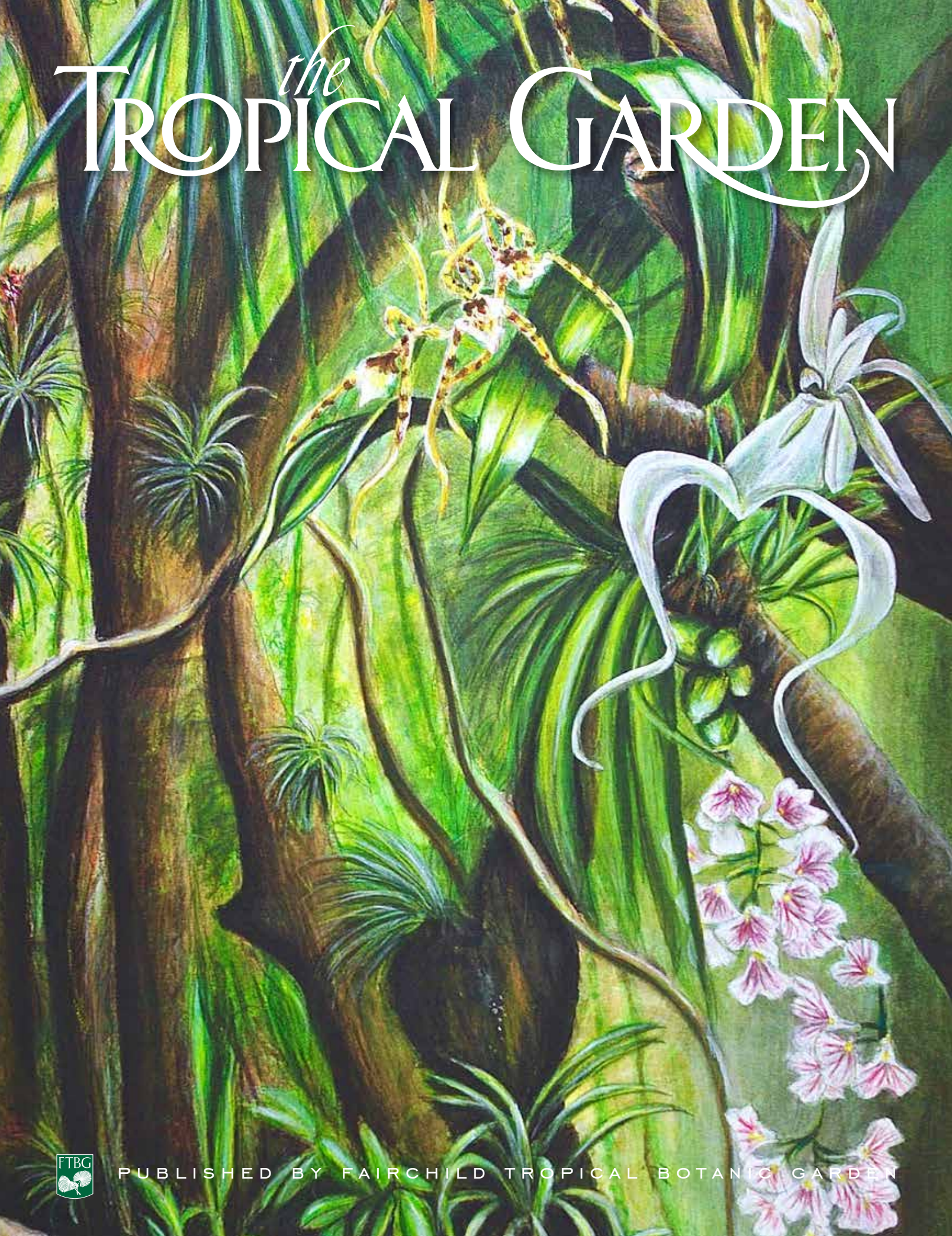

the TROPICAL GARDEN

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FEATURES

DEPARTMENTS

FROM THE DIRECTOR

@CarlLewis

I am pleased to share good news on behalf of the many volunteers, students and supporters involved in The Million Orchid Project. We are now seeing early signs of success around South Florida, as our newly planted orchids take hold. Native orchids now appear to be making a comeback.

