year or so.

Plastic ties and monofilament fishing line are alternatives. But because these synthetics are not biodegradable, you’ll need to loosen them as the stems grow, and eventually remove them once the roots form.

Hot-glue guns are another choice; take care not to injure new leads. Place a dab of glue on the rhizome or pseudobulb and hold against the tree for a few seconds.

7. PROVIDE ADEQUATE CARE, ESPECIALLY DURING THE FIRST FEW MONTHS
Mist with a hose, or run a sprinkler line up into the tree using lightweight PVC piping. Once established, orchid plants are almost carefree, although periodic applications of water and fertilizer are beneficial. "Tea bags" of timed-release fertilizer can be made using small pieces of pantyhose (the nylon is almost indestructible in the Florida sun); tie them on the tree near mounted plants. The fertilizer will slowly be released during wet or rainy periods, and the bags are easily replaced when spent.

Periodic maintenance of the tree may be required, as you need to ensure that its growth over time doesn’t reduce the amount of sunlight reaching the orchids so much that flowering is impacted. When it is necessary to prune trees on which orchids grow, take care not to injure the epiphytes. Once established, orchids will last for years.

Members of the *Oncidium* Alliance generally root from growths that are several inches tall, when the new pseudobulb is beginning to plump up. Resist the urge to attempt mounting these in trees until you are sure new roots are beginning to grow.

Ron McHatton, Ph.D., is the American Orchid Society’s chief education and science officer and the editor of its monthly magazine, *Orchids*. Fairchild and AOS partner on a number of critical orchid-related initiatives, including The Million Orchid Project, The National Orchid Garden and others. Fairchild is also the official headquarters of AOS.
22nd Annual Spring Plant Extravaganza

Presented by:
Searle Brothers Nursery, Inc. &
The Rainforest Collection®

SOUTHWEST RANCHES, FLORIDA - WESTERN BROWARD COUNTY

MARCH 2020
March 6, and 7, 8:00 a.m. - 5:00 p.m.
March 8, 9:00 a.m. - 4:00 p.m.
March 13 and 14, 8:00 a.m. - 5:00 p.m.
March 15, 9:00 a.m. - 4:00 p.m.

DON’T MISS THIS EXCITING SALE ONLY OFFERED TWICE A YEAR TO THE PUBLIC!

FEATURING A DYNAMIC TROPICAL PLANT SELECTION:
Including over 500 species of rare & exotic palms, crotons, aroids, bromeliads, cordylines, cycads, heliconias, gingers, orchids, flowering trees, shrubs & vines, tropical fruit trees & plants, unusual species and botanical oddities! Plus: Butterfly plants, deluxe & field-grown specimens, hedge materials, ground covers and a diverse selection of ornamental landscape plants!

FREE ENTRY! FREE PARKING!

Searle Brother Nursery, Inc 6640 SW 172nd Avenue
Southwest Ranches, FL 33331
Office: (954) 434-7681

Jeff Searle (954) 658-4317
palms@rainforestcollection.com
www.rainforestcollection.com

Go online to the IPS PALMTALK forum and search for “Extravaganza” topics for more information.
Dr. David Fairchild’s Frangipani Exploration in the Caribbean

By Nichole Tiernan; María Camas; Raquel Chavarria; Brett Jestrow, Ph.D.; and Javier Francisco-Ortega, Ph.D.
As the founder of the USDA program to introduce new crops in America, Dr. David Fairchild understood the global importance of plants across nations and political boundaries. His enterprises included edible plants as well as those with textile, ornamental, medicinal, religious, industrial, or gardening value.

In a recent issue of *The Tropical Garden* (volume 74, number 1, 2019), members of our research team highlighted the five-month plant-hunting trip that Dr. Fairchild led across the West Indies between 1931 and 1932. This was the first plant exploration endeavor to the region organized by the USDA, and botanists extensively surveyed the Bahamas, the Greater Antilles, the Lesser Antilles, Trinidad, Tobago, Guyana, and Suriname.

Documents and photographs from this trip indicate that the USDA targeted frangipanis during the multicountry expedition. These plants are common components of tropical gardens, and historically they spread rapidly from the tropical Americas to the rest of the world. Frangipanis belong to *Plumeria*, a genus that is placed in the Apocynaceae plant family.

**Two species of frangipanis are commonly cultivated:**

— *P. pudica*, which is found in the wilds of Panama, Colombia, and Venezuela. It has spoon-shaped leaves and persistent flowers.
— *P. rubra*, which originates in Mexico, Central America, Colombia, and Venezuela. It has large obovate leaves and displays a large variety of flower colors, ranging from yellow to pink or red.

Interestingly, the West Indies—specifically across the Bahamas and the Greater and Lesser Antilles—are where most species of *Plumeria* occur. *Plumeria* is considered taxonomically challenging in this region, with many authors disagreeing on species delimitations. In addition, many wild-growing species look similar to each other. As such, more than 55 different species names have been used to describe plants with similar-looking flowers—always white with varying shades of yellow in the center. In 1938, almost a third of these names were lumped under one species, *P. obtusa*, and no thorough revisions or analyses have occurred since. The systematic classification of the *P. obtusa* “group” is still unresolved, and we cannot rule out that some of the Caribbean morphological forms currently accommodated within *P. obtusa* represent entities that should receive separate taxonomic recognition.

We had the opportunity to research the collections, records, and photographs of frangipanis from the 1931–1932 USDA plant-hunting trip led by Dr. Fairchild. We visited several research institutions to study a variety of sources:

— Dr. Fairchild’s field collection books and photographs, which are part of the Garden Archives
— The USDA’s plant introduction logbooks
— Herbarium specimens housed at the U.S. National Herbarium, Smithsonian Institution
— The expedition journal and report of the great USDA plant explorer Howard Dorsett (1862–1943), housed at the U.S. National Archives in Maryland.
During the expedition, Dr. Fairchild and his team targeted frangipani, collecting eight germplasm accessions (seeds or cuttings) and four herbarium specimens (dried and preserved plant material) to be housed at the U.S. National Herbarium. The broad geography of these collections’ origins (their provenances) illustrates the approach that Dr. Fairchild followed as a plant hunter. One species was presented to him by the U.S. vice-consul of Cap-Haïtien, Haiti, C.F. Wood. It was labeled as *Plumeria acutifolia*, a species that is currently merged within the commonly cultivated *P. rubra*. Another accession was part of the living collections of the Botanic Garden of Grenada and was identified as *P. rubra*. Another five samples were wild-collected, and two of those samples belonged to the Caribbean island endemic *P. alba*, recognizable for its long, narrow leaves that have revolute margins, meaning their edges appear to be rolled under.

