

the TROPICAL GARDEN

NOW

Classes at Fairchild
In Every Issue

The Garden Renaissance Continues

Exploring Thailand

The Fern Glade Renewal

Using Stone in your Garden



The Shop

AT FAIRCHILD



 @ShopatFairchild

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](https://www.store.fairchildonline.com)

@FairchildGarden



FEATURES



COUNT ON STONE 22

OTHER STONES FOR YOUR GARDEN 26



EXPLORING THAILAND 34

CONTENTS

42 THE GARDEN RENAISSANCE CONTINUES

46 THE ISABEL J. FOSTER FERN GLADE

31 COMING SOON: GROWING BEYOND EARTH INNOVATION STUDIO

IN THIS ISSUE

- 4 FROM THE DIRECTOR
- 5 FROM THE EXECUTIVE EDITOR
- 6 FROM THE EDITOR
- 7 CONTRIBUTORS
- 8 CONNECT WITH FAIRCHILD
- 9 EVENTS
- 11 NEWS
- 14 VOLUNTEERS IN ACTION
- 16 IN STORE
- 19 CUISINE
- 20 WHAT TO DO IN YOUR GARDEN THIS MONTH
- 21 THE TOPICAL GARDEN: SURVIVE THE HEAT
- 41 BOOK REVIEW
- 51 ARCHIVES
- 55 BEHIND THE SCENES
- 57 CLASSES AT FAIRCHILD—NEW!

FROM THE DIRECTOR



 @CarlLewis

A major hurricane ripped through Miami in 1945, seven years after the Garden opened. Amidst the fallen trees and debris, Dr. David Fairchild saw opportunity, a chance to clear away established plants in favor of new introductions. Dangerous and destructive as they are, storms create space for newly available plants and fresh ideas.

Although it barely registered as a hurricane in our region, last year Hurricane Irma caused more than \$2 million in damage to Garden infrastructure and collections. As we repair our buildings and roadways, we are also planting massive numbers of new plants. Specimens that had been growing in our nursery during the past several years are now finding homes in the Garden. In the spirit of Dr. Fairchild, we see this as an opportunity to increase the value of our collection.

Irma hit our Arboretum hardest, but it toppled trees throughout the Garden—including in the Richard H. Simons Rainforest, along the mulch path and in the Michaux Bahamas Collection. The storm completely destroyed 176 trees and palms, while 740 additional specimens were severely damaged. Nat Cockshutt, Fairchild's arborist, and Dr. Brett Jestrow, our director of collections, kept detailed records of all damaged plants. Knowing what was lost, we can ensure that the new plantings are of greater value than what we had before.

We assess the value of Fairchild's living plant collection using the goals outlined in our Collection Management Policy. These include displaying the widest possible diversity of plant life and growing specimens that support our education, science and conservation programs. New, untested plants have special value, as they represent new horticultural and programmatic opportunities.

To increase diversity and support scientific research, we are adding plant families and genera that we have never grown before. Many are from recent trips to Southeast Asia, one of the world's most biodiverse regions and a favorite of Dr. Fairchild's. We add plants that are useful for our education programs, including species with special structural, ecological or ethnobotanical significance. Additionally, we support international conservation efforts by growing and distributing plants that are rare or threatened in the wild.

As our plantings become even more valuable, we are adopting new and improved systems for managing our collections. The old, hand-drawn maps are finally being replaced by digital maps, which are much easier to access and update. We are removing weedy plants from our landscape more aggressively. Volunteers are playing a larger role in planting and maintaining our collections.

Less than a year after Irma, I am amazed to see how quickly our Garden is improving. Our members tell me that they see the difference. The scars of Irma are becoming less conspicuous as new plantings fill the gaps and add new richness.

Fairchild is now in the midst of a fantastic growing season. Now more than ever, our landscapes are undergoing significant changes on a daily basis. I hope you can visit often and experience the transformation.

Best regards,

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

Carl E. Lewis, Ph.D.
Director



 @ZapataNannette

We are T-Minus 15 years or so from humans walking on Mars. Think about that for just a second: Plants and people will no longer be bound to Earth's gravity as we hurl toward our nearest neighbor. The trip to Mars is predicted to take upwards of nine months—in many ways symbolizing a kind of rebirth for humankind.

Traveling nearly 34 million miles to Mars for so long a time seems daunting, unfathomable to me, in fact—especially since I complain about flying five hours to the west coast! But if you stop to think about it, is this latest exploration within our solar system any different from previous explorations humans have undertaken (aside from the rockets, zero gravity and different planets)?

The course of humankind has been determined by humans' desire "to boldly go where no one has gone before." It's this desire for exploration that has defined our species over any other.

Think about ancient humans traveling from Africa to Asia, often walking for years before settling down. Or the early Polynesians who traveled by canoe for months without the aid of maps, GPS or instruments. Or even the early American settlers who braved terrible conditions in the North Atlantic and in new frontiers. Or the brave astronauts of the Mercury and Apollo missions, who sat in spaces smaller than an airline seat to take a spin around the Earth or moon, or to take "one small step" on the moon's powdery flesh. Or explorers like Charles Darwin, and Dr. David Fairchild—who spent years traveling the world on behalf of science and botany, looking for a better understanding of ourselves and our relationship to all things.

So what does Mars have to do with Fairchild, you ask? The answer is simple: everything! Because humans need plants to survive.

When the Orion spacecraft leaves Earth for Mars, it will have everything humans need to survive the trip and the planet's surface conditions—including edible plants. And that's why the work that we're doing here at Fairchild is so important. For the past three years, we have worked with NASA on Growing Beyond Earth, a student-based science project that is helping NASA select edible plants for the journey to and stay on Mars. These students' work today will determine our species' survival on the Red Planet during the next 20 to 40 years.

On June 29, the first two plants, from the Growing Beyond Earth program, 'Dragoon' lettuce and 'Extra Dwarf' pak choi, took off from Pad 40 at Kennedy Space Center aboard the SpaceX CRS-15. They are now growing on the International Space Station, where they will eventually be harvested and eaten.

This is why your support of Fairchild is so critical: The work we're doing today will not only help humankind survive on distant planets—it engages students in meaningful and real science right now, the results of which are already yielding edible crops on the International Space Station.

Warm regards,

Nannette M. Zapata, M.S./MBA
Chief Operating Officer

FROM THE EDITOR



[@TropGardenMag](#)
[@KennethSetzer](#)

Much in the way that the Garden itself is changing and evolving while still adhering to our founders' guidelines, *The Tropical Garden* magazine is getting a facelift of sorts.

After Hurricane Irma struck the Garden in 2017, much of what was destroyed and subsequently cleared opened up a blank canvas; our staff has not hesitated to fill in the newly opened areas with plants growing in our nursery and collected from abroad. We believe this is a good time to start fresh in some ways with other aspects of the Garden, including in no small part the magazine now in your hands (or on your screen), your magazine.

Since you are our audience, we want to know what you want to see more of, and less of. That is why I invite you to write me at ksetzer@fairchildgarden.org with questions and comments about the contents of *The Tropical Garden*. We're open to ideas and we are listening. From specific topics to general thoughts, I want to hear from you.

Also in this issue, you will find a survey to help us refine the magazine further. Please take a few minutes to fill it out and send it in. We very much appreciate it.

In future issues we also plan to include reader letters and questions on botany, horticulture, gardening or topics related to the Garden and your garden. If you'd like to contribute, please send your letters to my email, above, or to:

Fairchild Tropical Botanic Garden
Attn: Kenneth Setzer
10901 Old Cutler Road
Coral Gables, Florida 33156

As a work in progress, some new ideas might work, while others may not. And though you may notice only a few changes in this issue (like including our very popular Classes at Fairchild), down the road look for more changes, novel content and more reader interaction. Ultimately, I believe you'll get even more out of these pages and the community we offer.

Please come along with us as the Garden and *The Tropical Garden* grow. I look forward to hearing from you.

Sincerely,

A handwritten signature in black ink that reads "Ken Setzer".

Kenneth R. Setzer, M.A.
Writer and Editor



Jamie Anderson coordinates the BioTECH magnet school program, a growing partnership between Fairchild and Miami-Dade County Public Schools. Jamie has spent the past few years working in the field of marine science. She is thrilled to join the Fairchild team and share her knowledge of South Florida ecosystems with students.



Dr. Chad Husby is a botanical horticulturist. His work focuses on introducing new plants to the Garden as well as evaluating new introductions for horticulture and making the most promising ones available to the public.



Dr. Brett Jestrow is director of collections. He specializes in the flora of the Caribbean region, and is passionate about growing the world's tropical plants. Currently, he is researching the genetics of Caribbean palms as well as bringing taxonomic diversity to the living collections of the Garden.



James Lange is a field botanist on Fairchild's Conservation Team. He grew up in Broward County, and now spends time in the region's natural areas as much as possible. His research interests include biogeography, *ex-situ* conservation, rare species reintroductions, weed management and restoration science.



Mary Neustein has been the manager of continuing adult education programs for over 24 years. She has created many classes that connect talented Fairchild staff, local horticulturists, artists, chefs and photographers to our members and the local community.



Amy Padolf is director of education, where she oversees national and international multidisciplinary environmental science education programs for pre-kindergarten through post graduate studies, as well as teacher professional development and adult education.



Jennifer Possley is Conservation Team leader and field biologist, and has been a member of Fairchild's native plant Conservation Team for over 17 years, during which she has developed an affinity for ferns and a passion for pine rocklands.



Isabel Sanchez is director of volunteer services, promoting and enhancing the Garden's volunteer program. She also leads the new Conservation Student Scholar volunteer program, which engages our youth in community volunteerism while adding to the visitor experience.



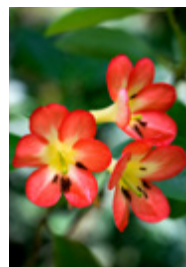
Kenneth Setzer is the Garden's editor and writer, focusing on increasing awareness of Fairchild's important work in preserving biodiversity and increasing appreciation for the natural world, particularly tropical botany and horticulture.



Marianne Swan is an Archives volunteer, and for almost 14 years has worked to preserve the photographic and written legacy of Dr. David Fairchild. She has provided assistance to Fairchild staff as well as researchers and authors seeking archival information.



Georgia Tasker is a Garden writer, gardens ferociously, and is particularly enamored with big-leafed 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.



ON THE COVER

Rhododendron 'Wild Child,' one of many new plants at Fairchild.

Photo by Chad Husby/FTBG

CONNECT

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)

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.

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 www.fairchildgarden.org/blog

DONATE TO FAIRCHILD

Inquiries: 305.667.1651, ext. 3351
donate@fairchildgarden.org
www.fairchildgarden.org/give or text 41444 to donate

BECOME A MEMBER OR RENEW YOUR MEMBERSHIP

Become a member and enjoy Garden benefits all year long.
Inquiries: 305.667.1651, ext. 3373
membership@fairchildgarden.org
www.fairchildgarden.org/membership

VOLUNTEER

Inquiries: 305.667.1651, ext. 3324
volunteer@fairchildgarden.org
www.fairchildgarden.org/volunteer

EVENTS AND PRIVATE RENTALS

Interested in having your event at Fairchild?
Inquiries: 305.667.1651, ext. 3358
specialevents@fairchildgarden.org
www.fairchildgarden.org/specialevents

SHOP AT FAIRCHILD

Visit The Shop at Fairchild for a large selection of unique items.
Inquiries: 305.667.1651, ext. 3305
Shop hours: 9:00 a.m. – 5:30 p.m.
store.fairchildonline.com

FOLLOW US

www.fairchildgarden.org
[@FairchildGarden](https://www.instagram.com/FairchildGarden)



the TROPICAL GARDEN

The official publication of
Fairchild Tropical Botanic Garden

EDITORIAL STAFF

**EXECUTIVE EDITOR/
CHIEF OPERATING OFFICER**
Nannette M. Zapata, M.S./MBA

EDITOR

Kenneth Setzer

DESIGN

Lorena Alban

FEATURE WRITERS

Georgia Tasker
Kenneth Setzer

CONTRIBUTORS

Jamie Anderson
Chad Husby, Ph.D.
Brett Jestrow, Ph.D.
James Lange
Mary Neustein
Amy Padolf
Jennifer Possley
Isabel Sanchez
Marianne Swan

COPY EDITOR

Rochelle Broder-Singer

ADVERTISING INFORMATION

Maureen Tan
mtan@fairchildgarden.org

PREVIOUS EDITORS

Marjory Stoneman Douglas 1945-50
Lucita Wait 1950-56
Nixon Smiley 1956-63
Lucita Wait 1963-77
Ann Prospero 1977-86
Karen Nagle 1986-91
Nicholas Cockshutt 1991-95
Susan Knorr 1995-2004
Nannette M. Zapata 2005 - Present

The Tropical Garden Volume 73, Number 2, 2018. *The Tropical Garden* is published triannually. Subscription is included in membership dues. © FTBG 2018, ISSN 2156-0501

All rights reserved. No part of this publication may be reproduced without permission.



Accredited by the American Alliance of Museums, Fairchild Tropical Botanic Garden is supported by contributions from members and friends, and in part by the State of Florida, Department of State, Division of Cultural Affairs, the Florida Council on Arts and Culture, the John D. and Catherine T. MacArthur Foundation, the National Endowment for the Arts, the Institute of Museum and Library Services, the Miami-Dade County Tourist Development Council, the Miami-Dade County Department of Cultural Affairs and the Cultural Affairs Council, the Miami-Dade County Mayor and Board of County Commissioners and with the support of the City of Coral Gables.

FAIRCHILD BOARD OF TRUSTEES

Bruce W. Greer
President

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

Charles P. Sacher, Esq.
Vice President

Suzanne Steinberg
Vice President

Jennifer Stearns Buttrick, Esq.
Vice President

L. Jeanne Aragon
Vice President & Assistant Secretary

Joyce J. Burns
Secretary

Leonard L. Abess
Alejandro J. Aguirre
Anne Baddour
Nancy Batchelor
Norman J. Benford, Esq.
Faith F. Bishock
Bruce E. Clinton
Martha O. Clinton
Swanee DiMare
José R. Garrigó
Kenneth R. Graves
Willis D. Harding
Patricia M. Herbert
Robert M. Kramer, Esq.
James Kushlan, Ph.D.
Lin L. Lougheed, Ph.D.
Tanya Masi
Bruce C. Matheson
Peter R. McQuillan
Fernando Mejia
David W. Moore
Larry Pimentel
John K. Shubin, Esq.
Janá Sigars-Malina, Esq.
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./MBA
Chief Operating Officer

September through December, 2018

View our full calendar of events at www.fairchildgarden.org/events



PLANT SALES

Aroid Society Show and Sale

Saturday and Sunday
September 15 and 16
9:30 a.m. – 4:30 p.m.