A century ago, the orchids around Miami began disappearing rapidly. At first they were harvested by the ton for commercial markets, and more recently they have been gradually lost to urban expansion. Whatever the pace, the trend has always been downward.

Now it appears that the trend line has turned a corner. We have been planting orchids in local neighborhoods for three years now, learning about what works and what doesn't. Some of our planted orchids are beginning to bloom, and many others are on the way.

Six years ago, while the DiMare Science Village was under construction, we were inspired by a visit to the orchid lab at the Singapore Botanic Gardens. Native orchids were being reestablished all over that city, thanks to careful lab work and clever use of urban landscapes.

In many ways our Million Orchid Project is like the Singapore project, but with our local palette of native orchids and the incredible involvement of volunteers and schoolchildren. When the Science Village opened in late 2012, we immediately began planting the seeds of what would become The Million Orchid Project. Now thousands of people are participating. See "The Million Orchid Project: Where Education Meets Conservation," on page 12 for an overview of all the educational outreach we do as part of the project.

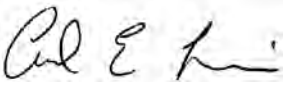
The first orchids we planted, back in the spring of 2014, were young butterfly orchids (***Encyclia tampensis***) and cigar orchids *(Cyrtopodium punctatum)*. That year, the unusually dry spring and summer conditions were too much for the cigar orchids, but the butterfly orchids rooted well. Since then, we have focused our planting efforts on butterfly orchids, while also finding ways to grow more resilient cigar orchids.

More recently, we have identified other native orchids, including the magnificent pine pink ground orchid *(Bletia purpurea)*, that establish very quickly and can bloom from seed within the first year. Pine pink orchids are now being distributed to elementary and middle schools, and many have been planted in parks throughout Coral Gables.

With just over 85,000 orchids planted out so far, we still have a long way to go. This summer will be a big planting year, with more than 100,000 orchids on deck in our nursery, and tens of thousands ready to be planted at schools.

One plant at a time, orchid numbers are increasing for the first time in more than a century. I invite you to stop by our orchid lab in the DiMare Science Village, think about how you can support The Million Orchid Project and help beautify our communities.

Best regards



Carl Lewis, Ph.D.
Director

@ZapataNannette

Orchids. Just the word brings a smile to my face.

My love of plants and gardening started with orchids. I bought one. And then another. And then a few more (at the same time). And then sometimes 15 at a time. And now I have multiple areas of my "porch garden" dedicated to my orchid collection; the blooms of these magical plants hang from my tongue-and-groove ceiling, dotting the white paint like stars dot the night sky.

My family knows when it's "orchid season," not only because my orchids start to bloom, but also because, inevitably, I bring home a carload during the Garden's Orchid Festival. In fact, when I buy a car, one of my requirements is that the trunk be large enough so that I can bring home more of these jeweled beauties without them getting damaged during the ride. (A great radio and orchid trunk space, and the deal is done!)

Orchids are fascinating. There are literally tens of thousands of varieties, with each one possessing an exotic beauty that's seemingly surreal and yet very relatable. For example, their bilateral symmetry, unusual for plants, appeals to our own anatomical bilateral symmetry. They're also tremendous tools for teaching evolutionary biology. For example, certain orchids need more water or light, others less. Some orchids have adapted to cooler, cloud forest conditions, while others thrive in ultra-tropical temperatures. In fact, it was an orchid *(Angraecum sesquipedale)* that reinforced Charles Darwin's theory of evolution.

It's both the breadth and depth of orchids that make them excellent for botanical research and science education—as well as for enjoyment.

This issue of *The Tropical Garden* focuses on the plant family Orchidaceae. Our partners, the American Orchid Society, whose headquarters and library are here at Fairchild, have written fascinating articles about the history of orchids and the AOS, as well as about the largest orchid library in the world. From the Fairchild staff, you'll learn what we're doing with The Million Orchid Project—a citizen science and conservation initiative in which we're propagating 1 million orchids. Through the project, and in partnership with city governments, citizens, middle school students and even our mobile propagation STEMLab, we're reintroducing native orchids into both natural and urban areas within Miami-Dade County. We'll also tell you about our orchid plant collection and our Orchid Odyssey exhibit, show you how to cook with vanilla (which, fun fact, comes from orchids), explain how to care for your own orchids and, of course, share Fairchild's history with orchids via our Archives and Natural History Collection.