The last three samples were labeled as the aforementioned West Indies native *P. obtusa*. One of them, which came from Great Inagua, Bahamas, remains unidentified, but it is likely to belong to *P. inaguensis*, one of the species now placed into *P. obtusa*. The other two came from Beata Island, in the Dominican Republic. Both were assigned to *P. obtusa* in Dr. Fairchild’s field collection book. However, one specimen was later determined to be *P. barahonensis* when it was entered into the USDA plant introduction logbook, and changed once again to *P. beatensis* when it was incorporated into the U.S. National Herbarium. The second specimen from Beata was changed to *P. ostenfeldii* when it was housed in the National Herbarium. Further confounding this classification, during Dr. Fairchild’s visit, Beata Island was already known for having two different species of *Plumeria* (*P. beatensis* and *P. ostenfeldii*), and *P. barahonensis* is only documented from Barahona, in the Southern Dominican Republic. All three of these species were previously only known from herbarium specimens; therefore, the full extent of their range is unknown. In 1938, a few years after this expedition, these three Dominican Republic endemics were merged within *P. obtusa*. The difficulty Dr. Fairchild and his USDA colleagues experienced in identifying the species collected in Beata Island exemplifies the taxonomic confusion behind the *P. obtusa* "group."

Seeds were sampled for the eight accessions, except for those from Rum Key and Haiti, for which either young plants or cuttings were obtained. Dr. Fairchild’s original field collection book details the whereabouts of these accessions and indicates that all of them except *P. rubra* from Haiti and Granada were growing in the U.S. by 1932, within a year of their collection.

Dorsett’s expedition journal offers further insights about the plants that they collected or recorded on these islands. While Dorsett included none of the eight photos taken by Dr. Fairchild in this journal, he did include two snapshots of his own. Dorsett’s accounts refer to the frangipani plants that were found in Beata Island, Rum Key, and St. Lucia. Most of his notes are brief, except
for those about Rum Key. In the initial visit to this island, members of the expedition decided not to collect *Plumeria*, because they “did not see any ripe seed pods.” However, as the team was organizing the samples collected during the journey, they had second thoughts about the frangipani plants that were not sampled. Dorsett wrote: “During the evening conversation Dr. Fairchild expressed regret on account of our not having secured cuttings and seed of the white flowered frangipani and it was decided and arranged, as we were to lay where we were anchored during the night, that early in the morning Toy and Dorsett would make a return trip to the island to get cuttings and if possible ripe seed of frangipani.” Indeed, their perseverance as plant hunters paid off. Although they didn’t find fully developed seeds, the plants that were collected were reported as growing by July 1, 1932, likely in Washington, D.C., as Dr. Fairchild wrote in the entry of this accession in his field collection book.

The plant explorers took eight photos of frangipanis during the expedition. Two of these pictures were taken by Dorsett and the rest by Dr. Fairchild. These eight images show plants in public gardens (St. Kitts) and also growing in their natural habitats (Mayero, St. Lucia). One of them shows Dr. Fairchild’s daughter, Nancy Fairchild, holding a flowering branch of *P. obtusa* on the island of Beata. Finally, there is a snapshot showing the curator of the Botanical Station of Dominica, F. G. Harcourt, and his assistants posing with a Wardian case (a portable greenhouse) that has samples of an unidentified species of *Plumeria*.

<table>
<thead>
<tr>
<th>Island</th>
<th>Dr. Fairchild’s Field Collection Book</th>
<th>USDA Plant Introduction Logbook</th>
<th>U.S. National Herbarium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rum Key</td>
<td><em>P. obtusa</em></td>
<td><em>P. obtusa</em></td>
<td><em>P. obtusa</em></td>
</tr>
<tr>
<td>Great Inagua</td>
<td><em>P. sp.</em> &amp; possibly <em>P. inaguensis</em></td>
<td><em>P. barahonensis</em></td>
<td><em>P. beatensis</em></td>
</tr>
<tr>
<td>Beata Island</td>
<td><em>P. obtusa</em></td>
<td><em>P. obtusa</em></td>
<td><em>P. ostenfeldii</em></td>
</tr>
<tr>
<td>Haiti</td>
<td><em>P. acutifolia</em></td>
<td><em>P. acutifolia</em></td>
<td>No specimen collected</td>
</tr>
<tr>
<td>Anguilla</td>
<td><em>P. alba?</em></td>
<td><em>P. alba</em></td>
<td>No specimen collected</td>
</tr>
<tr>
<td>Mayero</td>
<td><em>P. alba</em></td>
<td><em>P. alba</em></td>
<td><em>P. alba</em></td>
</tr>
<tr>
<td>Grenada</td>
<td><em>P. rubra</em></td>
<td><em>P. rubra</em></td>
<td>No specimen collected</td>
</tr>
</tbody>
</table>
These frangipani collections were not the only ones that reached the USDA. We found that Dr. Fairchild collected two additional accessions, of *P. rubra*, in the Philippines during the *Cheng-Ho* expedition in 1940. This was the first plant exploration endeavor organized by Fairchild Garden, and it focused on the Philippines and Indonesia. We examined the USDA plant inventory records from 1898 to 1954 (the year of Dr. Fairchild’s death) and found that it received 10 other accessions of *Plumeria* (mostly identified by our team as belonging to *P. rubra*) during those years. They originated from the Hawaiian Islands (three accessions) in 1923, Cuba (Botanic Garden of Soledad, Harvard University, two accessions) in 1924 and 1933, Suriname in 1934, and Mexico (three accessions) in 1940 and 1950. The Fairchild Archives also contain eight photographs of what appears to be *P. rubra*, in the Canary Islands, Indonesia, Liberia, Panama, and the Philippines.