80th Members' Day Plant Sale

Saturday, October 6
9:30 a.m. – 4:30 p.m.



Museum Day

Saturday, September 22
A partnership with the
Smithsonian Institution
Free admission
9:30 a.m. – 4:30 p.m.



Bird & Wildlife Weekend

Saturday and Sunday
October 27 and 28
9:30 a.m. – 4:30 p.m.



Trunk & Treat

Sunday, October 28
9:30 a.m. – 4:30 p.m.



Fall Garden Festival, Featuring the 78th Annual Ramble

Friday through Sunday
November 9, 10 & 11
9:30 a.m. – 4:30 p.m.



Howl-o-Ween

Wednesday, October 31
9:30 a.m. – 4:30 p.m.



WORKSHOPS

Plant ID Workshop

First Friday of each month.
September 7, October 5, November 2,
December 7, January 4
1:00 – 3:00 p.m.
Bring an unknown plant or plants to Fairchild's Herbarium for identification by our botanists. The workshops are free of charge.



SALES AT THE SHOP AT FAIRCHILD

Extra savings for members

Thursday through Sunday
November 22 - 25
9:00 a.m. – 5:30 p.m.

TOURS 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 2018 through June 2019
(Upon volunteer availability)

Discovering the Tropics
10:15 a.m., 11:15 a.m.,
1:15 p.m. and 2:15 p.m.

Exploring the Rainforest
Fridays
12:15 p.m.

Palmetum: Walk & Talk
Saturdays
1:15 – 2:00 p.m.

Fairchild History: Walk & Talk
Saturdays and Sundays
1:15 – 2:00 p.m.

ONGOING TOURS (YEAR-ROUND)

Plants that will bring Butterflies and Birds to your Yard
Saturdays
10:15 – 11:00 a.m.

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

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

EARLY BIRD WALKS

September 29 through December 9
Saturday and Sunday
7:30 – 9:30 a.m.

SOUTH FLORIDA BUTTERFLY GARDENING DISCOVERY CART

September 8 through December 9
Every second and fourth weekend of the month
10:30 a.m. – 1:30 p.m.

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



Participants in the first Keys Terrestrial Adaptation Workshop.
Photo by Logan Benedict/FWC

Helping Keys Plants Adapt to Sea Level Rise

Conservation Team member Jimmy Lange is helping create strategies for the adaptation and conservation of flora and fauna endemic to the Florida Keys as the area faces sea level rise. In June, he traveled to Orlando to participate in the third Keys Terrestrial Adaptation Workshop. The series of workshops is co-hosted by the Florida Fish and Wildlife Conservation Commission, the U.S. Fish & Wildlife Service, the National Park Service, The Nature Conservancy, the National Wildlife Federation and the Wildlife Conservation Society.

The first two Keys Terrestrial Adaptation Workshops identified species-specific predicted impacts at various sea level rise scenarios and developed proposed adaptation actions for each species. The June workshop focused on identifying barriers and other considerations that may prevent agencies, conservation biologists and land managers from implementing the proposed actions. Lange joined biologists, government officials, psychologists, legal professionals and others to ensure a nuanced, multidisciplinary approach to this difficult issue.

These workshops, while addressing issues specific to the Florida Keys, also serve as a framework for similar work, both nationally and globally. As more areas throughout the world are faced with new challenges related to climate change, many conservation strategies will shift from a model of persistence to one of adaptation and change, much like these workshops' model.



Students from Jose Marti MAST 6-12 Academy presented their research at the annual Florida Native Plant Society Conference in Miami.
Photo by Jimmy Lange/FTBG

Strong Showing From Fairchild at the Annual Florida Native Plant Society Conference

Fairchild scientists and students participated in the Florida Native Plant Society's annual statewide conference, held at the Miccosukee Resort in Miami. Fairchild's Conservation Team biologists, Jimmy Lange and Jennifer Possley, led four rainy-but-fun field trips in Broward and Miami-Dade Counties. During the conference's two days of lectures, Dr. Jason Downing, Fairchild's orchid biologist, gave an overview of The Million Orchid Project; Dr. Hong Liu, Florida International University-Fairchild research ecologist, spoke about reintroductions of Florida orchids; and Lange and Possley co-presented about the effects of Hurricane Irma on South Florida's rarest plant populations.

The conference also had an excellent student session, thanks in large part to Fairchild's collaborations with Jose Marti MAST 6-12 Academy in Hialeah and BioTECH @ Richmond Heights 9-12. Eleven local high school students held their own with botanists and land managers from across the state, presenting research on seed storage and horticulture methods for South Florida's rare native plants.

The Florida Native Plant Society promotes the conservation and restoration of Florida's native plants. To learn more, visit www.fnps.org.



Brian Harding took this group photo with his excellent team of nursery volunteers after a morning of hard work.

Horticulturist Brian Harding Joins Fairchild's Conservation Team

In April, Fairchild's Conservation Team welcomed a new horticulturist, Brian Harding. He is from the Atlanta area, and has experience in commercial horticulture, botanic gardens and the native plant communities of Georgia. Since joining the team, Harding has been busy improving the health of our long-term Center for Plant Conservation collections, vastly expanding the palette of pine rockland plants available to members of Fairchild's Connect to Protect Network, joining Jennifer Possley and Jimmy Lange in the field for rare plant monitoring, collecting wild and garden seed, running several different nursery experiments, and revamping the Isabel Foster Fern Glade. He has accomplished so much in a short time thanks in part to a large group of capable volunteers. Working at Fairchild has long been a dream of Harding's; we expect members and volunteers will be seeing more of him in the future!



Fairchild Welcomes a New Plant Records Manager

In early June, the Garden welcomed a much-needed plant records manager. Yisu Santamarina joined the staff after completing her degree in biology from Florida International University, where one of her instructors, Dr. Brett Jestrow (also Fairchild's director of collections), recognized her qualifications for the demanding task of recording and updating the status of every plot in the Garden. In addition to tracking all our plants—many of which were destroyed or removed due to Hurricane Irma—Santamarina takes part in #PlantingMondays, when new plants (more than 1,000 so far) are introduced to the Garden. She will also oversee Fairchild's massive plant database, which is transitioning to a new system this summer. We look forward to the valuable contributions Santamarina will make to Fairchild.

Graduate Students Perform Field Work in Cuba

Florida International University Ph.D. candidates Haydee Borrero (major advisor Dr. Hong Liu) and Nichole Tiernan (major advisor Dr. Javier Francisco-Ortega) recently continued their dissertation research with field work in Cuba. Dr. Ramona Oviedo-Prieto and Julio Montes de Oca at the Instituto de Ecología y Sistemática (Institute of Ecology and Systematics) in Havana hosted their trip. The team visited the western part of Cuba, including the living collection and herbarium at El Jardín Botánico de Pinar del Río (Pinar del Río Botanical Garden), Milcumbres Biological Research Station (a protected area in La Palma), Pinar del Río—Viñales, Cajalbana, Ceiba Mocha and localities in the Guanahacabibes Peninsula.

Tiernan studies the taxonomy and systematics of Caribbean-occurring *Plumeria*, commonly known as frangipani. Although several species of *Plumeria* are common to tropical gardens, little is known about many of the wild-growing species endemic to the Caribbean Islands. Tiernan presented her preliminary work on *Plumeria* to the botanical community at Quinta de Los Molinas, a historic botanical garden in Havana.

Borrero studies the tropical orchid *Trichocentrum undulatum* (mule ear orchid), which is found in both southern Florida and Cuba. She compares habitat types, herbivores and overall population health between countries. This trip was funded by three grants: the Botany in Action Fellowship through Phipps Conservatory and Botanical Garden, a student travel grant through the American Society of Plant Taxonomy and the Judith Parker Travel Scholarship through Florida International University.



(L-R) Team participants Dr. Ramona Oviedo-Prieto, Julio Montes de Oca, Haydee Borrero and Nichole Tiernan in the Cajalbana protected area in Pinar del Río.



Screenshot from the live conversation between Fairchild and the International Space Station astronauts.

“Station, this is Fairchild Tropical Botanic Garden. How do you hear me?”

On Wednesday, April 25, nearly 300 local high school students heard these opening words and had the rare opportunity to participate in a live question-and-answer session with astronauts Ricky Arnold and Drew Feustal aboard the International Space Station (ISS).

This once-in-a-lifetime experience allowed Miami-Dade students to ask the astronauts about life aboard the station, current scientific research in space and future deep-space exploration. The in-flight live video was the result of NASA’s growing partnership with Fairchild, which provides extensive resources and opportunities for students and teachers involved in Fairchild’s Growing Beyond Earth program.

Growing Beyond Earth is a unique partnership between Fairchild and Kennedy Space Center. It began in May of 2015, and helps further NASA’s plant-based research through the Garden’s large network of STEM-minded students and

teachers working on The Fairchild Challenge. Growing Beyond Earth was specifically designed to test and expand crop options for growing in space.

For 300 high schoolers, April’s in-flight question-and-answer experience connected their experimental work in the classroom to what’s currently being done on the ISS and served as an authentic extension into real-world research. The students’ carefully-thought-out questions to Arnold and Feustal included: “If you could grow any plant on the ISS, what would it be?,” “How do scientists on the ground help you do science on ISS?,” and “What technical problems have you ever had to troubleshoot?”*

Armed with the astronauts’ answers and inspired by the experience, these students are prepared to continue the research necessary for growing food in space. Long-term space missions will heavily rely on the ability to grow food, and Fairchild is utilizing student-driven data to help NASA scientists advance their knowledge of the types of plants that might one day support journeys to Mars and beyond.

Read more about growing plants for space travel at www.fairchildgarden.org/GBE

*Curious about the astronauts’ answers? Watch the video at www.fairchildgarden.org/ISS-Fairchild



The Legacy of Garden Volunteers from the 70s & 80s

By Isabel Sanchez | Photos: Archives/FTBG

In the 1970s, the *Fairchild Bulletin* publication began featuring individual volunteer efforts under the headline Volunteer Profiles. This was an effort to recognize the volunteers' selfless commitment to and efforts for the Garden.

The Garden volunteers have always inspired us with the time and energy they spend helping Fairchild succeed. Stories in the *Bulletin* from that decade show just how successful the volunteers' efforts were. One article noted that the volunteer-led guided walking tours of the Garden had become so popular that the program was expanded with additional trained guides and enhanced training. These tours were offered at no additional cost for members and lasted about two hours.

The walking tours were developed largely because of the passion and determination of volunteer Bertram Zuckerman, who patiently walked the Garden while observing and taking notes. After several months of research, he wrote the "Walking Tour Guide." Zuckerman was also actively involved in coordinating volunteers and was a member of the steering committee that established the Friends of Fairchild volunteer group. His very first involvement with the Garden, the *Bulletin* shared, dated back to 1953, when he saw Dr. David Fairchild leaning against the Vine Pergola. Zuckerman eventually became the Garden's historian and in 1988 published "The Dream Lives On: A History of the Fairchild Tropical Garden, 1938-1988."



PREVIOUS PAGE
Mary Ross Rathbun in
the Herbarium, 1984.

RIGHT (L-R)
Bert Zuckerman taking
a walk through the
Garden, April 1984.


Tour guide Rita Perlman
with a group of fifth
graders in the Rare
Plant House.
Photo by Barbara Smith.



The *Bulletin* also shared stories of other volunteers during the 1970s and 1980s. Roberta Lurie was an active horticulture volunteer whose dedication to maintaining the Garden’s beauty was appreciated. Like Zuckerman, she was a member of the steering committee that established the Friends of Fairchild. The group’s purpose was to organize the various volunteers who were actively working in the Garden. Open to all volunteers, Friends of Fairchild also held monthly meetings with guest speakers. The volunteers learned about plants and local natural history. The meetings were also a great opportunity to meet new people and share knowledge and common interests. They also planned field trips. Today the Friends of Fairchild is open to all volunteers who give or commit to giving a minimum of 30 hours of service to the Garden each year. There are monthly meetings, annual field trips and social events.

Another *Bulletin* story talked about Marge Corbin, one of the first volunteers in the Garden. Corbin became active on the Fairchild Board of Trustees while her husband, Jack, served as president of the Garden. A true philanthropist, she donated funds to construct a much-needed education building, which was named the Corbin Education Building in memory of her late husband. This building is the base for Education Department staff and includes two classrooms that are used for education programming and meetings. Marge Corbin was also a hands-on volunteer and was involved with The Ramble’s preparation of volunteers. She also volunteered for Members’ Day events as a cashier.

Throughout the Garden’s history, our volunteers have been innovators as well as creators. In another *Bulletin* article, we read of Rita Perlman and Sue Steinberg, two volunteers with a vision to develop an educational tour for children. In 1979, after learning about the lack of educational opportunities available for fifth-grade students outside the classroom, they worked year-round to create a program called “Students Day at Fairchild Tropical Garden.” They conferred with science teachers and the science consultant for Miami-Dade County Schools, developed field trip pre-planning guides for the teachers and trained volunteers as tour guides. The program successfully launched in January 1980. According to the *Bulletin*, Perlman’s and Steinberg’s goal for Students’ Day was for students to learn more about plants and why we need them; learn to see a plant: the different kinds of bark on trees, many shapes of leaves, the colors, the sizes, and all the details that are there for you to ‘see’; enjoy being here in this beautiful place and want to return with your family and friends; become interested in all of our natural world.” These amazing volunteers used their educational and botanical backgrounds to set in motion the creation of a program for school children.

Our volunteers from decades past certainly formed the roots of today’s Garden. It’s realistic to say that we wouldn’t have a Garden without them. 