Orchids are charismatic and generous plants. They provide great joy as well as fantastic opportunities to better understand the diversity of plants. This issue will give you a good sense of their importance and magic. And an upcoming orchid art exhibit by AOS will capstone the experience.

So be sure to visit the Garden and see our work and orchid collection firsthand. You'll soon want to trade in your own car for one with a more spacious trunk.

Warmest to you,

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

Mary Neustein has been the manager of the Classes at Fairchild for over 24 years. She has created many classes that have connected talented Fairchild staff, local horticulturists, artists, chefs and photographers to our membership and the local community. Her love of plants and animals was instilled in her from childhood. In her spare time, she loves gardening, cooking and caring for her husband and menagerie of dogs and birds.

John Ingram, Ph.D., holds degrees in Russian language and literature and Slavic linguistics. He has held positions at academic and research special collections at Brown University and the Colonial Williamsburg Foundation. From 1994 until June 2010, Ingram worked in the libraries at the University of Florida, retiring as senior associate dean of the university libraries. He is chair of the library and archives committee of the American Orchid Society.

Thaddeus Foote grew up in South Florida, then earned a B.A. in environmental geography from Clark University and an M.S. in environmental education from Antioch University New England. For the past 20 years, he has taught interdisciplinary environmental studies in a variety of settings, from the classroom to the seashore and the treetops to the boat shop. Foote currently coordinates BioTECH @ Richmond Heights 9-12, the country's first conservation biology magnet high school.

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

the TROPICAL GARDEN

The official publication of
Fairchild Tropical Botanic Garden

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ON THE COVER
Native Florida orchids.
Artwork by Mary Ruden

SCHEDULE OF EVENTS

THE AMERICAN ORCHID SOCIETY ART EXHIBITION
Through June 25
Adam R. Rose and Peter R. McQuillan Arts Center
9:30 a.m. - 4:30 p.m.

May

TROPICAL FERN AND EXOTIC PLANT SOCIETY SHOW AND SALE
Saturday and Sunday
May 27 and 28
9:30 a.m. - 4:30 p.m.

June

FATHER'S DAY BRUNCH
Sunday, June 18
9:30 a.m. - 4:30 p.m.

July

THE 25TH ANNUAL INTERNATIONAL MANGO FESTIVAL
Saturday and Sunday
July 1 and 2
9:30 a.m. - 4:30 p.m.

August

PLANT ID WORKSHOP
Friday, August 4
1:00 p.m.

September

PLANT ID WORKSHOP
Friday, September 1
1:00 p.m.

October

79TH ANNUAL MEMBERS' DAY PLANT SALE IN CONJUCTION WITH BIRD FESTIVAL
Coming this Fall

CARS IN THE GARDEN
Sunday, October 29
9:30 a.m. - 4:30 p.m.

HOWL-O-WEEN AT FAIRCHILD
Tuesday, October 31
9:30 a.m. - 4:30 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
10:15 a.m., 11:15 a.m.,
12:15 p.m., 1:15 p.m.
and 2:15 p.m.

BUTTERFLIES: WINGED WONDERS AND THE PLANTS THEY LOVE
Saturdays and Sundays,
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James Lange at Everglades National Park.

Monitoring the Status of Hardwood Hammocks in Everglades National Park

Through a cooperative agreement with Everglades National Park, Fairchild's South Florida Conservation Team has been working closely with Park Botanist Jimi Sadle to survey long-term vegetation plots within hardwood hammocks established on Long Pine Key nearly a decade ago by the Institute for Regional Conservation. The Hammocks of Long Pine Key—home to many species of rare ferns, orchids and, of course, hardwood trees—exist in a landscape of pine rockland and marl prairie. These two habitats are dependent on regular fire for their continued existence, yet must resist fire themselves in order to persist. Hammocks are resistant to fire because of higher moisture levels, lower winds and vegetation that generally is less flammable that that of other areas.