Our historical research demonstrates the interest Dr. Fairchild had in frangipanis as he hunted for plants in both the New World and the Old World. Our archive study also demonstrates the importance of plant collections that are well-documented and include photographs, travelogues, field collection books, and herbarium specimens. This “supplementary material” provides a needed backbone for effective plant exploration, and in our case clearly demonstrates the taxonomic complexity of *Plumeria* in the Caribbean islands. It’s been an honor to enjoy the great morphological and ecological diversity displayed by this genus in the region, with our fieldwork, in particular, greatly inspired by Dr. Fairchild’s legacy.

Nichole Tiernan, the lead author of this article, is enrolled in the Florida International University-Fairchild graduate program. Her Ph.D. research focuses on taxonomic and biological aspects of frangipanis. Read more about her frangipani findings on her blog: nicholetiernan.com.

ACKNOWLEDGEMENTS
Both Maria Camas and Raquel Chevarria are enrolled in the Florida International University (FIU) Global Learning Medallion program. Camas was sponsored by a FIU Kimberly Green Latin American and Caribbean Center-Global Learning Medallion Research Fellowship that was made possible through the center’s U.S. Department of Education National Resource Center Grant.
At the dawn of a new decade, we hope you will join us to explore hidden talents, engage your senses and feed your fascination with plants and horticulture. We are proud to offer many new opportunities for personal enrichment, learning and professional development. Whether you are interested in science and innovation, cuisine, living well, horticulture or creating a masterpiece, you will find something in the winter schedule to explore.

Don’t miss this chance to hear from the Garden’s experts and learn from our experienced instructors. Join us for a class and become part of a friendly community of learners, creators, and innovators at Fairchild.

ONLINE REGISTRATION IS NOW OPEN!

View a full description of classes and register at fairchildgarden.org/classes.

For assistance, call 305.663.8099. Please have your membership number and credit card ready. Advance registration is required and payment is due with registration. Please plan ahead, as walk-ins are not accepted. Fees cannot be transferred or prorated.

Not a member? Become a member online at fairchildgarden.org/membership.

For more information, call 305.667.1651, ext. 3373.

Refunds (less a 20% service fee) will be made for cancellations received at least seven days prior to classes and workshops. No refunds will be given for missed classes. Classes are not interchangeable. Classes may be canceled if minimum enrollment is not reached.
DRAWING THE PORTRAIT IN GRAPHITE
Carlos Gallostra
This class introduces you to a step-by-step process that facilitates capturing a portrait from the initial contour to the fully rendered form, in graphite or charcoal.
10:00 a.m. to 1:00 p.m.
Section A: Tuesdays, January 14 to March 3 (eight sessions)
Section B: Tuesdays, March 10 to April 28 (eight sessions)
Fee per section: Member, $216; Non-member, $270

SOFT PASTELS IN THE GARDEN
Dan Bondroff
Students at all levels are welcome to learn the fascinating art of pastels. Discover how to paint in soft pastel, considered by many as the purest of painting media.
1:30 to 4:30 p.m.
Tuesdays, January 14 to March 3 (eight sessions)
Fee: Member, $190; Non-member, $230

PUT YOUR PASSION ON PAPER WITH WATERCOLORS
Intermediate/Advanced
Diane Lary
Students will learn tools and techniques including the importance of leaving whites and creating shadow, selecting a color palette to create harmony and unity, and manipulating your reference materials. Basic knowledge of watercolor painting is required.
10:00 a.m. to 1:00 p.m.
Section A: Tuesdays, January 14 to March 4 (seven sessions)
Section B: Tuesdays, March 11 to April 29 (seven sessions)
Fee per section: Member, $230; Non-member, $290

ART

PUT YOUR PASSION ON PAPER WITH WATERCOLORS
Intermediate/Advanced
Diane Lary
Students will learn tools and techniques including the importance of leaving whites and creating shadow, selecting a color palette to create harmony and unity, and manipulating your reference materials. Basic knowledge of watercolor painting is required.
10:00 a.m. to 1:00 p.m.
Section A: Tuesdays, January 14 to March 4 (seven sessions)
Section B: Tuesdays, March 11 to April 29 (seven sessions)
Fee per section: Member, $230; Non-member, $290

THE ART OF PAINTING USING PALETTE KNIVES
MaiYap
In this class, you will receive basic instruction and frequent demonstrations on how to handle the different knives, mix colors, and apply various techniques. You will be using oils or water-mixable oils.
10:00 a.m. to 2:00 p.m.
Thursdays, January 16 to February 20 (five sessions)*
*No class 2/13
Fee: Member, $220; Non-Member, $275

SECTION A:
10:00 a.m. to 2:00 p.m.
Thursdays, February 27 to April 2 (four sessions)*
*No class March 5 or 12
Fee: Member, $176; Non-Member, $220

SECTION B:
10:00 a.m. to 2:00 p.m.
Thursdays, January 16 to February 28 (five sessions)
*No class 3/27
Fee per section: Member, $216; Non-member, $270

OPEN STUDIO WITH MARCELLE

Marcelle Zanetti
Artists of every level are welcome to spend Friday mornings in the studio with Marcelle. Time will be spent painting independently, with critiques at the end of every class. This class is open to students using oils, acrylics, and water-based oils.
10:00 a.m. to 2:00 p.m.
Section A: Fridays, January 31 to February 28 (five sessions)
Section B: Fridays, March 6 to April 10 (five sessions)**
*No class 3/27
Fee per section: Member, $220; Non-member, $275

PLEIN AIR IN THE GARDEN
Carlos Gallostra
Claim your ground, set up your palette, and let the beauty of our garden be your muse! This course is a must for intermediate to advanced students aiming to advance their skills and confidence in plein air rendering through works in oil paint or soft pastel. You will be able to work outside and within our studio.
10:00 a.m. to 1:00 p.m.
Wednesdays, January 15 to February 12 (five sessions)
Fee: Member, $90; Non-member, $112