Learn what volunteers at Fairchild do, and how to become one yourself, at: www.fairchildgarden.org/volunteer

Gear up for Fall Gardening

 @TheShopatFairchild

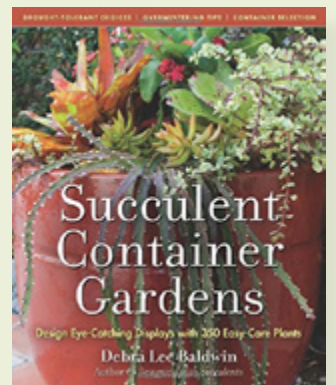
1



4



5



8



9



2



3



6



7



10




11



1. Felco 8 Pruner \$79.99 | Member \$72
2. Gardener's Log Book \$16.99 | Member \$15.30
3. Mosquito Repellent Woven Wristband \$5.99 | Member \$5.40
4. Butterfly Apron with Dibble \$29.99 | Member \$27
5. Succulent Container Gardens Book \$29.95 | Member \$26.96
6. Pot Hanger \$6.50 | Member \$5.85
7. Tapestry Garden Book \$34.95 | Member \$31.46
8. Hummingbirds in Flight Pot \$19.99 | Sale \$10
9. Gauntlet Foxgloves \$39.95 | Member \$35.96
10. Garden Visor \$29.95 | Member \$26.96
11. Green Songbird Bird Feeder \$14.95 | Member \$13.46

See more at store.fairchildonline.com



Everything you love about South Florida is happening at Fairchild

RENEW AND ENJOY ALL THE BENEFITS OF YOUR **FAIRCHILD MEMBERSHIP**:




Free access every day, including festivals like the
Chocolate Festival, Orchid Festival,
Mango Festival 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

@FairchildGarden




Cuisine d' *Hurricane*

By Mary Neustein

When I was asked to write an article about hurricane cuisine, my thoughts reflected back to Hurricane Irma's blow to South Florida and venturing out to find any restaurant or fast food chain open to get a "hot" meal. Even though we had canned provisions, I wanted a hot cooked meal after spending hours on debris cleanup in my garden.

During hurricane season, your pantry should be stocked with canned goods such as tuna, salmon, various kinds of beans, unsweetened canned fruit, peanut butter, boxed milk/cream (soy or almond), dried fruits, nuts, applesauce and non-refrigerated pudding cups.

Here's a simple dish that you can prepare from items you have in your pantry, with a simple burner. Something that comes in handy, and which I have in my hurricane supplies, is a chef's cassette burner (sold at big box stores for around \$20) and extra canisters of fuel. It's a lifesaver when there is no electricity, allowing you to prepare many items that are in your refrigerator before they go to waste.

After Hurricane Irma, I used the cassette burner to prepare simple dishes that would otherwise require a stove to cook. I wish everyone a quiet hurricane season. 



Hurricane Curry in a *Hurry*

- 1 can of sliced carrots—drain and reserve liquid
- 1 can or package of peas and onions
- 1 can of cream of coconut lite milk
- 1 can of chickpeas
- 1 cup of instant mashed potato flakes
- 1/3 cup coarsely chopped cashews or almonds
- 1 tablespoon curry powder
- 1 tablespoon garlic powder
- Pinch of red pepper flakes

- 1.** Bring 1 cup of water to a slow boil in a large, heavy pot. Slowly stir in potato flakes, curry, garlic powder and pepper flakes.
- 2.** Add drained canned carrots, peas and onions and stir for a few minutes.
- 3.** Add nuts and slowly add lite coconut milk to taste. At this time, you can add more curry powder to your taste.
- 4.** Add chickpeas and simmer until creamy and warmed through.

To make a heartier dish, add more vegetables—such as canned green beans or lentils or fresh zucchini or squash from the fridge that is still usable.

If your sauce is too thick, use the reserved liquid from the canned carrots to thin it.

Yield: about 4 servings.





WHAT TO DO IN YOUR GARDEN THIS MONTH

By Kenneth Setzer

Summer's nearly over. In South Florida, gardening season begins in the fall! Here's a **checklist to keep your garden in good shape** for the coming months.

SEPTEMBER


- > **Prep for storms and hurricanes** by removing large plant debris like branches or coconuts
- > Have your **trees storm-pruned** by a certified arborist
- > **Plant grass** if needed
- > **Transplant shrubs** and bushes if necessary
- > **Pull weeds** brought on by the month's usually wet weather
- > **Check plants for scale** insects
- > **Fertilize young trees** needing a push
- > **Pick guavas**
- > **Pick 'Keitt' mangos**, which are still fruiting
- > Try solarizing a plot of your garden to **kill soil pests**
- > **Start seeds of vegetables and herbs** like basil, thyme, peppers, chard, kale, tomatoes, pole beans, squash, radish, parsley and mint
- > **Avoid planting anything intolerant of damp soil**

OCTOBER

- > **Protect tomatoes** (in pots) from excess rain
- > **Prep in-ground garden beds** (weed, grade, fertilize)
- > **Build raised beds** to control soil quality
- > **Fertilize plants** as needed

- > If **vegetable seedlings** you started in September are ready, **transplant**
- > **Buy larger seedlings of herbs, vegetables and ornamentals** to plant towards the end of the month
- > **Plant strawberries** towards the end of the month
- > **Avoid planting anything intolerant of damp soil**

NOVEMBER

- > **Plant seedlings** of nearly any familiar herb, vegetable or flowering ornamental (see September)
- > If you've not started seeds yourself, buy and **plant seedlings** of herbs, vegetables and ornamentals
- > **Pick radishes** before they get big and bitter
- > **Watch tomatoes** for hornworms, scale and too much water
- > All new plants should be coming along, but **watch for scale, thrips, and mealybugs**
- > **Plant a butterfly/hummingbird garden**
- > **Refill bird feeders** for the migration and enjoy the show 

See more home gardening tips, tricks and hurricane preparedness at www.fairchildgarden.org/home-gardening

Survive the Heat

How plants and gardeners can deal with rising temperatures

By Kenneth Setzer

We're accustomed to thinking of freezing temps as deadly to many plants, but extreme heat is just as dangerous. With temperatures rising around the globe, what can gardeners and plant lovers do to protect our plants from high heat?

Signs of heat stress include wilt, leaf margins that are brown and crisp, and dropping of flowers. Some basic steps you can take to protect your plants from heat stress include:

Proper Watering

Watering seems obvious, but only in early morning or early evening. Midday watering will result in much of the water evaporating before enough can penetrate to the plants' roots, particularly if it needs to first penetrate a layer of mulch. Besides, who wants to stand outside under intense sun on a midsummer day holding a hose for an hour? Ideally, a soaker hose should be used to provide deep penetration of water over a longer period, rather than a quick spray from the hose. New plantings and those in pots may require more frequent watering.

Insulation—Mulch, Mulch, Mulch

It seems counterintuitive, like wearing a coat at the beach, but a layer of mulch can insulate and protect plant roots from high heat just as it does from cold. I use leaves that have accumulated in other parts of the yard. Store-bought mulch is fine, too, and can create a thicker layer.

Insulation also means your plants will need less watering, as the inches of mulch help block soil moisture from simply evaporating. But remember, intense summer rains may have already saturated the deeper soil level, and if you water based simply on the drier soil surface, you might create conditions for root rot.

Shade

In extreme heat, many plants will not flower or fruit. Smaller edibles like peppers, beans and the like are best grown in deep pots that you can move to avoid the worst of the sun. If they're in-ground and not covering too much area, patio umbrellas can provide shade. Pre-made row covers are available, but in a pinch, you can use a light fabric sheet supported over the plants. It's a tough balancing act, because much of what we grow for fruit and vegetables needs at least six hours of direct sun to thrive.

If you have the space, building a shade house is easier than you might anticipate as long as the top can support shade cloth or transparent plastics designed to reduce UV.

An interesting option for potted plants is the *zeer* pot. This ancient concept has been used for millennia to cool food. It's simply a clay pot placed inside a larger clay pot with sand packed between them. The sand is soaked with water—as the water evaporates, it cools the inner pot.


It might work for plants, where a few degrees' difference means a lot.



Sunburned leaf margin.
Photo by Georgia Tasker

Heat-Tolerant Varieties

There are loads of plant varieties marketed as "heat tolerant," but I don't think they always have "South Florida" in mind. Look for heat-tolerant Caribbean edibles and ornamentals, as well as desert succulents, like "CAM" plants, provided they're in well-draining-soil. CAM stands for crassulacean acid metabolism, a mouthful indeed but in short, CAM plants have adapted to very arid, hot conditions. Our wet weather doesn't suit all of them.

Heat-lovers to plant include: *Pentas*, *Liatris*, *Lantana*, agaves, *Aloe*, cacti, some euphorbias and a host of native Florida plants like saw palmettos. Just take a look around the open, sandy areas of a pine rockland to find plants that shrug off high heat. Take advantage of midday shade provided by your home or other structures or trees. It might take a day to map out such locations, but it's worth it to put the right plant in the right place. 

Looking for heat-tolerant plants and expert advice? You'll find them at **Fairchild's Members' Day Plant Sale on Saturday, October 6.** www.fairchildgarden.org/membersday



COUNT ON STONE TO
WEATHER THE STORM



One way to rebuild after Hurricane Irma: create a rock-dominated landscape designed to resist hurricanes and storm surge.

Text and photos by Georgia Tasker

PREVIOUS PAGE
Boulders, rocks and low-growing plants may serve to protect Richard and Jannette's Tavernier garden during another big storm.

RIGHT
Polished river rock created a trail among boulders and low-lying plants.



A new, rock-dominated landscape—planned to be hurricane and storm-surge resistant—is now thriving in Tavernier on Key Largo, one of the Florida Keys where Hurricane Irma left a significant scar in 2017. It's one of many southern Florida gardens where the aftermath of Irma has led to extensive use of rock and stone designed to reduce storm damage and maintenance. The Tavernier garden is notable, though, for its harmony with the surroundings and the sea—and for its audacious intent.

Where once there was a live oak, large verawood (*Bulnesia arborea*) and tall queen palms, there now are bottle palms, allspice, pygmy date palms and lady palms. Lower-growing trees and palms are designed to duck beneath the wind. Where vines and weeds once covered a large berm, there now are crucially placed boulders, limestone steps, several sizes of river rock and mulch, as well as salt-tolerant and drought-tolerant species.

"We tried to keep sod to a minimum," says the garden's owner, Richard Brandon, who has resided here with his wife Jannette for 25 years. "The steps were always here, but with stones, they are nicely connected." Indeed, the flow of the design leads your eye up the 15-foot rise to the arrival court without exposing what lies ahead: two stories of contemporary living space and a private beach fronting Florida Bay.

Brandon, who is an American Orchid Society orchid judge, has known Bob Fuchs and Michael Coronado of R. F. Orchids for many years. After Irma, Brandon turned to Fuchs to redo his storm-torn landscape.

The expanse of hardwood hammock that separates the Brandon home from the Overseas Highway once held an orchid-festooned nature trail as well as orchid houses. The fragile Keys hammock now is littered with toppled trees, but the two-story house was unhurt by Irma. In the past, Brandon preferred a wilder, more natural look to his wooded surroundings. The new



Bronze giraffes appear to nibble on the foliage.

garden is more manicured, yet in a macho sort of way: "I told Bob, let's do something different," he explains.

Fuchs, who is a life member and vice president of the American Orchid Society, which is now headquartered at Fairchild, knows about post-hurricane rebuilding. Although Hurricane Andrew flattened R. F. Orchids, Fuchs and Coronado have rebuilt it, as well as their house and garden, so impeccably that they give tours of their own garden on the weekends. For the Brandons' garden, "I just visualized the area and got a pile of boulders and spaced them one at a time. So it gives the visual effect of being able to walk through the landscape on the boulders," explains Fuchs, who taught art at Homestead Junior High School before establishing his successful orchid business.

The Brandons' yard and garden are similarly transformed. The substantial berm in front of their home is covered with 200 truck-loads of fill and stone, plus 100 bales of Pro Mix, a soil favored by horticulturists around South Florida. Two dump trucks unloaded white river rock, and 200 bags of polished rock

were added for decoration. Plus, 50 bags of Nutricote fertilizer were added to enrich the hill that rises 15 feet above the water. Fuchs dug down three feet before adding the boulders and rocks. "If they would get a surge, the rock would stop it," he says.

When looking for suitable garden specimens, Fuchs selected salt-tolerant plants, including cardboard palm (*Zamia furfuracea*), silver buttonwood, *Podocarpus*, and small- and large-leaf clusias, as well as macho ferns and Green Island ficus. He also included necklace pod, a native shrub that can tolerate salt wind, and desert rose (*Adenium obesum*), which is moderately salt-tolerant. Also included in the landscape are Tahitian gardenias, blue daze and the white form of blue daze, monstera or Swiss cheese plant, and many large and impressive bromeliads nestling against the corners of large stones.

As a special touch, two bronze giraffes are positioned so they appear to be nibbling on trees, and two bronze elephants stride up the hill. They're not exactly native fauna, but are delightful and whimsical surprises nonetheless.







OTHER STONES FOR YOUR GARDEN

TEXT AND PHOTOS BY GEORGIA TASKER

The use of stone in South Florida gardens is becoming more popular, in part because after Hurricane Irma, large yard areas were more or less erased to blank tablets. “People have areas where nothing grows, and stone is a permanent option without the maintenance,” says Emily Ortega, who runs Bernie’s Rock and Garden in Homestead with her mother, Marta. “Stone always maintains its beauty in its color, size and texture. And the popularity of stone has to do with the use of stone around the world—a world which has become smaller through the internet and travel.”

The company’s founder, the late Bernie Ortega, built the waterway through Fairchild’s Wings of the Tropics exhibit in The Clinton Family Conservatory. He also built the waterfalls and stream in the Richard H. Simons Rainforest. Today, his wife and daughter run the decorative rock business. They handle everything from pea rock (small brown river rock) to sandstone rock slabs, crab orchard blocks (also sandstone), glacier green quartzite, polished pebbles in many sizes and colors, even sea shells for those seeking the Sanibel look.

Emily Ortega explains that colorful large boulders or stones are increasingly popular garden ornaments. These may be surrounded with river rocks to become a focal point in the garden, or, three smaller boulders together may serve as sculpture. A winding path of Mexican beach pebbles can become a stylized river for a flat-lander’s garden, while meandering trails of small river rock can make walkable paths through the garden.

A variety of stones are arranged to demonstrate possible uses at Bernie’s Rock & Garden.



Mica sparkles in this large boulder called “sparkling pink” feldspar.



Emily Ortega often uses a forklift to move heavy rocks and boulders.

Bernie’s carries aquamarine quartzite, gold quartzite, boulders with black tourmaline, even zebra marble (black and white stripes). The gold quartzite, which exhibits shades of gold, yellow, brown and silvery white, is among its best-selling larger stones, because the colors are complementary to most homes, Ortega says. Quartzite, by the way, is metamorphic rock that once was sandstone but hardened under heat and pressure. Metamorphosis, after all, is to undergo change, such as a caterpillar turning into a butterfly.