But what happens in the rare event that fire does penetrate a hammock's interior? Fairchild and Sadle are researching this question as they evaluate the impacts from two fires that occurred during 2016—one prescribed and the other a visitor-induced wildfire. The latter was ignited during very dry conditions and slowly smoldered through two hammocks, which both contain three monitoring plots each, giving us the opportunity to evaluate impacts to vegetation and better describe the successional processes that take place following these rare disturbance events. For example, one hammock became overrun with *Carica papaya*, our "native" small-fruited papaya, which is thought to be a pre-Columbian human introduction. Similar observations were made following Hurricane Andrew, showing that *C. papaya* seeds are able to persist in hammocks' soil seed banks for decades, and likely serve as important post-fire cover, because they shoot up quickly to provide shade and humidity while hardwoods recover. We hope that this research will serve as a useful tool for biologists and land managers who seek to preserve these fascinating habitats.

(L-R) Jonathan Flickinger, Jason Lopez, Ray Morris, James Lange and Rafael Aberle.

Sargent's Cherry Palm Monitoring: A Team Effort

More than 25 years ago, the Garden worked with partners to augment the fragile wild population of the endangered Sargent's cherry palm (*Pseudophoenix sargentii*) on Elliott Key. Together, they introduced 63 trees of varying sizes in a group effort that included support from Biscayne National Park, the Florida Department of Environmental Protection, the International Palm Society, horticulturists, many strong volunteers and several Fairchild scientists and horticulturists.

This past February, a team ventured out once again to monitor the health of surviving introduced palms as well as naturally occurring ones. The team included Fairchild Field Biologists Jimmy Lange and Jennifer Possley, Fairchild Living Collections Manager Jason Lopez, Fairchild Grounds Technician Rafael Aberle, Florida International University graduate student Jonathan Flickinger (who is hosted at the Garden) and Fairchild volunteer extraordinaire Ray Morris. Despite the presence of an extremely vibrant mosquito population, the team managed to visit all known plants along the entire length of the 7-mile-long island. Although the team is still crunching the data, they have reported that the Sargent's cherry palm is still alive and well on the island, including some beautiful trees planted by Fairchild back in 1991-1992. Two of these trees were observed fruiting for the first time ever, which is great news for the future of this population.

(L-R) Brothers Leon and Marie Victorin, in Bahía Honda, Cuba, 1939.
Photo: Copyright of Division de la Gestion de Documents et des Archives, Université de Montréal

Caribbean Island Botanical History Research at the University of Montreal Archives

Dr. Javier Francisco-Ortega, a professor in Florida International University's Department of Biological Sciences and a Garden scientist, traveled to Montreal March 12-18 to conduct botanical history research in the archives of the University of Montreal. He was hosted by Luc Brouillet and Geoffrey Hall, both from the herbarium of the Montreal Botanical Garden; by Monique Voyer from the University of Montreal archives; and by Marie Timperley from the Kirouac Family Association.

Francisco-Ortega's research focused on documents and photos from the Caribbean and Florida expeditions of Brother Marie-Victorin, a member of the Catholic congregation of La Salle. These expeditions took place between 1931 and 1942. Brother Marie-Victorin was the founder of the Montreal Botanical Garden, and the father of modern botany in Canada. A main highlight of this research visit was the discovery of a travelogue produced by Brother Marie-Victorin during his 1941 trip to Trinidad, Jamaica, and Barranquilla (Colombia). The study of these documents and photos is part of projects involving colleagues from Canada, Florida and the Caribbean Islands.

This trip was sponsored by the Kimberly Green Latin American and Caribbean Center, the International Center for Tropical Botany of FIU and the College of Arts and Sciences of FIU.

Amy Padolf talks at TEDx Coconut Grove

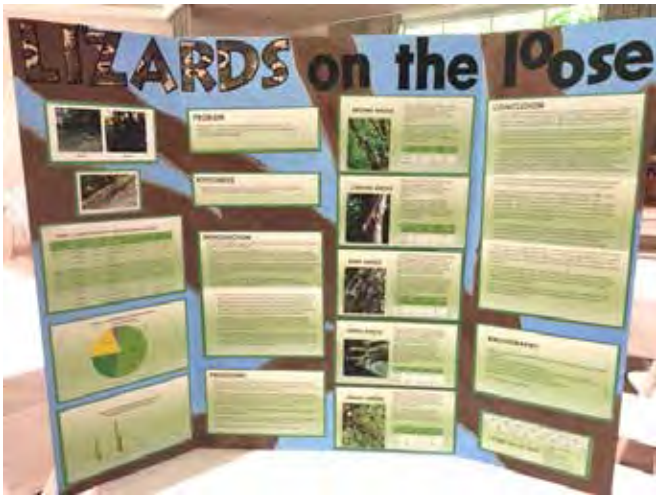
On March 17, Fairchild's director of education, Amy Padolf, presented at TEDx Coconut Grove. Held at Ransom Everglades School, the conference's theme this year was "Escape." Through her presentation, "Learning from History, Preparing for the Future," Padolf shared the story of how and why Fairchild got involved in testing crop options for growth on the International Space Station. This research, conducted in partnership with NASA's Kennedy Space Center, has transformed how Fairchild approaches plant science education.