THE ART OF PAINTING USING PALETTE KNIVES
MaiYap
In this class, you will receive basic instruction and frequent demonstrations on how to handle the different knives, mix colors, and apply various techniques. You will be using oils or water-mixable oils.
10:00 a.m. to 2:00 p.m.
Thursdays, January 16 to March 5 (eight sessions)
Section A: Thursdays, January 16 to March 5 (eight sessions)
Section B: Thursdays, March 19 to May 7 (eight sessions)
Fee per section: Member, $216; Non-member, $270

FROM THE GROUND UP: PAINTING THE STILL LIFE IN OIL

Carlos Gallostra
You will learn to facilitate drawing from observation, dive into theories on value and color, and apply a stronger understanding of oil painting techniques to turn the form, capture the light, and finalize a realistic record of your subject.
1:30 to 4:30 p.m.
Section A: Thursdays, January 16 to March 5 (eight sessions)
Section B: Thursdays, March 19 to May 7 (eight sessions)
Fee per section: Member, $216; Non-member, $270

ALTERED BOOKS WORKSHOP
Mila Hajjar
In this workshop, you will take a hardcover book (old, new, recycled) and cut, glue, burn, fold, paint, add to, collage, rebind, and create. You may add pockets and niches to hold tags, rocks, photos, and more.
10:00 a.m. to 1:00 p.m.
Section A: Fridays, January 31 to February 28 (five sessions)
Section B: Fridays, March 6 to April 10 (five sessions)**
*No class 3/27
Fee per section: Member, $220; Non-member, $275

PAINTING THE PORTRAIT IN OIL
Carlos Gallostra
This class introduces a step-by-step process for capturing the portrait from the initial contour to the fully rendered form in oil paint. Topics will range from ideas on value and color mixing to techniques meant to finalize the turn of form and the relationship of darkness and lights. This class is not for beginners. Students will work on independent projects and should have prior experience in both drawing and painting.
10:00 a.m. to 2:00 p.m.
Wednesdays, January 15 to February 12 (five sessions)
Fee: Member, $90; Non-member, $112

PAINTING THE PORTRAIT IN OIL
Carlos Gallostra
This class introduces a step-by-step process for capturing the portrait from the initial contour to the fully rendered form in oil paint. Topics will range from ideas on value and color mixing to techniques meant to finalize the turn of form and the relationship of darkness and lights. This class is not for beginners. Students will work on independent projects and should have prior experience in both drawing and painting.
10:00 a.m. to 2:00 p.m.
Wednesdays, January 15 to February 12 (five sessions)
Fee: Member, $90; Non-member, $112
WATERCOLORS: THE NEXT STEP
(Intermediate/Advanced)
Ricardo Aberle
This class will expand your knowledge of the various techniques. Students will work at their own pace to develop their unique, creative style. There will be optional critiques and group interaction, but the majority of the class will be spent painting and receiving one-on-one guidance from the instructor.

10:00 a.m. to 1:00 p.m.
Section A: Fridays, January 31 to February 28 (five sessions)
Section B: Fridays, March 6 to April 10 (five sessions)
Fee per section: Member, $165; Non-member, $210

MOTHER NATURE AND ME
Caroline Parker
Parents/caretakers and their little ones are invited to make memories together at Fairchild with Create Miami Art Instructors. Each class includes storytime, garden exploration and nature craft activity! Engage in social, tactile and creative fun. Bond with your little one over finger painting, confetti, and glue, and leave the cleanup to us!

Section A: 9:30 – 10:15 a.m.
Section B: 10:30 – 11:15 a.m.
Fridays, January 21 – February 25 (six sessions)
Fee: Member, $150; Non-member, $200

JOURNEY INTO THE SELF FOR HEALTH & WEALTH WITH QIGONG
Lilly Lei, M.D.
This class begins building the energetic foundation for this ancient Chinese practice for longevity, the Five Elements of Medical Qigong. Energizing and mood-elevating, qigong is naturally conducive to increased self-awareness and examination. You can practice it indoors or outdoors, and it doesn’t take much space or equipment—just you and a chair.

10:30 a.m. to noon
Fridays, January 17 to February 21 (six sessions)
Fee: Member, $150; Non-member, $200

PILATES IN THE AFTERNOON AT FAIRCHILD
Maureen O’Rourke
Pilates is a non-impact movement style that develops long, lean muscles and incorporates techniques that enhance concentration, control, centering, relaxation, and breath. This method improves postural integrity, stabilization and balance while simultaneously stretching and strengthening the muscles. You must be comfortable sitting and lying on the floor; prior to enrollment, the instructor will consult with newcomers.

4:30 to 5:30 p.m.
Thursdays, January 23 to February 27 (six sessions)
Fee: Member, $90; Non-member, $110

FENG SHUI WITH A PURPOSE—INTRODUCTORY COURSE
Lilly Lei, M.D.
Organize your home and/or office according to your life’s purpose with Feng Shui—the art and science of managing your environment (external and internal) to improve life. You’ll be introduced to a wide range of effects it offers, such as helping you find a positive energy area to support work or study, or a healing area to speed recovery from illness.

2:00 to 4:00 p.m.
Sunday, February 23 (one session)
Fee: Member, $60; Non-member, $90

LITTLE SPROUTS YOGA—MOMMY OR DADDY AND ME
Debie Lee
This baby and grownup yoga class gives adults the opportunity to gain strength and tone muscle while bonding, stretching, and playing with their babies. Grownups and little ones will enjoy breathing techniques to calm you both, gentle baby massage and stretches, asanas and stretching for grownups, sharing and more! For babies 6 weeks to 3 years old.