Horticulturist and landscape designer Debra DeMarco and landscape designer Carlos Samosa lecture and teach classes at Fairchild on design, use of color and hardscapes. They recently used shell-embedded concrete pavers edged in gray chips of slate as a walkway in a Coconut Grove landscape, and this is a popular scheme to dress up pavers from driveway to door. Ortega says concrete pavers usually are set between two and three inches—and up to six inches—apart, with smaller stones between.

Stone can also be seen throughout South Florida playing a role as mulch and in swales where cars otherwise would ruin grass or leave ruts. After Hurricane Irma, it’s become noticeably more common to see front yards entirely covered over with rocks and stone.


However you’re using it, DeMarco recommends using nothing smaller than 3/8-inch rocks in your lawn or garden, so blowers used by lawn services won’t blow them away. And she cautions that using black stones around the base of plants may damage roots, as black absorbs heat. Ortega cautions not to use small pebbles near a swimming pool, because they may blow into the pool.



Black obsidian is volcanic stone that makes a bold statement in a garden setting.

Ortega also notes that stone installation is site-specific; one instruction does not apply to all. But for decorative use in a garden bed, she recommends digging down 1/2 to 2 inches and then lining with rock cloth or weed cloth. She also advises that rock designs be edged with metal or another material. This, combined with putting down small rocks or sand first, followed by somewhat larger rocks, will help keep a stone path in place.

Samosa recommends 8 inches of excavation for a stone walkway—hardly feasible without machinery in most areas, given that many of us live virtually on top of stone. The walkway's lowest layer should be 4 inches of crushed lime rock or pea gravel, topped with 1^{1/2} inches of sand to allow for the leveling of the walk. Finally, add 1^{1/2} inches of stone. Otherwise, he says, tree roots can buckle the walk, and weeds will be quick to invade. Plus, after summer rains, even large river rocks will sink into the ground.

A helpful and inspirational 2004 book, "Garden Stone" by Barbara Pleasant, will give you myriad ideas for using stone. It is available online. 

Learn more about Fairchild's Wings of the Tropics Exhibit at www.fairchildgarden.org/wings-of-tropics, and about the only outdoor tropical rainforest in the Continental U.S. at www.fairchildgarden.org/rainforest



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.

@FairchildGarden





Coming Soon: The Growing Beyond Earth **Innovation Studio**

Fairchild will build the first food-growing
makerspace in a botanic garden.

By Carl E. Lewis, Ph.D. and Amy Padolf
Renderings by Moonlighter Makerspace



In the GBE Innovation Studio, people with shared interests will gather to work on projects while sharing ideas, equipment and knowledge.

Fairchild will soon begin building a makerspace dedicated to the technology of growing food, supported by a grant NASA awarded the Garden in June. One of just three TEAM II (Teams Engaging Affiliated Museums and Informal Institutions) grants awarded from the agency, it will help support the Growing Beyond Earth Innovation Studio, the world's first makerspace of its kind in a botanic garden.

The planned makerspace is a new concept not just for botanic gardens, but also for NASA (the National Aeronautics and Space Administration)—and it will be unique within the maker community. It will be the first public facility dedicated to NASA's food production challenges and the first project to leverage community input in the development of plant-growing hardware. The grant will help equip the makerspace with fabrication equipment, including 3D printers and laser cutters, allowing users to turn ideas into reality.

The Growing Beyond Earth (GBE) Innovation Studio concept is built upon the success of the Growing Beyond Earth Challenge program. Through that program, students in more than

150 South Florida classrooms have contributed thousands of points of data annually since 2015, all in support of NASA research. Growing Beyond Earth has shown us the tremendous power of a crowd-sourcing approach to engage the community. NASA and Fairchild recognize that an open-source approach to exchanging ideas will create opportunities for makerspaces around the nation to provide input, build on the work of others and offer expertise that feeds NASA research. In the GBE Innovation Studio, people with shared interests will gather to work on projects while sharing ideas, equipment and knowledge.

The GBE Innovation Studio will focus on food-production challenges that NASA researchers face as they prepare for long-term human presence beyond Earth orbit. Fairchild will help address these science, technology, engineering and math challenges by harnessing the creativity and talent in our local community, and connecting with a national network of makerspaces. Each year, work in the Innovation Studio will focus on one challenge identified through conversations with scientists, engineers and researchers at NASA's Kennedy Space Center. These challenges include:

YEAR 1

Plant habitats

Efficient use of three-dimensional growing space: Current spacecraft have minimal space for astronauts to live and work, leaving very little room for anything else. Aboard spacecraft, plant-growing environments must be small, placing limits on potential food production. It is essential to design plant-growing systems to be as efficient as possible, so that astronauts can grow the maximum amount of food in these small spaces (maximizing edible biomass production per volume of growing space). On the International Space Station, for instance, plants are grown in cube-shaped spaces with lights attached to one inner surface (the top) and the plant root zone attached to the opposite (bottom) inner surface. When plants are small, there is empty space above them. As plants grow, leaf surfaces become closer to the light, creating empty space underneath them.

YEAR 2

Maintaining plants without human intervention


During crewed missions in space, astronauts have busy schedules with many demands on their time and attention. The plant-growing systems aboard spacecraft must minimize the need for hands-on maintenance. Although existing systems now require human intervention for watering, adjusting lights, modifying airflow and responding to plant stress, future systems might be able to do these things by themselves. Fully autonomous systems could support food production without any human assistance.

YEAR 3

Robotic planting and harvesting of vegetables

In the near future, space exploration may involve distant habitable facilities that can support human travel into deep space. One concept is a moon-orbiting Deep Space Gateway that would be a staging point for missions to the moon's surface or to Mars. That type of facility might be unoccupied most of the time, but would need to be able to sustain astronauts for days or weeks when they are present. Autonomous systems, including plant-growing environments, could be designed to run in the absence of a crew. If vegetable planting and harvesting can be automated, it might be possible to produce food in the weeks prior to crew arrival.

The GBE Innovation Studio will be housed in two adjacent buildings: the Hawkes Lab, which was the Garden's first laboratory building, and the Superintendent's Building. They are located in the Richard H. Simons Rainforest, one of the most active parts of the Garden. With the addition of large windows on the exterior and state-of-the-art equipment in the interior, these buildings will house a makerspace filled with the tools and expertise to encourage creative innovation and invention.

The Growing Beyond Earth Innovation Studio is being developed in collaboration with Moonlighter, a makerspace with a broad local outreach program, and with Nation of Makers, a nonprofit that fosters collaboration among makerspaces nationwide. In addition to the NASA grant, building renovations are generously supported by the Kendel Kennedy Foundation. 

Learn more at www.fairchildgarden.org/GBE or [@GrowBeyondEarth](https://twitter.com/GrowBeyondEarth)

Want to help support the Growing Beyond Earth Innovation Studio? Visit www.fairchildgarden.org/give

In keeping with the Garden's goals, we will use the makerspace to:

Encourage innovation through STEM-based field trip programs for middle school students to work on NASA's key challenges

Inspire creativity by providing an opportunity for elementary students to design and illustrate solutions to NASA's annual challenges through The Fairchild Challenge

Engage our community through open sessions, during which Garden visitors will address these challenges

Expand our reach by disseminating NASA's annual challenges through the Nation of Makers' national network of makerspaces

Develop a network by sponsoring a session at the annual Nation of Makers' Conference, where participants can showcase their solutions to NASA's annual challenge

Communicate ideas by having participants share their designs, questions and discoveries through an online platform



Continuing the Tradition:
How we collect, evaluate and
introduce new plants to Fairchild—
Thailand, December 2017

Text and photos by Chad Husby, Ph.D. and Brett Jestrow, Ph.D.



View at Nong Nooch
Tropical Botanical Garden.

A Tradition of Plant Introduction and Evaluation

Eighty years ago, the Garden was founded with a primary goal of being a site for introduction, evaluation and display of tropical plants, as well as for educating the public about horticulture and plant diversity. In a talk he gave before the Garden's founding, called "Some Reasons for an Arboretum and Plant Garden in South Florida," Dr. David Fairchild beautifully expressed the pressing need that he saw for a major botanical garden in South Florida: "We must build a far broader foundation than we have so far considered and gather

from all over the Tropical Zone the best of everything that flowers and produces edible fruits or charms by its waving fronds or swaying branches. We must gather those into permanent planes in a well-ordered arboretum where they will be given the best of attention for many years to come, and where, with the flight of time, our children will go and learn something of the wealth of plant materials which is at their disposal and also see for themselves the amount of room they will require when they are full-grown and the treatment they should have if they are to be fully used to advantage about their homes."



TOP
Sunrise at Nong Nooch
Tropical Botanical Garden.

ABOVE
Dracaena x 'Stardust'
at the Rama IX plant
show and sale, Bangkok,
Thailand. A propagation
of this is now planted in
Fairchild's Tropical Plant
Conservatory.

Before we can assess a plant's fitness for South Florida, it must first survive the challenges of travel and propagation. It also must avoid succumbing to various factors that aren't directly related to its worthiness, such as destruction by hurricane, drought, construction or chainsaw. Dr. Fairchild saw that the Garden would become a place where new plant introductions could be preserved and evaluated away from many of the vicissitudes that threaten private and municipal plantings, but would provide crucial inspiration and serve as a source of propagation material for those plantings. During his "Some Reasons ..." talk, he added, "Had there been kept in the arboretum a specimen of every type which grew well in this region there would have been a great inspiration throughout the community to have in their gardens the most beautiful and useful forms which were brought in."

Similarly, Marjorie Stoneman Douglas made a compelling case, in a 1937 booklet titled "An Argument," for the establishment of the Garden as "an excellent centralized proving ground for the newly introduced tropical material. It would help carry out plant hybridization studies which would aid in the development of new plant types.

It would furnish material for experimenters who are working to obtain much needed new knowledge on the propagation of tropical plants."

During the 80 years since, the Garden has continued to spearhead exploration for new plants to introduce to South Florida, and it has become a favored repository for new introductions from nurseries and private collectors. In recent years, we have reinvigorated the Garden's plant introduction and evaluation efforts. Since 2012, we have significantly increased our expeditions to gather new plant material from the wild and from horticulture. We begin by growing them in our nursery, and then plant them out to evaluate their suitability for our climate and soils. Often, we are not sure which new plants will perform best in South Florida and remain well-behaved in the long run. So, we introduce large numbers of new plants, increasing the chances that we will find a significant number that prove worthy during the evaluation stage.

Col. Robert Montgomery, the Garden's founder, knew well that those of us who love the diversity of the world's plants are always on the lookout for new things, despite knowing that not all will turn out

to be as promising as we might hope. We are motivated by the faith that some will turn out to be even more wonderful than we could imagine. In a 1948 "Occasional Paper" for the Garden, in an article titled "David and Marian Fairchild," Montgomery wrote: "Continuously and up to this time David Fairchild is as much interested as ever in bringing in new things which may or may not be as valuable or as beautiful as some of his previous introductions but to this lovable enthusiastic plant lover, 'Hope springs eternal.' Just last week he received seeds from New Guinea of a 100 foot pandanus!!"

Taking Tradition to the Next Level: Thailand, December 2017

In this spirit, thanks to the kind support of Mr. Yife Tien, we headed to Thailand in December 2017, in the wake of Hurricane Irma, to find new and exciting plants we could use to reinvigorate the Garden during 2018. We had found many wonderful new plants during our first two trips to Thailand, in 2015, and many acquisitions from these trips were now ready to plant. And, we knew that the horticultural community in Thailand is so vibrant that a diverse array of new plants would be available that was not available in 2015.

December is an ideal time to find new plants in Thailand, and is one of the most pleasant times of year to visit Bangkok. Around the city, we visited the Thonburi Market and the remarkable collection of our kind and extremely knowledgeable host, Sappasiri Chaovanich. We also spent several days at the renowned Rama IX plant show and sale, honoring the birthday of the late King of Thailand, Bhumibol Adulyadej, which always takes place around December 5. (The King had a great love for plants and horticulture.) This plant show and sale has become the largest of its kind in Southeast Asia and attracts collectors and enthusiasts from around the world. There, we found many new treasures for the Garden, some of which have already been planted. Highlights include the elegant *Barringtonia papuana* (planted in the Tropical Plant Conservatory), a stunning new hybrid *Dracaena* 'Stardust,' a remarkable new dwarf fig with cupped leaves, a new bromeliad selection with remarkable spiral leaf patterns (planted near the Jean DuPont Shehan Visitor Center), and a wide diversity of flowering trees and shrubs in the family Annonaceae.

About two hours' drive northwest of Bangkok, the annual agriculture fair at the Kamphaeng Saen campus of Kasetsart

Spiral bromeliad at the Rama IX plant show and sale, Bangkok, Thailand. These are now planted near the Visitor Center





TOP
Loading newly purchased plants into our van at the Rama IX plant show and sale. These plants were then taken to the nursery of our host, Sappasiri Chaovanich, for later cleaning, packing, inspection and shipping.

ABOVE
Selaginella picta at Phosadet Garden in Nakhon Si Thammarat, southern Thailand.

University takes place at the same time as the Rama IX plant show and sale. It is also an important opportunity to find new plants, especially new fruits and ornamentals. Among the many treasures we found there is a promising new orange-flowered vine in the genus *Butea* and a very promising new legume shrub from Vietnam, which has lovely flowers and shows excellent promise for bonsai. It is already planted in the Lisa D. Anness South Florida Butterfly Garden.

In addition to exploring the markets and collections around Bangkok, we ventured to the south of Thailand, which has a wetter climate. Our primary goal was to visit a fern nursery, Phosadet Garden, that was propagating rare *Asplenium* spp., the stunning *Selaginella picta* and epiphytic lycopods (genus *Phlegmariurus*)—ancient and very ornamental plants sometimes called “tassel ferns” due to their delicate dangling stems. Though we visited during a year of record flooding in the south, we were fortunate and rainfall did not hamper our work.

As in 2015, we found an abundance of remarkable plants in the gardens and nurseries to the east of Bangkok.

Nong Nooch Tropical Botanical Garden, which contains many palms grown from seed that came from our Garden, has always been very generous in sharing its superlative plant collections. This time, we found even more new botanical treasures than we had two years previously. The highlights included a new species of ornamental banana from Vietnam, *Musa haekkinenii*, as well as a new genus of palms for the garden, *Maxburretia*, and seeds of Dr. Fairchild’s favorite palm, *Pigafetta filaris*, which have since germinated in our nursery.