View the presentation at **www.fairchildgarden.org/tedx**

Graduate students Nichole Tiernan and Jonathan Flickinger, El Pilón, Cuba, 2016.

Fairchild Graduate Students Receive Botany in Action Fellowships

Fairchild graduate students Jonathan Flickinger and Nichole Tiernan each received a Botany in Action Fellowship from Phipps Conservatory and Botanical Garden in Pittsburgh. They are studying plant systematics at Florida International University (major advisor Dr. Javier Francisco-Ortega). Each fellowship includes a $5,000 grant to support research projects. Related outreach activities will be conducted with students from Biotech @ Richmond Heights 9 - 12 and FIU, and with Miami-Dade area teachers. Flickinger and Tiernan are also scheduled to attend Science Engagement Week at Phipps. Research will be done in partnership with Garden Herbarium Curator Dr. Brett Jestrow.



Lizards on the Loose

It's been another great year for our Lizards on the Loose project with The Fairchild Challenge! This project has middle school students from all around South Florida conducting visual surveys of native and non-native lizards in their school grounds, backyards and local parks. In total, this project has involved 1,725 students from 117 schools who have conducted 1,750 surveys, and recorded more than 24,000 lizards!

Importantly, some of our outstanding middle school students have identified brand-new populations of invasive lizards outside of our current knowledge of their distribution. Last August, Fairchild presented the results of our Lizards on the Loose project at a special symposium on "New Frontiers in Conservation Ecology of Tropical Amphibians and Reptiles" at the Ecological Society of America's annual international conference. A large crowd of International ecologists and conservation biologists attended the presentation The Lizards on the Loose project, supported by The Fairchild Challenge, continues to provide direct and important contributions to science. We are still analyzing data from our 2017 lizard surveys and are extremely excited about the project growing in 2018.

Conservation Fund Provides Emergency Support for Plant Conservation at Botanic Garden of Cayes, Haiti

Dr. Javier Francisco-Ortega, professor in Florida International University Department of Biological Sciences with an official appointment at Fairchild, received a $5,000 grant from the Disney Conservation Fund's Rapid Response Program to provide post-Hurricane Matthew assistance to the Botanic Garden of Cayes, Haiti. This botanic garden is Haiti's only botanical institution, and has a mission to effectively conserve Haitian endemics in its living collections. In October 2016, Hurricane Matthew extensivelly damaged the facilities and infrastructure of this garden. This emergency grant will help to restore its basic irrigation system. The grant is administered through the FIU Foundation and the FIU International Center for Tropical Botany, and its activities are undertaken in partnership with William Cinea (director of the Botanic Garden of Cayes) and Dr. Brett Jestrow (herbarium curator at Fairchild), who are both leading several conservation projects focusing on the highly threatened endemic flora of Haiti.

The Million Orchid Project: Where Education Meets Conservation

Student scientists learn and study while directly assisting this important reintroduction effort.

By Amy Padolf

More than 1,000 seventh grade students have contributed to the production of 1,500 rare South Florida orchids during STEMLab's pilot year.
Photo by Jay Arce

The beauty of being an organization where the education and conservation missions are completely intertwined is that Fairchild is able to create programs that are both innovative and impactful.

The Million Orchid Project is the epitome of this. We are able to deploy our army of student scientists to help achieve our important conservation goal of reestablishing a healthy population of native orchids, while giving those students another avenue to learn about science and conservation. As their work helps us reintroduce native orchids, it also inspires them to care more about conservation. And it is powerful.

Students' projects vary in complexity and scope. High school students extract DNA to help us understand the complicated genetics of our rare orchids. Middle school students assist with the tremendous job of propagating orchids from seeds in our STEMLab. Elementary schoolers take healthy seedlings back to their schoolyard and plant them in areas where the orchids would originally have been found. Hundreds of students of all ages are testing a variety of growth conditions in their classrooms. We've shown that everyone has a vital role in conservation.