9:30 to 10:15 a.m.
Tuesdays, March 3 to April 7 (six sessions)
Fee: Member, $90; Non-member, $110

ART

MOMMY & ME

WELLNESS
CREATE YOUR OWN TERRARIUM - FAMILY CLASS
Debie Lee
Join master gardener Debie Lee for some family fun while creating your own gnome and fairy garden. Together, you and your child will design your own tabletop garden inspired by your imagination. All supplies to create one tabletop garden will be provided.
5:30 to 7:30 p.m. Tuesday, January 21 (one session)
Fee: Member, $30; Non-member, $40

TROPICOLOR PLANTING COMBINATIONS FOR SOUTH FLORIDA GARDENS
Carlos Somoza
Join Miami landscape designer Carlos Somoza on a journey through subtropical gardens and their stunning plant combinations, which can be used in your gardens and on your balconies. Fundamental planting design principals, including color, form, and texture, will be discussed, as will the basic culture and characteristics of the highlighted plant palettes.
6:30 to 8:30 p.m. Thursday, January 30 (one session)
Fee: Member, $30; Non-member, $40

PLANT GROWTH REGULATORS’ APPLICATION ON ORNAMENTAL PLANTS
Dr. Amir Khoddamzadeh
Learn about Plant Growth Regulators (PGRs) and their applications. Dr. Amir Khoddamzadeh, a Florida International University instructor and undergraduate director of its Earth and Environment program, will explain how to use PGRs in your home garden to improve rooting, promote uniform branching, increase floral induction, and control height.
10:00 a.m. to noon Saturday, February 1 (one session)
Fee: Member, $30; Non-member, $40

GROWING PLANTS IN CONTAINERS: THE ART AND SCIENCE OF PORTABLE HORTICULTURE
Dr. Chad Husby
Most of the plants we grow in gardens spend at least part of their life in containers. However, many aspects of growing plants in pots, from pot size and shape to the types of soil mix, watering and fertilization, are poorly understood. This course will explore and demonstrate basic insights from physics, chemistry and biology that help us to better care for our potted plants. Common myths and misconceptions of container horticulture will also be discussed.
Section A: 6:30 to 8:30 p.m. Tuesday, April 21 (one session)
Fee: Member, $30; Non-member, $40

WATER GARDENING
Dr. Brett Jestrov
This hands-on and interactive class will introduce you to the scope and nature of garden water features. You will learn how to design the perfect garden and select the right plants, and why water quality is so important. To provide inspiration and context, this class includes a tour of Fairchild’s spectacular water gardens.
Section A: 10:00 a.m. to noon Saturday, February 8 (one session)
Fee: Member, $30; Non-member, $40
Section B: 10:00 a.m. to noon Saturday, March 2 (one session)
Fee: Member, $30; Non-member, $40

GARDENING WITH HORTICULTURE
Dr. Carl Lewis
Whether you are new to orchids or have been growing them and want to learn more, you’ll enjoy discussing the orchid family with an introduction to genera, species, and their culture. You’ll learn about the best locations for growing orchids, repotting, mounting, placing them in the landscape, pests, diseases, and fertilizers.
10:30 a.m. to 12:30 p.m. Wednesdays, February 19 to March 4 (three sessions)
Fee: Member, $90; Non-member, $120

LANDSCAPING WITH ORCHIDS
Peter Kouchalakos
With proper care, you can introduce fabulous ground-growing orchids to your tropical garden or your pool patio. You’ll learn about the types of garden habitats these orchids require and what you can expect in the way of performance. A variety of orchids will be available for sale after class;
10:00 a.m. to noon Saturday, February 22 (one session)
Fee: Member, $30; Non-member, $40

THE ART AND SCIENCE OF GROWING ORCHIDS IN SOUTH FLORIDA
Dr. Sandra Schultz
Whether you are new to orchids or have been growing them and want to learn more, you’ll enjoy discussing the orchid family with an introduction to genera, species, and their culture. You’ll learn about the best locations for growing orchids, repotting, mounting, placing them in the landscape, pests, diseases, and fertilizers.
10:30 a.m. to 12:30 p.m. Wednesdays, February 19 to March 4 (three sessions)
Fee: Member, $90; Non-member, $120

THE TROPICAL GARDEN
DISCOVERING THE NATIVES ORCHIDS OF SOUTH FLORIDA
**LECTURE AND TOUR**
*Dr. Jason Downing and Jay Arce*
Through this lecture and garden tour, you’ll learn to identify Florida’s orchids and view living samples around Fairchild. You’ll see Fairchild’s orchid Micropropagation Lab and become a steward of The Million Orchid Project when you transplant an orchid in the Garden and take one home to transplant in your yard.
10:00 a.m. to noon Saturday, February 29 (one session)
Fee: Member, $30; Non-member, $40

GROWING ORCHIDS IN SOUTH FLORIDA
*Dr. Sandra Schultz*
Learn tips and techniques to successfully purchase, grow and enjoy orchids. Cultural requirements for common orchids will be addressed, with demonstrations of dividing and potting orchids, how to choose potting materials, and types of orchid pots and mounts.
6:30 to 8:30 p.m. Thursday, March 5 (one session)
Fee: Member, $30; Non-member, $40

INTRODUCTION TO BONSAI
*Ray Kincaid*
You will learn the basics of bonsai, including a brief history, basic care and maintenance, tools, styles, and the rules that govern styling a bonsai tree. You’ll also see a tree worked from its native state to create a pre-bonsai suitable for potting. Each student will receive a pre-bonsai that they will plant into a pot to take home.
1:00 to 3:00 p.m. Saturday, March 7 (one session)
Fee: Member, $30; Non-member, $40

PROPRATION 101
*Brian Harding and Sabine Wintergerst*
Discover how plant propagation plays a role in the conservation of rare, threatened, and endangered plants of South Florida and the Caribbean. Horticultural techniques and propagation methods will be demonstrated in relation to conserving our globally imperiled plants. This class takes place at Fairchild’s Nursery.
9:00 a.m. to noon Saturday, April 11 (one session)
Fee: Member, $30; Non-member, $40

BUILDING MATERIALS FOR SUBTROPICAL GARDENS
*Carlos Samosa*
Building beautiful gardens in South Florida relies heavily on choosing the right building materials and applying commonsense construction techniques. Miami landscape designer Carlos Samosa will present both natural and man-made building material alternatives, including locally quarried and imported stone, precast pavers, and tropical hardwood decking.
6:30 to 8:30 p.m. Thursday, April 16 (one session)
Fee: Member, $30; Non-member, $40