Moving further east, to Chanthaburi, we visited the amazing nursery of Mr. Poonsak, a renowned horticulturist and specialist in the palm genus *Licuala*. We obtained many new palms for the Garden, as well as new gingers, ferns, rainforest understory plants and conifers. We even obtained a remarkable endemic shrub from Mauritius that is known for its colorful leaves: *Coptosperma cymosum*. We also endeavored to find new staghorn fern (*Platycerium* spp.) for the garden by visiting the “I Love Ferns” nursery in Chanthaburi. The nursery is propagating nearly every species, along with a very large number of exciting new cultivars



ABOVE
Musa haekkinenii
inflorescence at Nong
Nooch Tropical Botanic
Garden, Pattaya, Thailand.


BELOW
Dr. Brett Jestrow and our
host, Sappasiri Chaovanich
during final packing and
labelling of 22 boxes of
new plants for the Garden.


and hybrids. These will soon appear in the Tropical Plant Conservatory and elsewhere in the Garden.

Finally, we explored some limestone habitats north of Bangkok in the area around Saraburi. This area of Thailand not only has limestone like South Florida, but also has a similar climate, with warm dry winters and hot wet summers. We visited Phu Kae Botanical Garden and received some precious specimens of limestone-endemic plants for the Garden's collection: *Wrightia sirikitae*, which has beautiful white flowers and is named in honor of Queen Sirikit of Thailand, and the only two known species of *Santisukia*—*Santisukia kerrii* and *Santisukia pagetii*.

After several weeks of plant shopping, we acquired hundreds of new plants for the Garden—they filled 22 large boxes, more than triple the number we brought back from either of our 2015 trips. All the plants arrived safely in Miami and, after inspection by the USDA, were released to us.

We've begun evaluating these new plants—many are doing well, some are struggling and a few have perished. As we hoped, some have shown themselves to be vigorous enough for trial plantings in the Garden, and others are nearing that stage. Our goal is not only to display these new introductions to inspire the public, but also to propagate and share the most promising ones, while enhancing the Garden's value for education and research.

We are stewards of an increasingly rich and precious collection of tropical plants as we strive to fulfill the vision Dr. Fairchild articulated for the Garden's future in "Some Reasons for an Arboretum and Plant Garden in South Florida": "The appeal for your garden is as great and should be as widespread as the effort to save the Sequoia grove in California or any other inheritance from nature which cannot be duplicated." 

 If you'd like to support Fairchild's new planting efforts, please visit: www.fairchildgarden.org/give





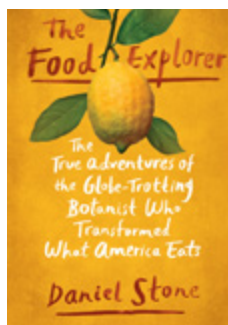
Celebrate your special event at Fairchild

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 www.fairchildgarden.org/private-events
or contact Lori Sellers at 305.667.1651 ext. 3358
or at lsellers@fairchildgarden.org.

@FairchildGarden





“The Food Explorer”

By Daniel Stone

Reviewed by Kenneth Setzer

The work Dr. David Fairchild set in motion more than a century ago is still being celebrated and revealed as a greater part of our everyday lives than we often realize. A new, thorough, modern collation of his life by *National Geographic* writer Daniel Stone puts us into the shoes of the man who brought us thousands of life-sustaining plants.

Readers closely associated with the Garden are familiar with the story of how a young, naive, but fiercely ambitious Fairchild yearned to see Java. And how his wealthy backer Barbour Lathrop funded their multiple trips around the world. But “The Food Explorer” immediately struck me as different; it drew me into its pages as a good book should, and made me feel like a third party at conversations between Fairchild and Lathrop.

This biography avoids the predictable chronological presentation of a person’s life by interspersing nuggets of information, like the connection between Marian Fairchild (David’s wife) and Mount Rushmore. Born into a famous family, daughter of Alexander Bell, Marian must have caused quite the scandal as a single woman studying art with an eccentric sculptor in Greenwich Village.

What a world this book paints: of Bell’s Wednesday evening gatherings of intellectuals and, later, his attempts at early flight. It is a world that seems impossible now, one aligned with America’s newfound early 20th century prosperity

and potential for limitless growth, not all of it beneficial. It’s interesting to read what Fairchild thought of issues of his day, with his view that colonialism was sometimes far from positive.

While it contains great botanical detail, “The Food Explorer” thankfully avoids the trap of becoming a plant list. Instead, we see that Fairchild was not above skirting the rules to get a plant he desired. We often picture him as the grandfatherly man with white moustache, but he slept on the decks of rolling ships packed with bulls and manure; travelled for weeks on end only to find he had missed a connection and had to head back; got typhoid; snuck into fields in dangerous situations to get cuttings of plants like the citron; got arrested; and in general led a life that makes a great biography.

It wasn’t all roses, of course, and Fairchild’s frustrations with government that won’t listen and bureaucrats without imagination are problems we can all identify with. But I believe he would be pleased with America’s current openness to new foods.


Fairchild’s failures, too, should be viewed as valuable lessons. Some foods just did not work where he thought they would, or remained backyard curiosities due to their oddness or the difficulty of commercializing them. This book shows how essential good marketing was (and is) to introducing new foods to the nation.

We have Fairchild and the department at the USDA he created to thank for a wide

variety of foods that bring us not only joy and diversity, but nutrition people a hundred years ago never thought possible. Among them is quinoa, the superfood we now enjoy. Fairchild sent quinoa to the U.S. when no one knew what to do with it. How he’d love knowing it’s finally found a place in American diets.

While I read this book, my wife and I would sometimes discuss dinner plans, to which I could so often exclaim, “Fairchild brought that,” or “Guess who brought that to the U.S.!” I said that for the Hass avocado, champagne mango, quinoa, asparagus and more.

“The Food Explorer” reads like a historical novel, easy-flowing and hard to put down. It touches on what you’d expect, while weaving in topics I would not normally consider of interest, like the political moods of the late 19th and early 20th centuries.

Whether you’re new to the history of Fairchild the man, or are a daily part of it, “The Food Explorer” is a must-read that will surely take you back in time to the sheltered, midwestern boy enthralled by his houseguest Alfred Russel Wallace, who grew up to be a man who moved a behemoth government to action and realized his dream of enriching the nation he loved with plants of use and value. 

Find this book in the Shop at Fairchild and online at store.fairchildonline.com \$28, members \$26.97

The Garden Renaissance Continues

By Georgia Tasker and Kenneth Setzer
Photos by Chad Husby and Kenneth Setzer



Begonia thelmae, another new addition that serves as a sprawling groundcover in the Tropical Plant Conservatory.

We've been busy with fresh plantings at the Garden, making hundreds of new additions and spreading to new areas of Fairchild. Presented originally on social media as #PlantingMondays, these plantings were initiated by Dr. Brett Jestrow and Dr. Chad Husby. Fairchild's Plant Recorder Yisu Santamarina joined the team, and our volunteers, too, have been graciously hauling plants and digging holes under Florida sun and rain, often accompanied by mosquitos.

You can peek at the work in progress online by searching for #PlantingMondays or #PlantingFundays, and by following @NewPlantsFTBG on Twitter. On these pages, we present a brief look at a dozen Garden additions, many of which are new to cultivation and completely new to the Garden.



1. *Phlegmariurus squarrosus*

A lycophyte, part of the most ancient lineage of vascular plants, *P. squarrosus* occurs from Madagascar to the South Pacific as an epiphyte and on boulders and creeks near waterfalls in wet lowland rainforest gorges. Sometimes called rock tassel fern, It is a type of clubmoss, related to some of the earliest vascular plants. Synonyms are *Lycopodium squarrosum* and *Huperzia squarrosa*. It's growing in our Tropical Plant Conservatory.



2. *Selaginella willdenowii*

Peacock moss, another lycophyte found in deep shade of wet tropical forests, now resides in the Tropical Plant Conservatory. This species is iridescent blue, sometimes with purple tinges on the new growth. Two kinds of leaves, lateral and median, are arranged in rows on the stem, giving it an overall flattened architecture. The blue iridescence is caused by an interference filter in the waxy cuticle layer overlaying the leaf epidermis.



3. *Wikstroemia retusa*

Planted across from the Glasshouse Café and Lakeside Café, this shrub is native to Taiwan, where it grows in forest thickets, deforested slopes and grasslands. It is rarely found in horticulture in Taiwan. Jestrow and Husby collected it from a native plant nursery there in 2015, and determined it would adapt well to South Florida's similar climate.

4. *Agathis ovata*

This is the scrub kauri, one of five *Agathis* species found in New Caledonia in the South Pacific. Threatened by harvesting of tall trees, it is on the IUCN Red List of Threatened Species. Like the other unique conifers of New Caledonia, these trees occur in soils high in metals, which limits competition from other plants. Surprisingly, scrub kauri can also adapt to the very different soil conditions of South Florida. In the wild, this conifer grows to a robust low tree with a spreading, candelabra-shaped crown, though it tends to produce a narrower and taller crown when cultivated under less stressful conditions.





5. *Euphorbia arbuscula*

A rare form of *Euphorbia*, this has silvery-blue color and tiny leaves that are quickly shed, leaving smooth, cylindrical upright stems that form a candelabra-like shape. It comes from Yemen, the Yemeni island of Socotra (which was hit by Tropical Cyclone Mekunu at the end of May) and other small islands with dry shrubland in the same archipelago. As a summer grower, it will do well in our tropical monsoon climate.



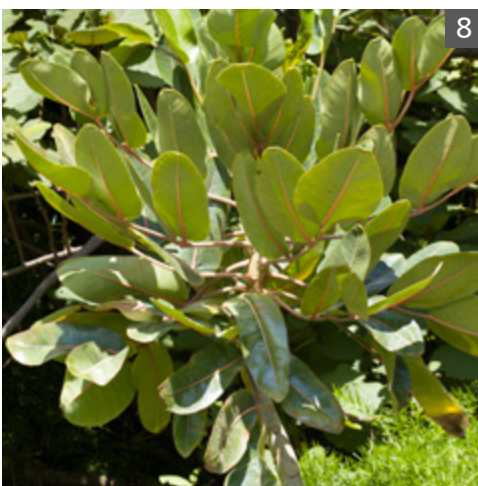
6. *Copernicia berteriana*

Endemic to Hispaniola, this fan palm grows in open forests with low rainfall. It loves full sun and has a slender trunk, compared to other species in the genus, such as *Copernicia baileyana*. With the cooperation of the Jardín Botánico Santo Domingo, Fairchild collected seeds from this critically endangered palm for growing and *ex-situ* conservation in the Garden. The genus is named for the astronomer Nicolas Copernicus.



7. *Dorstenia choconiana*

Native to Central America and in the same family as *Ficus*, this plant is a resident of the recently renovated rock waterfall feature in our Tropical Plant Conservatory. It loves humid forest conditions, so it's in an ideal location. This one sports pinnately lobed leaves and the typical oddly shaped inflorescences of the genus; this species is known to show strong variation in leaf shape.



8. *Polyscias maraisiana*

This endangered Mauritius endemic's presence here is a good example of *ex-situ* conservation. The small, shrubby tree's foliage consists of fairly large leaves of an incredibly glossy deep green on top, with a flat green underside cleaved by a red midrib. You'll find it north of the Gatehouse baobab tree and near the Jean DuPont Shehan Visitor Center.



9

9. *Begonia chloroneura*

Begonias offer so much variety of color and form, and this one is no exception, with its classic asymmetric leaves of dark green contrasted with lime green to whitish veins, all covered and bordered in minute purple hairs. A Philippines native plant, it grows in shady, humid areas.



10

10. *Racinaea crispa*

This bromeliad was formerly in the genus *Tillandsia*. A cloud forest epiphyte found from Panama to Ecuador, ours resides along the rock wall separating the Tropical Plant Conservatory from the Rare Plant House, where it receives the pure water it requires. Its crimped foliage is only outshone by its bright yellow inflorescence.



11


11. *Rhododendron* 'Simbu sunset'

This hybrid is known for its vigor and adaptability to warmer conditions. It flowers frequently throughout the year, with dazzling deep peach and orange flowers darkening towards the margins to red. Vireya—a section of mostly tropical mountain rhododendrons—normally require the cooler conditions found at higher elevations, but this cultivar has been bred to tolerate higher temperatures. The Vireya clade is native across Southeast Asia.



12

12. *Melaleuca howeana*

This low-growing, dense shrub has beautiful red new growth and symmetrical leaf arrangement. Endemic to the Lord Howe Island group off Australia, it has an amazing history. Specimens of *Melaleuca howeana* grow on Ball's Pyramid, a shark's tooth of jagged rock jutting sharply out of the Pacific Ocean. On that islet is probably the world's rarest insect, the Lord Howe Island stick insect, which was believed extinct until a few individuals were found on a single *Melaleuca* bush in 2001. The juvenile insect depends entirely on this *Melaleuca* for food and shelter. This rare shrub was shared with the Garden by the San Diego Zoo. 



THE ISABEL J. FOSTER FERN GLADE

Rare native ferns mix with tropical ferns in this secluded spot in the Garden's Rainforest

By Jennifer Possley | Photos by Kenneth Setzer and Jennifer Possley

Our tropical Garden dazzles visitors with stately palms from around the world, layers of epiphytes, and colorful showy blooms. Yet sometimes the plant life in quieter, tucked-away areas can be just as alluring. The Isabel J. Foster Fern Glade is one such botanical treasure. Nestled within Fairchild's Richard H. Simons Rainforest, this planting bed showcases the variety of shapes, textures and patterns in tropical ferns from around the world.

The roughly two-dozen fern species in the Fern Glade congregate around a handsome chunk of Miami's natural oolitic limestone. Embedded within the stone is a tile bearing a 1980 dedication to Ms. Isabel J. Foster.

Foster, who passed away in 1976 at the age of 92, was the mother of Nell Foster Jennings, who was married to the Garden's founder, Col. Robert Montgomery.

The Foster Fern Glade received a revamping this spring, thanks to the efforts of Fairchild's new conservation horticulturist, Brian Harding, and his team of volunteers. Rare ferns of South Florida (collected by the author) now mix with tropical ferns from the extensive collections of Dr. Chad Husby, the Garden's botanical horticulturist. The next time you visit the Garden, sneak away to this secluded spot in our Rainforest to revel in the wonders of ferns! For now, you can get a sneak peek at our ferns in these photos.