BioTECH @ Richmond Heights 9-12

For instance, at the three-year-old BioTECH @ Richmond Heights 9-12 (the botany and zoology magnet high school Fairchild helped found), 11th graders are exploring some of our researchers' most-pressing questions. Working with Dr. Jason Downing, Fairchild's orchid biologist, the students have designed a variety of projects. Some are using DNA extraction and analysis to identify exotic species of orchids that are out-competing our native rare species. Others are working to determine whether some species of native orchids share a mycorrhizal fungus with local ferns (see page 21). Others are using micro imaging to study the effects of orchid seed metabiology on light pattern to determine how it can affect growth habits. And, students are studying factors that impact the growth of these orchid species in nursery conditions.

The STEMLab program is facilitated with the help of Fairchild volunteers.
Photo by Jay Arce

STEMLab

Of course, not every school has its own built-in botany lab. We bring the lab to seventh graders at other schools with our mobile STEMLab, our most innovative approach to getting students involved in our Million Orchid Project. This state-of-the-art mobile tissue culture lab was built in partnership with Miami-Dade County Public Schools MDCPS and was designed by students at the University of Miami School of Architecture's Design Build Studio.

Part of MDCPS's fleet of mobile laboratories, STEMLab connects students with Fairchild's ongoing research. Inside the mobile laboratory, they do the same sterile work that our researchers, specially trained lab volunteers and graduate students from local universities do in order to save several rare and endangered native orchid species.

Since September 2016, more than 1,500 seventh grade students from 30 of Miami-Dade's most diverse public middle schools have joined Fairchild's research team. They explore local conservation and basic plant biology, use specialized laboratory equipment, propagate and care for native orchids, collect and analyze data and, finally, plant orchids in their schoolyard.

The Fairchild Challenge

Other South Florida students participate in The Million Orchid Project through The Fairchild Challenge. During the 2015-16 academic year, thousands of students tested standard, commercially available, growing media with two different supplements (banana and potato) to determine which additive works best for the health and structure of developing orchids in sterile conditions. They found that banana extract had a positive effect on root development and promoted healthy seedlings for *Encyclia tampensis* (Florida butterfly orchid), as well as for the other orchid species targeted for The Million Orchid Project. However, we encountered difficulties when the orchid seedlings were removed from the sterile conditions and directly transferred into very dry substrate. It was determined that the seedlings did not have sufficient time for their roots to get used to their new conditions and harden properly.

This school year, 35 South Florida high schools are helping Fairchild researchers refine our acclimatization techniques for the epiphytic (growing on other plants or trees) *E. tampensis* and the terrestrial *Oncidium ensatum*. Students are determining how long each species should remain on sphagnum moss media before being transferred into a root-hardening media.

Explorer Field Trip Program

At the Garden, we have integrated The Million Orchid Project into our Explorer Field Studies program. Through this program, students study local ecosystems and focus on areas that are home to some of Florida's most endangered orchid species. As a part of this program, they have the opportunity to deflask orchids that have been growing in our lab or were propagated by students aboard the STEMLab. Students then take the orchids back to their schoolyards to be planted. This year, more than 2,500 *Bletia purpurea* (pine pink orchids) have been distributed to participants in third through fifth grades. Many schools have told us that their orchids are a proud addition to their schoolyard and have already begun blooming.

The Million Orchid Project has given us the opportunity to rethink how we approach conservation education. By tapping into the Garden's long history of exploration, plant expertise and huge network of environmentally-minded junior researchers, we are offering infinite possibilities.

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

Fairchild volunteers serve the Garden, the South Florida community and the world through their hands-on, interactive participation in Fairchild's programs and activities, while meeting others who share their interest in plants, people and gardens. Current volunteer opportunities include hosting, guiding students on field trips and gardening on a horticulture team.

To learn more about becoming a Fairchild volunteer, please visit us at www.fairchildgarden.org/volinfo or call 305.667.1651, ext. 3360.

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SPOTLIGHT

NURSERY *VOLUNTEERS*

TRANSITIONING ORCHIDS FROM GREENHOUSE TO GROUND

Text and photos by Jason Downing, Ph.D.