THE ART AND SCIENCE OF FERNS
*Jennifer Possley*
Combining biology lessons, horticulture, and a nature walk, this class is an introduction to South Florida’s native ferns. After all, Miami-Dade County is the No. 1 fern diversity hotspot in the continental U.S. Students will observe spore prints in the classroom and each student will receive a spore germination container and add the species of his or her choice to bring home.
1:00 to 3:00 p.m. Saturday, March 7 (one session)
Fee: Member, $30; Non-member, $40

PRUNING—HURRICANE PREPAREDNESS
*Nathaniel Cockshutt*
During hurricane season, the right tree in the right place may help protect your property from strong winds by acting as a buffer. But improperly pruning trees before a storm can increase the possibility they will break or fall more easily during the storm. In this class, you’ll learn practical tips and techniques for preparing your yard for hurricane season.
10:00 a.m. to noon Saturday, March 7 (one session)
Fee: Member, $30; Non-member, $40

INTRODUCTION TO MACHTING AND MARCOTTING
*Jorge Zaldivar*
Grafting is the age-old practice of joining plants to specific root systems to get the desirable benefits of both parts. During this hands-on workshop, participants will receive instruction in the different techniques of grafting fruit trees. Rootstock, scionwood and tools will be provided for participants to graft their own.
9:00 a.m. to noon Saturday, April 25 (one session)
Fee: Member, $30; Non-member, $40
**MEDITERRANEAN VEGETARIAN**
*Chef Amy Lubchansky*

Drawing on the rich cultural traditions of the Mediterranean, we will create a vegetarian feast. On the menu: wild mushroom crostini, fresh from the farmers market salad, a Swiss chard and leek frittata, and a rustic fruit galette for dessert.

1:00 to 4:00 p.m.  
Friday, January 17 (one session)  
Fee: Member, $55; Non-member, $70

**RAW FOOD LIVING**
*Chef Amy Lubchansky*

Make a day’s worth of raw meals, from a breakfast chia pudding to a spiralized pasta lunch, to a raw taco dinner, and a walnut cocoa brownie dessert. All feature nutrient-dense plant-based ingredients.

1:00 to 4:00 p.m.  
Sunday, February 2 (one session)  
Fee: Member, $55; Non-member, $70

**BEYOND RICE AND POTATOES**
*Chef Kira Voltz*

There are so many grains out there to explore, and all have more protein, vitamins, and minerals than rice or potatoes. You will learn about the nutritional benefits of these grains and how to prepare them in delicious side dishes or as tasty stand-alone meals.

6:00 to 9:00 p.m.  
Tuesday, February 11 (one session)  
Fee: Member, $35; Non-member, $45

**SMOOTHIES FOR THE WHOLE FAMILY**
*Chef Deanna Bossert*

Learn about wholesome and nutritious ingredients to power-pack your favorite smoothies. We’ll review some local South Florida smoothie ingredients, and you’ll gain an understanding of how to incorporate veggies, seeds, and additional products into your smoothies or bowls.

10:00 a.m. to noon  
Friday, March 20 (one session)  
Fee: Member, $55; Non-member, $70

**DESSERT FOR NON BAKERS**
*Chef Amy Lubchansky*

Intimidated by pastry and dough, but still want to make desserts from scratch? You don’t need to be a classically trained French pastry chef to create delicious desserts at home. We will make a seasonal fruit crisp, bar cookies, and a galette.

10:00 a.m. to 1:00 p.m.  
Friday, March 20 (one session)  
Fee: Member, $55; Non-member, $70

**FISH TACOS**
*Chef Kira Voltz*

Explore fresh and lively fish wraps for a quick, easy, delicious, and nutritious meal! All of the ingredients can be wrapped in your favorite flour or corn tortilla or tossed into a bowl.

6:00 to 9:00 p.m.  
Thursday, April 9 (one session)  
Fee: Member, $55; Non-member, $70
DESIGNING FOR THE FUTURE
Jordan DeWitt
Ages 13+
It’s 2020, and the future starts now! What problems still exist in the world that new technology could solve? Join us for one or more of a series of design-thinking workshops where we will use Fairchild’s Innovation Studio design software, machine controls, and materials to brainstorm, design and create concepts for new technologies.

**January 20:** Empathize and Define—Discern and state the problems you aim to solve

**January 21:** Ideate and Prototype—Challenge assumptions and create solutions to problems

**January 22:** Testing and Further Defining—Redefine or determine new problems based on tests

**January 23:** Prototype and Refine—Use what was learned from testing to create new solutions

6:00 to 8:00 p.m.
Monday, January 20 to Thursday, January 23 (four sessions)
Fee per session: Member, $20; Non-Member, $25
Fee for all four sessions: Member, $75; Non-Member, $90

3D PRINTING BASICS—SKILL BUILDER
Moonlighter Makerspace
Ages 13+
Make your ideas come to life! You’ll learn how to create three-dimensional designs optimized for 3D printing.

6:00 to 8:00 p.m.
Sunday, February 23 (one session)
Fee: Member, $40; Non-Member, $50

LEARN TO SOLDER—SKILL BUILDER
Moonlighter Makerspace
Ages 9+
This beginner electronics workshop will teach you how to solder your own LED light onto various circuit boards and perf boards. This essential skill is a good foundation for any budding hardware hacker or enthusiast.

1:00 to 3:00 p.m.
Sunday, March 22 (one session)
Fee: Member, $40; Non-Member, $50

CIRCUIT CARD CRAFTING
Jordan DeWitt
Ages 7+
Design and create an unforgettable card for your Valentine (or yourself) complete with its own LED circuit! During this workshop, you will learn basic circuitry as you create a light-up card to take home, and learn how electronic systems as simple as these are being put to use aboard the International Space Station.

6:00 to 8:00 p.m.
Thursday, February 13 (one session)
Fee: Member, $40; Non-Member, $50

CIRCUITS IN SECONDS WITH littleBits
Moonlighter Makerspace
Ages 7+
Learn how to make something light up, make a sound, move, or sense something! Using modular circuit blocks that easily snap together with magnets, you’ll learn how to quickly invent functional electronic prototypes. With the additional Lego adapters, it’s a fun way to build your ideas!