Microgramma heterophylla

The climbing vine fern grows only in the West Indies and extreme South Florida (Miami, Key Largo, the Everglades and Big Cypress National Preserve), where it is listed as an endangered species. This is one of several fern species for which Fairchild’s Conservation Team has conducted reintroduction projects, and it has been the most successfully introduced fern species thus far—93% of the 56 individuals we planted in 2014 and 2016 are alive, and many have climbed trees and begun to produce spores.

Microsorium punctatum* (left) and *M. musifolium

These two ferns in the genus *Microsorium* were donated to Husby by Charles Alford Plants, a Vero Beach nursery specializing in ferns. The fern on the left that appears to be fluorescing in a shaft of sunlight is *Microsorium punctatum*; *M. musifolium*, on the right, is also known as the “crocodile fern” for its scaly, lizard-like leaves.



Asplenium nidus

The Foster Fern Glade’s biggest fern (by far) is the bird’s nest fern. Easily 5 feet across, the strap-shaped leaves of this beautiful fern converge to form a large “nest.” The bird’s nest fern is native to Old World tropics as well as Hawaii.

***Asplenium nidus* ‘Supreme cobra’**

In contrast with the natural, smooth-frond form of the bird’s nest fern is a cultivar of *A. nidus* with the demure name “Supreme Cobra.” Husby obtained this fascinating specimen during a 2015 trip to Thailand.



Ctenitis sloanei

The foliage shown here is from the endangered Florida tree fern. While it is not a true tree fern, mature members of this species have a tree-like form, including a “trunk” crowned by incredibly soft orange fur that protects the developing young fronds. Florida tree fern is often available for sale at Fairchild’s plant sales and it is a very popular choice.

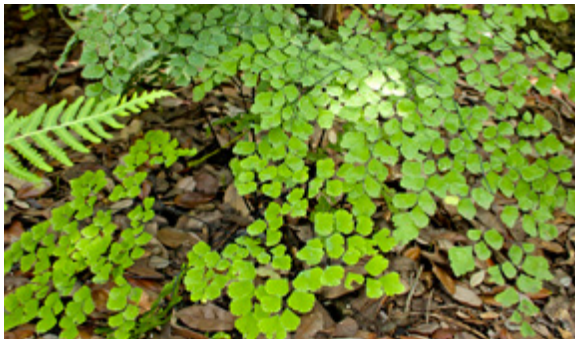


Pteris argyrea

The silver brake fern is native to Southeast Asia, but its beautiful variegated fronds have led to it being cultivated around the world as an ornamental plant. This specimen actually comes directly from Southeast Asia—Thailand, to be exact, where Husby obtained it during a 2017 collecting trip.

Thelypteris sclerophylla

The stiff star-hair fern is named for the tiny, spiny, star-shaped hairs that coat the front and back sides of the fronds. Though they are invisible to the naked eye, these hairs give the plant a sandpapery feel. The stiff star-hair fern is found only in the Greater Antilles and in two of Miami-Dade County’s Environmentally Endangered Lands preserves, where it is extremely rare. Fairchild’s native plants conservation program maintains an *ex situ* conservation collection of this species.



Adiantum tenerum

The brittle maidenhair fern is common throughout the New World tropics, and is one of the more common ferns growing throughout Fairchild’s 83 acres. Its distribution in greater Florida is, however, very limited, so it is considered an endangered species. Ferns in the genus *Adiantum* bear their sporangia (where spores are formed) under the edges of curled-under leaf margins; this flap of tissue is called a “false indusium.”

***Angiopteris* sp.**

This fern in the genus *Angiopteris* was collected by Husby from Hawaii's Wahiawa Botanical Garden in 2013. We very much hope the fern is happy in the Foster Fern Glade, because (like all ferns in the family Marattiaceae), if it sporulates, it will do so by producing synangia—structures made out of multiple sporangia fused together, which look like tiny, oblong lotus pods.

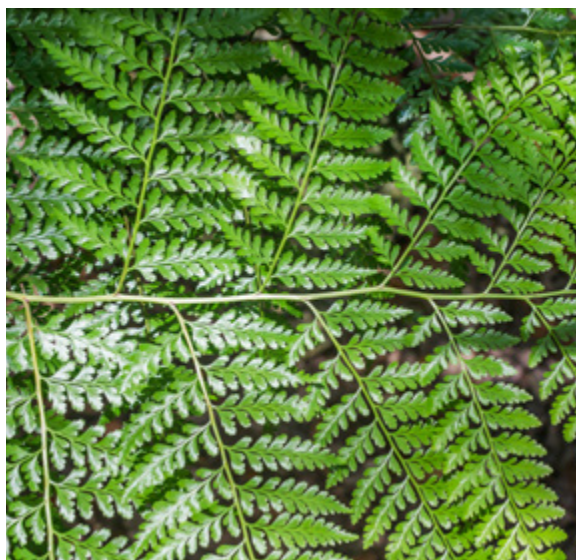


Pteris bahamensis


The Bahama ladder brake is found only in Cuba, The Bahamas and Florida's five southernmost counties, where it is listed as a threatened species. This species is unusual in that it tolerates a wide range of light levels. In shade, its fronds may reach three feet long and take on a deep green color. In full sun, plants are more yellow-green, with small, compact fronds. It is known to hybridize with a ubiquitous, non-native species called Chinese ladder brake (*Pteris vittata*).

Blechnum gibbum

The dwarf tree fern is native to the South Pacific islands of Fiji, Vanuatu and New Caledonia. Despite its relatively narrow global range, it is a popular choice for tropical and subtropical fern gardens, and is widely available for sale. The plant's form is reminiscent of a sago palm (which is not a palm, but the cycad *Cycas revoluta*, but that's another story).



Dennstaedtia bipinnata

The bipinnate cuplet fern gets its name from the cup-like, spore-bearing structures (involucres) that form along the edges of its fertile fronds. This species is found throughout the New World Tropics, and was once considered native to Palm Beach County, but that population is believed to have been extirpated. This particular plant was donated to Fairchild by Richard Moyroud, a longtime nurseryman in Lake Worth, Florida. 

Learn more about our Rainforest at www.fairchildgarden.org/rainforest



Classes at Fairchild

Art
Horticulture
Digital Photography
Iphoneography
Cuisine

Class information now in every issue!

Register online at www.fairchildgarden.org/classes
For assistance and more information call 305.663.8094

@FairchildGarden



FROM THE ARCHIVES



**ALEXANDER
GRAHAM
BELL
FAIRCHILD**
1906-1994

Dr. David and Marian Fairchild's only son was a tropical entomologist inspired by childhood scientific exploration with his father.

By Marianne Swan

It might come as **no surprise that the only son of Dr. David and Marian Fairchild, the grandson of inventor Alexander Graham Bell,** would gravitate toward a career in science. From early childhood, Alexander Graham Bell Fairchild, known to his family as Sandy, **was included in his father's quest for knowledge of the natural world.** However, it was **the study of insects, rather than plants, that fascinated Graham Fairchild.**



Previous
Graham Fairchild in his laboratory at Gorgas Memorial Laboratory in Panama, June 30, 1941.
Photo: David Fairchild, Archives/FTBG

Above
A very young Graham Fairchild studying a display of insects circa 1914.
Photo: "Book of Monsters"

Graham's curiosity may well have originated in David and Marian Fairchild's "Book of Monsters." Published in 1914, this compilation of photos of magnified insects includes a shot of a very young Graham studying an insect display. In another of his books, "The World Grows Round My Door" (1947), Dr. Fairchild wrote that it was Graham who helped find the insects for the photos and expressed great pride in his son's subsequent accomplishments:


"My reveries took me back through the years to the little shingled study at In The Woods in Maryland, when our son Graham was helping us ... to collect all sorts of "monsters" in the shape of insects of summer which he found in the grass or under the leaves fallen from our trees. How little did Marian and I dream then that another August would come when our little Graham of those days would be an authority on biting flies."

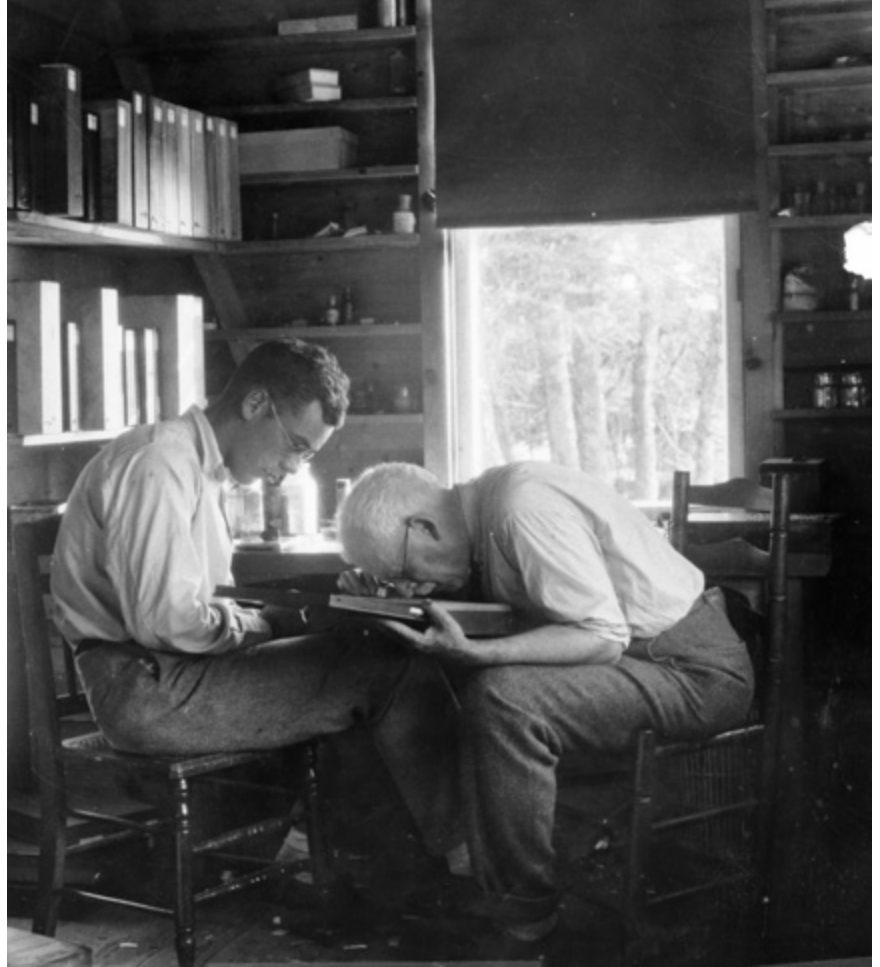
Graham was 21 when he graduated from high school, but the delay was not due to poor scholarship. His long absences from school were the result of traveling with his parents on scientific expeditions. These excursions all over the world gave Graham a field education that became the foundation for his college studies.

These youthful expeditions included a trip in 1922, when he was 15, during which Graham accompanied his father and USDA plant collector Palemon Howard (P. H.) Dorsett on a trip to Panama. Graham was so entranced with the abundance of insect life in the tropical forests that he returned to work at the Gorgas Memorial Laboratory in 1938. In the meantime, from 1923 to 1926, Graham was included in his father's expeditions to Europe, Asia and Africa, increasing his knowledge and enthusiasm for entomology (the study of insects). He was also mentored and encouraged in his studies by prominent scientists,

About Fairchild's Archives

Fairchild's Archives contain thousands of historical photos, documents, artifacts and publications. The Archives are a source of vital information—often unpublished or unavailable anywhere else—for researchers in topics from history to botany, plus many others. If you would like to help conserve and further preserve our Archives, please visit www.fairchildgarden.org/support.

Learn more about the treasures in our Archives at www.fairchildgarden.org/archive. 



Graham Fairchild examining a collection of insects with his father, Dr. David Fairchild. Photo: Archives/FTBG


notably entomologist William Morton Wheeler and zoologist Thomas Barbour.

Graham entered Harvard University and earned a Bachelor of Science, a Master of Science and a Ph.D. in entomology. His doctoral dissertation, under the supervision of Professor Joseph Bequaert, was on the family of insects known as horse flies, a taxonomically complex group that would figure prominently in his life's work. After college, he initially studied yellow fever in Brazil, but soon returned to his beloved Panama.

In 1938, Graham was hired as an entomologist at Gorgas, the laboratory named in memory of William Crawford Gorgas, who was instrumental in eradicating yellow fever in Panama. Gorgas Memorial Laboratory (part of Gorgas Memorial Institute of Tropical and Preventive Medicine) remains to this day a prominent facility dedicated to the study of tropical diseases and their insect vectors. Graham's work

there focused on the taxonomy of medically important insects, especially the biting flies of the Tabanidae family. He remained at Gorgas for 32 years, retiring in 1970.

After Graham's retirement from Gorgas, he and his wife, Elva, returned to the United States and settled in Gainesville, Florida. He became an adjunct professor at the University of Florida and a research associate at the Florida State Collection of Arthropods, Museum of Entomology. He died in Gainesville in 1994 at the age of 87.

Graham's research has been published in more than 130 scientific papers and books. More than 30 species of insects have been named for him by other entomologists. The American Entomological Society named him Entomologist of the Year in 1968, and the Invertebrate Museum at the University of Panama is named in his honor. 



When Leaving a Legacy Matters

Explore the many ways you can help meet your financial goals and maximize your philanthropic giving through sound and timely gift planning with Fairchild.

About The Legacy Society

The Legacy Society is a dedicated group of Fairchild supporters who have made a lasting commitment to the Garden by making a planned or life-income gift with Fairchild or by naming Fairchild as a beneficiary in their estate plans.

Create your Legacy

For more than 80 years, bequests and planned gifts have provided vital support to Fairchild's collections, exhibits and programs. Today, you can help continue this tradition by making a lasting commitment to the Garden. When you join The Legacy Society, you help ensure that the programs we pioneer today will continue long into the future. And, the expression of your individual values will provide hope, inspire others and have a real and lasting impact.

Ways to join Fairchild's Legacy Society

Membership in The Legacy Society is open to those who wish to join the tradition of making a lasting gift. It is our way of recognizing a remarkable commitment to Fairchild. You can become a member of The Legacy Society by naming Fairchild in your will or estate plan or by making a life-income gift. As a member of The Legacy Society, we recognize your profound contribution and dedication to preserving the Garden.

Please contact Susannah Shubin at 305.667.1651, ext. 3375 or sshubin@fairchildgarden.org to learn how you can join The Legacy Society. Your commitment today supports the Garden long into the future.

@FairchildGarden



Q&A with Marlon Rumble

Fairchild Nursery Manager



We know that behind every great organization are great people, and we thought you would enjoy getting to know who we are. This new feature in the magazine is a behind-the-scenes look at the phenomenal staff who carry out the Garden's mission every day.