Volunteers Erich Cauller and Bill Capps with terrestrial orchids *Bletia purpurea* and *Oncidium ensatum*.

Since the beginning of The Million Orchid Project, nursery volunteers Erich Cauller, Roly Santana, Bill Capps and Margie Bauer have managed the endless floods of orchids being produced in the propagation lab at Fairchild.

After they have grown for over a year in the laboratory, the volunteers relocate thousands of tiny orchids to the Fairchild nursery, where they are carefully removed from the growing media and planted one-by-one in horticulture trays. This transition from the sterile-controlled environment of the culture bottles to the dynamic conditions of the greenhouse remains the most difficult part of orchid growing. It is particularly true for our native epiphytic species, which are extremely sensitive to water loss, pests and environmental shock. In the early stages of the project, many orchid seedlings were lost while students, volunteers

Nursery volunteers Roly Santana and Margie Bauer with native ground orchid. *Bletia purpurea* (Pine-pink orchid).

and researchers worked on better propagation protocols for each species. Two years later, the orchids are still growing in size and number. In particular, the volunteers' work has greatly improved our propagation protocols for the native terrestrial orchids *Bletia purpurea* (pine pink orchid), and *Oncidium ensatum* (Florida dancing lady). With these new protocols, we can now produce a flowering plant from seed in one year.

The Million Orchid Project has a very different approach than that of traditional orchid propagation. Our aim is to try to propagate all of the orchids—not just the largest, most beautiful or hardiest specimens. Our volunteers have mastered painstaking techniques and successfully grow even the tiniest seedlings—crucial to achieving our goal of generating millions of orchids. By propagating specimens of all types, we help preserve each species' overall genetic diversity by more accurately representing the genetics of the entire population, versus only a few selected plants.

With the help of volunteers and students, The Million Orchid Project so far has placed nearly 30,000 plants across Miami's landscapes. This year's goal of generating hundreds of thousands of orchids will undoubtedly keep our amazing nursery volunteers busy for the foreseeable future! Their service is greatly appreciated.

Volunteer Erich Cauller working at Fairchild's orchid green house.

Crême Brulee

Ingredients
2 cups heavy cream
1/4 cup white sugar
1 pinch salt (optional)
½ vanilla bean
2 eggs
3 egg yolks
4 tablespoons white sugar

Directions
1. Preheat oven to 300 degrees F and line the bottom of a large baking pan with a damp kitchen cloth.
2. Bring a large pot of water to boil.
3. While water is boiling, combine cream, vanilla bean, 1/4 cup sugar and salt in saucepan over medium heat. Stir occasionally for 4 to 5 minutes, until steam rises.
4. In a medium bowl, beat egg yolks and eggs until smooth.
5. Pour hot cream into eggs, a little at a time, stirring constantly, until all cream is incorporated. Pour mixture into four 6-oz. ramekins.
6. Place ramekins on towel in baking dish, and place dish on oven rack. Pour boiling water into dish to halfway up the sides of the ramekins. Cover whole pan loosely with foil.
7. Bake 25 to 30 minutes in the preheated oven, until custard is just set. Then chill ramekins in refrigerator for 4 to 6 hours.
8. Before serving, sprinkle 1 tablespoon sugar over each custard ramekin. Use a kitchen torch or oven broiler to brown top for 2 to 3 minutes.

Now grab a spoon, tap gently to break the caramelized sugar top and dig into this creamy, vanilla-specked delight. While you savor it, think about the journey *V. planifolia* took to get onto your spoon. Enjoy!