1:00 to 3:00 p.m.
Sunday, February 23 (one session)
Fee: Member, $40; Non-Member, $50

PLANTECH—BUILDING SOIL MOISTURE SENSORS
Jordan Dewitt
Ages 13+
Apply your soldering and design skills to help care for your houseplants. Through this workshop, you will create your own soil moisture monitoring system and learn how to interpret its readings.

6:00 to 8:00 p.m.
Thursday, March 19 (one session)
Fee: Member, $40; Non-Member, $50

DIY HOME BOTANY KIT
Moonlighter Makerspace
Ages 9+
This introduction to the Growing Beyond Earth Design Challenge will have you build your own home version of Fairchild’s LED plant-growing chamber. You’ll learn how to assemble the pod, solder the LED lights, and plant your edible leafy green. After, you’ll get to take it home and watch it grow!

1:00 to 3:00 p.m.
Sunday, April 9 (one session)
Fee: Member, $40; Non-Member, $50

LASER ENGRAVING BASICS—SKILL BUILDER
Moonlighter Makerspace
Ages 9+
Learn how to use design software, machine controls, and various materials to create your own custom pieces with this digital fabrication technology. At the end of the session, you get to take home your creation!

1:00 to 3:00 p.m.
Sunday, April 5 (one session)
Fee: Member, $40; Non-Member, $50

PLANTECH—PLANT POD
Jordan DeWitt
Ages 13+
Re-create your own home version of NASA’s Advanced Plant Habitat. Through this workshop, you will create your own egg-shaped terrarium perfect for succulent-type plants. You’ll use your 3D-design, circuit-building, and other making skills to customize it.

6:00 to 8:00 p.m.
Thursday, April 9 (one session)
Fee: Member, $40; Non-Member, $50
**How to Use and Master Your Interchangeable Lens DSLR (Single Lens Reflex) Camera**

*Pedro Lastra*

Take advantage of your full-featured advanced DSLR camera. This class will cover which lenses are best suited to your particular needs and how to use them, as well as basic flash and lighting techniques, different focal length lenses, basic camera functions, and the unique features of your particular camera. (Please bring your camera and manual.) The class is offered to users of Canon, Nikon, Pentax, Sony, and Leica.

6:00 to 9:00 p.m. 
Thursdays, January 16 and 23 (two sessions) 
Fee: Member, $70; Non-member, $88

**Using iPhoneography Techniques During the Golden Hour and Moonrise at Fairchild**

*Shirley Drevich*

Don’t miss this chance to experience the Garden with its stunning, glowing late-afternoon landscapes leading into a full moonrise. You’ll learn effective techniques for taking stunning photos of the winter sunset and the Gibbous moonrise using your iPhone. Students will then spend time creatively processing their images with a few choice apps.

4:00 to 7:00 p.m. 
Section A: Friday, February 7 (one session) 
Section B: Friday, March 6 (one session) 
Fee per section: Member, $36; Non-member, $45

**Sunrise—Early Morning Photography at Fairchild**

*Carlos Causo*

Students will photograph Fairchild’s spectacular landscapes, dramatically lit by the rising sun. Participants will receive instruction, tailored to their level, on photographing outdoors in the early morning natural light, as well as help selecting a subject and creating attractive compositions with your camera. In the field, instruction will be geared toward the aesthetic challenge of moving from documentation to interpretation.

7:00 a.m. to 9:00 a.m. 
Section A: Saturday, February 8 (one session) 
Section B: Saturday, March 28 (one session) 
Fee per section: Member, $36; Non-member, $45

**Full Moon: Night Photography**

*Carlos Causo*

In this one-night class, students will photograph the rise of the moon. Sturdy tripods and cameras with interchangeable lenses or point-and-shoot cameras with close-up and user-adjustable settings are strongly recommended. This class is designed for intermediate to advanced students.

5:00 to 8:00 p.m. 
Snow Moon: Sunday, February 9 (one session) 
Worm Moon: Monday, March 9 (one session) 
Pink Moon: Tuesday, April 7 (one session) 
Fee per session: Member, $36; Non-member, $45

**Using the Snapseed App on Your iPhone**

*Shirley Drevich*

With the Snapseed camera app, you can capture photos like never before without post-processing, and its new Pro Mode offers numerous lens and film combinations that can be applied after taking a photo. Students will learn how to shoot with the camera app, view samples of different lens and film combinations, and more.

1:30 to 4:30 p.m. 
Friday, February 28 (one session) 
Fee: Member, $36; Non-member, $45

**Butterfly and Small Bird Early Morning Photography**

*Pedro Lastra*

Learn to create interpretative flower images in the Garden by reviewing the best camera settings, including using shallow focus, hyperfocal techniques, and lighting techniques. In the field, you will learn how to manage the subject, use the correct approach and effectively compose the image. This class is designed for intermediate to advanced students. Current phones with telephoto lenses, such as the Apple iPhone 11 and Samsung Galaxy Note 10+, can also be used for this class.

8:00 to 11:00 a.m. 
Section A: Saturday, February 29 (one session) 
Section B: Saturday, April 11 (one session) 
Fee per section: Member, $36; Non-member, $45

**Beginners Portrait with Botanicals**

*Sean Black*

This intermediate-level course is geared towards photographers looking to switch away from auto settings, and is targeted to eco-friendly and savvy photo enthusiasts. By learning more about your DSLR camera’s manual settings, you will learn to capture what your mind’s eye envisions through spot-metering and selective focusing as you take plant portraits.

1:00 to 4:00 p.m. 
Saturday, February 8 (one session) 
Fee: Member, $36; Non-member, $45

**Artistic Flower Macro Photography**

*Pedro Lastra*

Learn the skills required to master butterfly macro photography in Wings of the Tropics, Fairchild’s butterfly conservatory. Sturdy tripods, cameras with interchangeable lenses or point-and-shoot cameras with close-up settings and user-adjustable settings, and a 90mm or longer macro are strongly recommended. Phones with telephoto lenses, such as the iPhone 11 and Samsung Galaxy Note 10+, can also be used for this class.