Q: What is your job?

A: As the Fairchild nursery manager, I propagate and maintain our living plant collection, the facility and oversee the daily operation of the nursery. I also supervise 25 volunteers on a weekly basis. We oversee hundreds of species. Last time we counted, it was something like 20,000 individual plants, but that varies.

In the nursery, we propagate for the Garden's living collection, for plant sales and for backup plants for the Garden. There are also some plants that we wild collect and grow for conservation purposes. Many plants are propagated for multiple reasons: For example, some plants in the Bahamas are very rare or endemic to a specific island and we may collect them and propagate them for the Garden and for conservation purposes; the seeds can then be distributed to other gardens.

Q: What's your biggest worry in the nursery?

A: Water is always our biggest concern. I was here the day after Hurricane Irma struck, and water was the biggest problem. A city water main was ruptured by a tree, and there was no power for us to run a pump for water [in the nursery]. Normally, the city water would run with no electricity, but in this case, it was impossible.

Q: What is the best book you have ever read?

A: "The Hidden Life of Trees" by Peter Wohlleben. I pick up a lot of books, but don't always finish them; I just get distracted. But someone gave me this book as a Christmas gift, and since I'm a plant person, it was very, very interesting to me, with stuff I felt I needed to know. It talks about plants as living beings. ...Like animals in some ways, plants seek protection and may grow spines to ward off predators, or thick leaves to handle drought. And you read of things like the network of forestry, a whole system that functions as one, with certain plants and trees that interlock their roots to support each other. Plus, there's the overall benefits of plants. I wish everyone would read more about plants. Nothing would exist without them. Food, clothing, shelter and oxygen. They cool the climate and make habitats for wildlife.

Q: What is your favorite pastime?

A: I love the outdoors, so it's gardening, hiking and biking.

Q: Where are you from originally?


A: I grew up in the northeast side of rural Jamaica in what was really a sustainable farming community. Most of

the folks I knew, they were farmers. And as a kid, everybody had a little plot of their own in their yard to have their own garden. You started with that, growing whatever you wanted. What I like about plants and farming is that nothing stays the same. A picture on the wall—nothing will change about it. But you plant corn, and two days later it sprouts. And a few days later it's different. There's always something to look forward to.

Q: What did you want to be when you grew up?

A: I wanted to have my own farm. I am a tiller of the soil. I couldn't see myself doing anything besides growing plants or raising animals, or something with the environment. Working here at the nursery is a great lesson. You learn the theoretical and hands-on parts of growing.

Q: What do you grow in your own garden?

A: Butterfly attracters, fragrant bloomers, herbs, some fruit trees, plants that remind me of my childhood. It's lush and nice, and I try to grow a little of everything. I have a vegetable garden—sage is growing now, basil and tomatoes, too, but it's getting too hot for them, so I'll save the seeds for the fall. I grow rosemary year-round. I grow butterfly plants, and I like fragrant blooming plants that bloom early in the morning or late at night, like *Portlandia grandiflora*, *Cubanola domingensis*, *Brunfelsia nitida*. I plant them near my door so late at night, their smell will remind you they are there. I have bananas, pineapples, papayas and avocado. If it looks good and will grow, I'll try it. 

EVERY SMALL BUSINESS STARTS WITH A BIG DREAM.

IT'S NEVER JUST BUSINESS

At HSBC, we help nurture your business by understanding your needs and tailoring solutions to meet them. With our global reach, local knowledge, and range of financial resources, our Business Banking Team can help you open doors to new possibilities and opportunities. It's our goal to help you go further — as far as your dreams can take you. Ask how we can help your business today.

us.hsbc.com/businessbanking



SBA's participation or support is not an endorsement of any product, service or entity

HSBC 

Deposit products are offered in the U.S. by HSBC Bank USA, N.A. Member FDIC.

©2017 HSBC Bank USA, N.A. Member FDIC.

Have Orchids Delivered

Twelve issues of *Orchids* magazine (print and/or digital format)
 U.S. Individual — one year \$65 • U.S. Joint — one year \$80
 Access to special "members' only" educational opportunities and more



Email:
TheAOS@AOS.org

For American Orchid Society membership information and benefits,
 please go to www.aos.org or call the membership office at 305-740-2010.


 American Orchid Society

Greetings, Fairchild students!

Welcome to our new home in *The Tropical Garden* magazine. Enjoy our interesting articles and keep the magazine handy to refer to all of this season's packed creative and educational Classes at Fairchild.

With summer nearing its end and the kids back to school, it's time to start planning ahead and getting your gardens ready for vegetable and tomato planting. With that preparation, you can count on a bounty of fresh produce to eat and share with family and friends for our winter months.

Let one of our art instructors bring out the inner artist in you when you join one of our many art classes, such as watercolors, oils, acrylics, drawing, palette knife, botanical illustration or zendoodle. We're also excited to introduce a new offering to our lineup of art classes: photo encaustic hot wax painting.

Express your inner artist in a different way through photography classes—grab your digital camera or iPhone and click away morning, noon or night. Capture the beauty of the Garden's landscapes, flora or fauna, then share your work on social media.

Is food more your style? Let your taste buds travel as our talented chefs take you to cuisine destinations without leaving Miami.

There are plenty of classes for you to choose from in the upcoming fall months at Fairchild. In the meantime, thank you for your continued support, and we look forward to seeing you in one or more of our classes soon.

Online registration is now open!

View a full description of classes and register at www.fairchildgarden.org/classes. For assistance, call 305.663.8094.

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 www.fairchildgarden.org/membership

For more information, call 305.667.1651, ext. 3373.

Refunds (less a 20% service fee) will be made for cancellations received 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.

**September
through
December
2018**



ART



THE ART OF PAINTING USING PALETTE KNIVES

MaiYap

In this class, you will be mesmerized by the texture, movement and flow that can only be achieved using a palette knife.

10:00 a.m. to 2:00 p.m.

Section A: Thursdays,
September 13 – October
11 (five sessions)

Fee: Member, \$235;
Non-Member, \$275

Section B: Thursdays,
November 15 – December 13*
(four sessions)

*No class November 22

Fee: Member, \$190;
Non-Member, \$220



THE BASICS OF DRAWING: BARGUE STUDIES

Carlos Gallostra

Popular beginner class on the basics of mastering basic drawing techniques.

10:00 a.m. to 12:00 p.m.

Section A: Mondays,
September 24 – October 29
(six sessions)

Section B: Mondays,
November 5 – December 10
(six sessions)

Fee per section: Member, \$150;
Non-member, \$205



ABC'S OF DRAWING AND WATERCOLORS

Hillary Parker

Whether you are just getting started, want a review or have drawing and watercolor experience, this class is for you.

10:00 a.m. to 1:00 p.m.
Mondays, September 24 –
October 8 (three sessions)
Fee: Member, \$160;
Non-member, \$195



INTERMEDIATE DRAWING: GRAPHITE, CHARCOAL AND CONTE

Carlos Gallostra

Take your skills in drawing to brand new heights with our intermediate drawing class exploring different types of media.

1:00 to 3:00 p.m.

Section A: Mondays,
September 24 – October 29
(six sessions)

Section B: Mondays,
November 5 – December 10
(six sessions)

Fee per section: Member, \$150;
Non-member, \$205



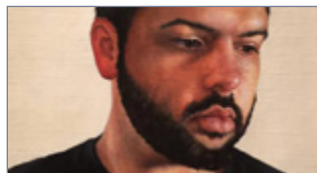
BOTANICAL ART FOR EVERYONE—ALL LEVELS WELCOME!

Donna Torres

For beginner and advanced students focused on the representation of tropical plants in watercolor and graphite. Students draw and paint using fresh plant material collected at Fairchild.

1:00 to 3:30 p.m.
Wednesdays,
September 26 – October 31*
(five sessions)

*No class October 10
Fee: Member, \$160;
Non-member, \$195



PAINTING THE PORTRAIT IN OIL

Carlos Gallostra

This class introduces the student to a step-by-step process that facilitates capturing the portrait from the initial contour to the fully rendered form in oil paint.

10:00 a.m. to 12:00 p.m.
Thursdays, September 27 –
December 13* (10 sessions)

*No class November 8 and 22
Fee: Member, \$250;
Non-member, \$325



FROM THE GROUND UP: PAINTING THE STILL LIFE IN OIL

Carlos Gallostra

From the novice to the seasoned artist, this class is designed to give you a leg up on crafting an oil painting from the ground up.

1:00 to 4:00 p.m.
Thursdays, September 27 –
December 13* (ten sessions)

*No class November 8 and 22
Fee: Member, \$285;
Non-member, \$360



ABSTRACT PAINTING USING ACRYLICS

Marcelle Zanetti

This class will teach the student how to compose an abstract painting that is focused around nature. All levels of experience are welcome.

10:00 a.m. to 2:00 p.m.
Fridays, September 28 –
October 26 (five sessions)
Fee: Member, \$200;
Non-member, \$250



DRAWING THE PORTRAIT IN GRAPHITE

Carlos Gallostra

This class introduces the student to a step-by-step process that facilitates capturing the portrait from the initial contour to the fully rendered form in graphite.

9:30 a.m. to 12:30 p.m.
Section A: Tuesdays, October
2 – 30 (five sessions)

Section B: Tuesdays,
November 13 – December
11 (five sessions)

Fee per section: Member,
\$180; Non-member, \$255



DRAWING FOR WATERCOLORS

Hillary Parker

For all levels of ability, and as a great refresher for those advanced watercolor artists who have not drawn in a while.

10:00 a.m. to 1:00 p.m.
Tuesdays, October 2 – 9
(two sessions)

Fee: Member, \$110;
Non-member, \$135



SOFT PASTELS IN THE GARDEN

Dan Bondroff

All levels are welcome to discover how to paint in soft pastel, considered by many as the purest of painting media.

1:00 to 4:00 p.m.
 Section A: Tuesdays,
 October 2 – 30 (five sessions)
 Section B: Tuesdays,
 November 6 – December 11*
 (five sessions)

*No class November 20
 Fee per section: Member,
 \$155; Non-member, \$195



**CAPTURING THE BUTTERFLY
 IN COLOR PENCIL**

Carlos Gallostra
 Using butterfly specimens
 from the Wings of the Tropics
 collection, the student will
 develop studies in color
 pencil on paper from direct
 observation.

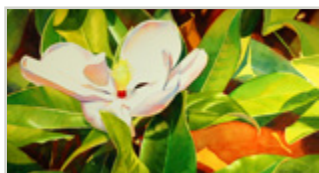
1:30 to 3:30 p.m.
 Section A: Tuesdays,
 October 2 – 30 (five sessions)
 Section B: Tuesdays,
 November 13 – December
 11 (five sessions)
 Fee per section: Member,
 \$180; Non-member, \$255



**WATERCOLORS:
 THE NEXT STEP**

Intermediate/Advanced
Ricardo Aberle
 Join Fairchild Horticulturist
 Ricardo Aberle as he teaches
 you to explore the many facets
 of watercolor in a fun and
 relaxing way.

10:00 a.m. to 1:00 p.m.
 Fridays, October 5 – December 7*
 (eight sessions)
 *No class on November 9
 and 23
 Fee: Member, \$260;
 Non-member, \$300



**PUT YOUR PASSION ON
 PAPER WITH WATERCOLORS**

Intermediate/Advanced
Diane Lary
 Discover the beauty and power
 of using color, value and light
 to describe your subject. Basic
 knowledge of watercolor
 painting required.

10:00 a.m. to 1:00 p.m.
 Wednesdays, October 10 –
 December 12* (eight sessions)
 *No class on November 7
 and 21
 Fee: Member, \$260;
 Non-member, \$300



**ALLA PRIMA APPROACH: THE
 PORTRAIT IN OIL**

Carlos Gallostra
 For advanced and seasoned
 artists, this intensive portrait
 workshop positions the
 participant to explore alla prima
 to capture an immediate likeness
 in a short amount of time.

9:30 a.m. to 12:30 p.m.
 Saturdays, October 13 –
 November 3 (four sessions)
 Fee: Member, \$175;
 Non-member, \$205



**PAINTING AUTUMN'S
 HARVEST IN WATERCOLORS—**

Intermediate
Hillary Parker
 Requires basic watercolor
 experience. Painting fall fruits,
 gourds, and colorful leaves
 from New England is a fun way
 to explore autumn's gorgeous
 palette and unique forms.

10:00 a.m. to 1:00 p.m.
 Mondays, October 22 –
 November 5 (three sessions)
 Fee: Member, \$160; Non-
 member, \$195



**NATURE MANUSCRIPTS
 ILLUSTRATED WITH
 WATERCOLORS AND
 CALLIGRAPHY**

Hillary Parker
 Explore the Old World style
 of manuscripts and learn
 techniques in calligraphy
 and watercolor illustration.
 Requires basic drawing and
 watercolor experience.

10:00 a.m. to 1:00 p.m.
 Tuesdays, October 23 –
 November 13 (four sessions)
 Fee: Member, \$220;
 Non-member, \$270



**INTRODUCTION TO PHOTO
 ENCAUSTIC HOT WAX
 PAINTING**

Andrea Clement
 Encaustics is a mixed-media
 technique that involves using
 a heated beeswax medium
 applied to a surface along with
 other materials.

10:00 a.m. to 2:00 p.m.
 Thursday/Friday, October 25
 and 26 (two sessions)
 Fee: Member, \$150;
 Non-member, \$190



**THE POWER BEHIND THE PAINT
 BRUSH WITH OILS AND ACRYLICS**

Marcelle Zanetti
 All levels welcome to explore
 composition, color and paint
 application techniques.

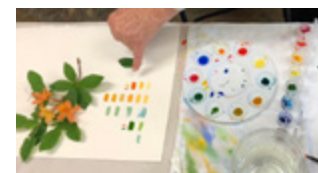
10:00 a.m. to 2:00 p.m.
 Fridays, November 2 –
 December 14* (five sessions)
 *No class November 9 and 23
 Fee: Member, \$200;
 Non-member, \$250



**ZENDOODLE INTO THE
 HOLIDAYS: RELEASING THE
 INNER ARTIST IN YOU!**

Margie Bauer
 Create art that can be turned
 into holiday greeting cards.
 No experience is necessary.

10:00 a.m. to 3:00 p.m.
 Saturday, November 17
 (one session)
 Fee: Member, \$45;
 Non-member, \$60



**PALETTE PLAY: MAKING
 THE ART OF MIXING
 WATERCOLORS EASY**

Hillary Parker
 Learn to comfortably and
 accurately mix and match the
 spectrum of colors from six
 primaries, while practicing
 using complementary, triadic
 and analogue colors.