8:00 to 11:00 a.m. 
Saturday, February 22 (one session) 
Fee: Member, $36; Non-member, $45

**Photography**

*THE TROPICAL GARDEN | 65*
This introductory class gives novice photographers the opportunity to immerse themselves in lush flora and fauna while looking closer at the hidden beauty of our natural world. Learn the basic creative and semi-manual settings of your DSLR camera and why some photographs are just more visually appealing than others.

1:00 to 4:00 p.m.  
Saturday, March 7  
(one session)  
Fee: Member, $36;  
Non-member, $45

CREATIVE iPHONEOGRAPHY  
Shirley Drevich  
Explore ways to capture and process images with your iPhone and create stunning results using a variety of apps. Students will spend time capturing images in the Garden (weather permitting) and processing them in the classroom as they learn how to use various applications. An iPhone 6/6s or later and an active iTunes account are required.

10:00 a.m. to 1:00 p.m.  
Section A: Wednesdays, March 18 and 25  
(two sessions)  
Section B: Fridays, April 3 and 10  
(two sessions)  
Fee per section: Member, $70;  
Non-member, $90

STUDIO FLOWER AND STILL-LIFE PHOTOGRAPHY  
Carlos Causo  
Are you looking to take accurate photographs of your subjects? During this class, you’ll receive instruction on using your camera to effectively expose, focus, and compose photographs. Time spent in demonstrations will be geared towards the challenges of accurate documentation or interpretative representation.

6:00 to 9:00 p.m.  
Tuesday, March 24  
(one session)  
Fee: Member, $36;  
Non-member, $45

THROUGH THE EYE OF THE ARTIST  
Andrea Clement  
Learn how to compose a good photograph and create moods and special effects. You’ll learn about using lines and lighting in creative ways to create depth, using repetition and texture, and as other visual elements of art. You will take photographs in the Garden and a group critique will reinforce understanding of these concepts.

1:00 to 4:00 p.m.  
Sunday, April 5  
(one session)  
Fee: Member, $36;  
Non-member, $45

PHOTO EDITING  
Pedro Lastra  
As an owner of large screen iPhone, iPad 2, iPad Air or higher, you can access endless apps for photo editing and sharing. Learn how to manipulate images, add filters, and produce new works of art to share with family and friends. In preparation for this class, students will download and install Photoshop Express, Snapseed, and Filterstorm.

1:00 to 4:00 p.m.  
Thursdays, April 23 and 30  
(two sessions)  
Fee: Member, $70;  
Non-member, $90

LET NATURE BE YOUR GUIDE  
Sean Black  
This introductory class gives novice photographers the opportunity to immerse themselves in lush flora and fauna while looking closer at the hidden beauty of our natural world. Learn the basic creative and semi-manual settings of your DSLR camera and why some photographs are just more visually appealing than others.

1:00 to 4:00 p.m.  
Saturday, March 7  
(one session)  
Fee: Member, $36;  
Non-member, $45

ORCHID PHOTOGRAPHY: CAPTURING THE BEAUTIES OF FAIRCHILD’S 18TH ANNUAL INTERNATIONAL ORCHID FESTIVAL  
Carlos Causo  
Orchid and photography enthusiasts will enjoy this unique opportunity to preview and photograph Fairchild’s International Orchid Festival early in the morning, before the crowds arrive. You will learn how to photograph the orchids using artificial light to produce natural-looking photographs, as well as how to create attractive compositions. Advanced point-and-shoot cameras with pop-up flashes and macro capability or SLRs with macro lenses and external flashes are highly recommended.

8:00 to 10:00 a.m.  
Saturday, March 14  
(one session)  
Fee: Member, $36;  
Non-member, $45

ADVANCED DSLR TECHNIQUES: GETTING MORE OUT OF YOUR DSLR CAMERA  
Pedro Lastra  
This class will cover advanced functionalities of your DSLR, including when to use RAW format vs. jpg, managing white balance options, autofocus, and multiple external flashes and light modifiers. You’ll also learn the basics of using your histogram to maximize image quality and managing lens aperture and focal length. This class is for owners of Canon, Nikon, Pentax, Sony, and Leica cameras.

6:00 to 9:00 p.m.  
Thursdays, March 19 and 26  
(two sessions)  
Fee: Member, $70;  
Non-member, $90

THE INVERTED GARDEN: COLOR, STYLE & IMAGINATION  
Sean Black  
Walking alongside a professional commercial and fine art photographer and university educator, you will explore the artistic process, from developing a visual concept with a client, to capturing stylized versions of our natural world. In addition to makeshift props and gels, you’ll learn to use Adobe lightroom software to translate your otherworldly vision while retaining a superbly crafted fine-art image.

1:00 to 4:00 p.m.  
Saturday, April 11  
(one session)  
Fee: Member, $36;  
Non-member, $45
LOVE IN THE GARDEN
A JAZZY NIGHT UNDER THE STARS
WITH KITTY CARMICHAEL0

FRIDAY, FEBRUARY 14
5:30 P.M. GATES OPEN
7:00 P.M. CONCERT BEGINS

DINING OPTIONS

A LA CARTE
Bring your own dinner basket.
Sparkling wine, blankets, and limited menu items will be available for purchase.
Members: $65 per person; non-members: $80 per person

BETWEEN US
Basket and blanket for two.
Sparkling wine, dinner and dessert, premier seating for the concert, and preferred parking.
$285 per couple

FOR MORE INFORMATION, PLEASE VISIT FAIRCHILDGARDEN.ORG
INDULGE YOUR SENSES
IN PARADISE

DISCOVER AND EXPERIENCE CHOCOLATE BEYOND YOUR WILDEST DREAMS.

JOIN US FOR A CELEBRATION OF ALL THINGS CHOCOLATE

Fresh From Fairchild Marketplace
Milkshake Shoppe blended by Whip’n Dip
Cinema au Chocolat featuring “Willy Wonka and the Chocolate Factory”
Chocolate face painting • Abstract chocolate spin art
Sweets & Spirits @ The Mixology Lab
Powerhouse pastry chefs
Chocolate Science • And so much more!

FAIRCHILDGARDEN.ORG