10:00 a.m. to 1:00 p.m.
 Mondays, November 26 –
 December 10 (three sessions)
 Fee: Member, \$160;
 Non-member, \$195

EDIBLE ART

Hillary Parker
 Use watercolor and basic
 calligraphy to write and
 illustrate favorite family
 recipes. Requires basic drawing
 and watercolor experience.

10:00 a.m. to 1:00 p.m.
 Tuesdays,
 November 27 – December 11
 (three sessions)
 Fee: Member, \$160;
 Non-member, \$195

HORTICULTURE



TREES AND SHRUBS— PROPER TRIMMING TECHNIQUES

Nathaniel Cockshutt

Learn the basics of trimming, with a natural look as the goal. Basic tools will be on display and Fairchild's arborist, Nat Cockshutt, will demonstrate proper trimming techniques on specimens in the Garden.

10:00 a.m. to 12:00 p.m.
Saturday, September 29
(one session)

Fee: Member, \$30;
Non-member, \$40



THE CYCAD COLLECTION AT FAIRCHILD: DISTRIBUTION AND HISTORY

Chip Jones

Understand cycads and their importance to the Fairchild experience. Tour the 10 genera of cycads at Fairchild and learn their natural history. A cycad seedling will be given to participants.

4:30 to 7:30 p.m.
Thursday, October 11
(one session)

Fee: Member, \$30;
Non-member, \$40



HOME GARDENING IN SOUTH FLORIDA

(at Fairchild Farm)

Dr. Richard Campbell

Richard will focus on growing fruit, vegetables and

ornamentals for every taste. Each student will also take home a tree of their own.

9:00 a.m. to 12:00 p.m.
Saturday, October 13
(one session)

Fee: Member, \$30;
Non-member, \$40



ZONE 10 RAISED BED VEGETABLE GARDENING

Terri Stephen

Topics such as plant lists, pests, fertilizer, soil and troubleshooting will be discussed for growing fresh, organic produce.

11:00 a.m. to 1:00 p.m.
Thursday, October 18
(one session)

Fee: Member, \$25;
Non-member, \$35



TOMATOES FOR SOUTH FLORIDA

(at Fairchild Farm)

Dr. Richard Campbell

Learn how to grow tomatoes in South Florida conditions. Students will be furnished with seedlings of successful varieties that are not normally available at garden centers.

9:00 a.m. to 12:00 p.m.
Saturday, November 3
(one session)

Fee: Member, \$40;
Non-member, \$55



LANDSCAPING WITH TERRESTRIAL ORCHIDS

Peter Kouchalacos

Learn how easy it is to add terrestrial orchids to your landscape, including orchids in the *Phaius*, *Spatoglottis*, *Epidendron* and *Oncidium* genera. A variety of orchids will be available for sale after class.

6:30 to 8:30 p.m.
Wednesday, November 14
(one session)

Fee: Member, \$30;
Non-member, \$40



BEGINNER BEEKEEPING FOR THE BACKYARD GARDENER

(at Fairchild Farm)

Dr. Noris Ledesma

For the novice beekeeper, learn about beekeeping and harvesting honey. Books on the subject, beehives and bees will be discussed during the class.

9:00 a.m. to 12:00 p.m.
Saturday, November 17
(one session)

Fee: Member, \$40;
Non-member, \$55



GROWING ORCHIDS IN SOUTH FLORIDA

Dr. Sandra Schultz

Dr. Schultz, past president of South Florida Orchid Society and the Orchid Society of Coral Gables, will share her tips and techniques to

successfully grow orchids. Learn dividing and repotting orchids, how to choose potting materials and types of orchid pots and mounts.

10:30 a.m. to 12:30 p.m.
Wednesday, November 28
(one session)

Fee: Member, \$30;
Non-member, \$40



GROWING HERBS IN SOUTH FLORIDA—LECTURE AND SALE

Carolyne Coppolo

Carolyne, owner of Redland Herb Farm, will introduce students to growing culinary and medicinal herbs in South Florida. Plants will be available for sale.

6:30 to 8:30 p.m.
Wednesday, December 5
(one session)

Fee: Member, \$25;
Non-member, \$35



COMPOSTING 101

Terri Stephen

Learn the tried and true organic methods of turning your food scraps and yard waste into dark, healthy nutritious soil with the four components of composting.

10:30 a.m. to 12:30 p.m.
Wednesday, December 12
(one session)

Fee: Member, \$25;
Non-member, \$35

DIGITAL PHOTOGRAPHY



NYPHAEAS: PHOTOGRAPHING WATER LILIES AND AQUATIC PLANTS IN THE GARDEN

Pedro Lastra

Enjoy capturing the amazing water lily collection in Fairchild's many pools. Instructor Pedro Lastra will cover the camera settings and modes best suited to this type of photography.

12:00 to 3:00 p.m.

Sunday, September 16
(one session)

Fee: Member, \$35;
Non-member, \$55



HOW TO USE AND MASTER YOUR DIGITAL INTERCHANGEABLE LENS DSLR (SINGLE LENS REFLEX) CAMERA

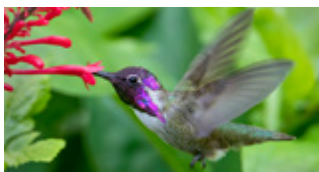
Pedro Lastra

Now that you have a full-featured advanced DSLR camera, learn to use its many features. The class is offered to users of Canon, Nikon, Pentax, Sony and Leica.

6:00 to 9:00 p.m.

Mondays, October 15 – 22
(two sessions)

Fee: Member \$65;
Non-member, \$85



BUTTERFLY AND HUMMINGBIRD EARLY MORNING PHOTOGRAPHY

Pedro Lastra

Photograph the beauties in the Wings of the Tropics, while learning the technical skills to master butterfly macro photography.

8:00 to 10:00 a.m.

Section A: Saturday, October 20 (one session)

Section B: Saturday, December 15 (one session)

Fee per section: Member, \$35;
Non-member, \$55



HUNTER'S MOON: NIGHT PHOTOGRAPHY

Pedro Lastra

Photograph the rise of the Hunter's Moon (October's full moon) at Fairchild. Sturdy tripods strongly recommended.

5:30 to 8:00 p.m.

Tuesday, October 23
(one session)

Fee: Member, \$35;
Non-member, \$55



SUNRISE-EARLY MORNING PHOTOGRAPHY AT FAIRCHILD

Carlos Causo

Photograph the sunrise at Fairchild and the associated flora and fauna, dramatically lit by the rising sun.

7:30 to 10:00 a.m.

Section A: Saturday,
October 27 (one session)

Section B: Saturday,
December 8 (one session)

Fee per section: Member, \$35;
Non-member, \$55



THROUGH THE EYE OF THE ARTIST

Andrea Clement

Learn to take your photography to the next level and produce more artistic images, create moods and use special effects.

2:00 to 5:00 p.m.

Thursday, November 1
(one session)

Fee: Member \$35;
Non-member, \$55



ENVIRONMENTAL PORTRAITURE IN THE GARDEN

Pedro Lastra

Learn to best use your equipment to photograph people in the Garden for perfect environmental portraiture.

2:00 to 5:00 p.m.

Sunday, November 4
(one session)

Fee: Member, \$40;
Non-member, \$65



EARLY MORNING MACRO LIFE PHOTOGRAPHY AT FAIRCHILD

Carlos Causo

Explore, discover and photograph the Garden focusing on flowers, leaves and insects. The last hour will be spent photographing butterflies in the Wings of the Tropics.

7:30 to 10:00 a.m.

Saturday, November 17
(one session)

Fee: Member, \$35;
Non-member, \$55



ADVANCED DSLR TECHNIQUES

Pedro Lastra

Learn about the advanced features and functionalities of your DSLR camera.

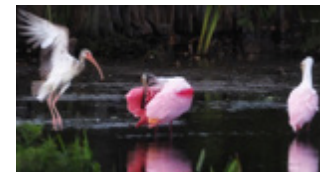
10:00 a.m. to 1:00 p.m.

Saturdays, December 1 – 8
(two sessions)

Fee: Member \$55;
Non-member, \$75

IPHONEOGRAPHY

All classes are taught by
Shirley Drevich



CREATIVE IPHONEOGRAPHY

Explore various ways to capture and process images with your iPhone, creating stunning results with a variety of apps. iPhone 5/5s or later and active iTunes account required.

Section A: Saturdays,
1:00 to 4:00 p.m.

September 29 – October 6
(two sessions)

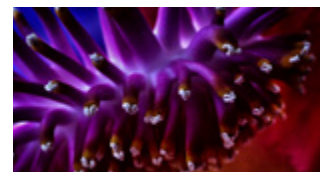
Section B: Wednesdays,
1:30 to 4:30 p.m.

November 28 – December 5
(two sessions)

Fee per section:

Member, \$65;

Non-member, \$85



USING THE HIPSTAMATIC APP ON YOUR IPHONE

Capture that photo like never before without post processing. Choose from numerous lens and film combinations and creative photo effects.

1:00 to 4:00 p.m.

Saturday, October 20
(one session)

Fee: Member, \$30;
Non-member, \$45

(iPhoneography classes continued)



USING IPHONEOGRAPHY TECHNIQUES DURING THE GOLDEN HOUR AND MOONRISE AT FAIRCHILD

Capture the experience of the Garden at night, then creatively process your images with apps in the classroom.

5:00 to 8:00 p.m.
Monday, October 22
(one session)

Fee: Member, \$30;
Non-member, \$45



USING SNAPSEED: EDITING PHOTOS WITH EASE WITH YOUR IPHONE or ANDROID CAMERA

One of the most powerful editing apps is Snapseed. Using their iPhone/iPad or Android phone, students will learn to edit, apply filters, crop, spot repair and use "stacks" to create wonderful images like never before.

11:00 a.m. to 2:00 p.m.
Saturday, December 1
(one session)

Fee: Member, \$30;
Non-member, \$45

CUISINE



EASY SEPTEMBER SUPPER

Maury Crespo

Make a tasty gluten-free meal effortlessly without spending all your time in a hot kitchen. Chef Maury will put the "easy" into this refreshing menu.

6:00 to 9:00 p.m.
Thursday, September 27
(one session)

Fee: Member, \$55;
Non-member, \$70



THAI FOOD TRAVELS

Chris Bulgarin

Prepare Thai basil chicken with cashews from Bangkok, and stir fry prawns with tamarind, chives and vegetables from the Phuket southern provinces, plus jasmine coconut rice.

6:00 to 9:00 p.m.
Thursday, October 11
(one session)

Fee: Member, \$55;
Non-member, \$70



VIETNAMESE NOODLE SOUP

Johnson Teh

Learn how to make pho, Vietnam's most recognized and beloved beef noodle soup. Johnson will also share some recipes for simple appetizers such as spring rolls and green papaya salad.

6:00 to 9:00 p.m.

Thursday, October 25
(one session)

Fee: Member, \$55;
Non-member, \$70



FESTIVE FINGER FOOD AND FLAN

Jessica Welsh

Gringa Flan's Jessica will show you how to prepare delicious and easy-to-make appetizers. Her menu includes artichoke bruschetta, ceviche-tini's, mussels Miami Latin style, baked-brie bites and her famous pumpkin flan.

6:00 to 9:00 p.m.
Wednesday, November 14
(one session)

Fee: Member, \$55;
Non-member, \$70



TASTING TURKISH CUISINE

Billo Jolly

Billo, our multi-cultural chef, will be creating for your pleasure an appetizer (borek); a feta with herbs turnover; a rustic red lentil soup; beef kebabs (simit kofte) and an easy and quick dessert called Sultan's jello.

9:30 a.m. to 1:00 p.m.
Saturday, November 17
(one session)

Fee: Member, \$55;
Non-member, \$70



CHEF JOHNSON'S ASIAN FAVORITES WITH A PALEO TWIST

Johnson Teh

An Asian twist on the paleo diet, including Kimchee fried cauliflower rice, Asian tuna

burgers and mushroom Japchae noodles. Embrace the paleo way of eating.
6:00 to 9:00 p.m.

Thursday, November 29
(one session)

Fee: Member, \$55;
Non-member, \$70



FEAST OF THE SEVEN FISHES SOUTH FLORIDA STYLE

Chris Bulgarin

A South Florida spin on this classic Italian holiday feast using snapper, mussels, squid, octopus, clams and crab. Chris will guide you through his recipes with tips on how to select the best possible bounty from the sea.

10:00 a.m. to 1:00 p.m.
Tuesday, December 4
(one session)

Fee: Member, \$65;
Non-member, \$75



HEALING SPICES AND HERBS AND THEIR BENEFITS

Billo Jolly

The sages of India established Ayurveda, or Knowledge of Life, thousands of years ago. Billo will discuss how herbs and spices have been used in Indian cuisine to cure a myriad of ailments and to preserve foods, for a balanced diet with therapeutic and healing properties.

10:00 a.m. to 12:00 p.m.
Saturday, December 8
(one session)

Fee: Member, \$30;
Non-member, \$40

REGISTER NOW!
www.fairchildgarden.org/classes

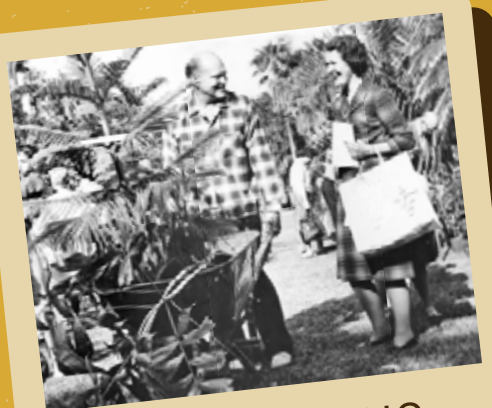
80TH Annual

MEMBERS' DAY

Plant Sale

at Fairchild

SATURDAY, OCTOBER 6, 2018
9:30 A.M. - 4:30 P.M.



CELEBRATING



EIGHTY



YEARS!



Fall Garden Festival

FEATURING THE 78TH

RAMBLE

AT FAIRCHILD TROPICAL BOTANIC GARDEN
NOVEMBER 9 - 10 - 11, 2018
FRIDAY - SATURDAY - SUNDAY - 9:30 a.m - 4:30 p.m

Share the fun @FairchildGarden. Use #RambleFestival
during Fall Garden Festival for your chance to win prizes!