THERE'S AN *ORCHID* IN MY SPICE RACK

By Mary Neustein

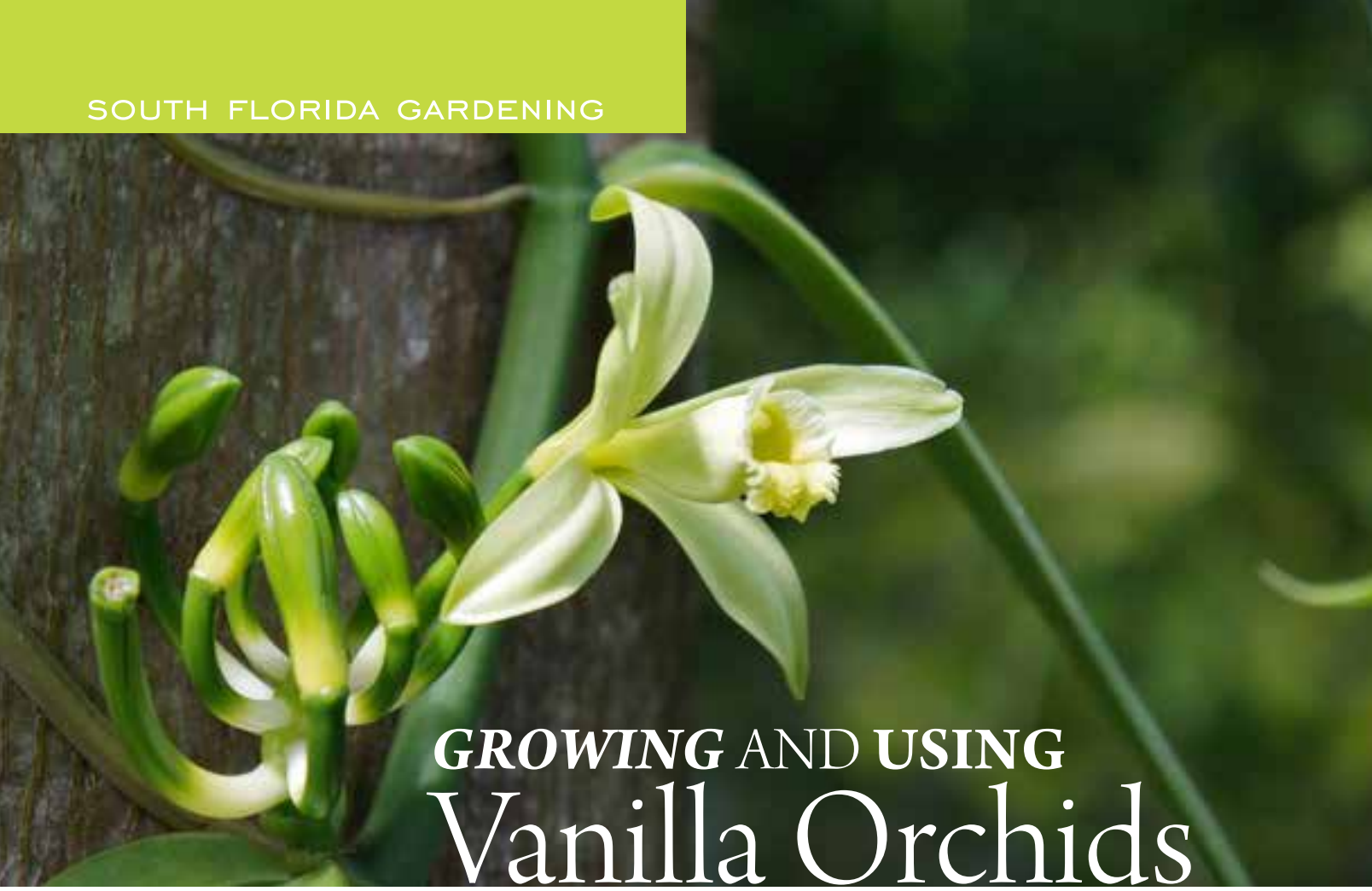
Did you know that the vanilla orchid, *Vanilla planifolia*, is the only orchid with black seeds, and each vanilla bean (really the pod) contains thousands of seeds?

Known for its popular aroma and the flavor it adds to baked goods and silky desserts, vanilla can be found in the grocery story in both extract and imitation forms—and the extract is always more expensive. Why? We can find the answers on a journey to Indonesia and Madagascar, the world's largest producers of vanilla.

To produce pure vanilla extract, the beans from *V. planifolia* are laid out in the hot tropical sun to dry and cure for up to eight months. Once the dried beans have developed their flavors, they are crushed and placed in a mixture of alcohol and sugar. The aromatics of the beans will infuse flavors into the alcohol and water mixture for several months to make an extract. A pure vanilla extract must be 35% alcohol and use 13.35 ounces of vanilla beans per gallon of steeping liquid. Vanilla extract is the only flavor regulated by U.S. law. The process is labor-intensive and the product is pure and simple perfection to be added to a recipe. The average cost of natural (pure) vanilla extract is about $4.50 per ounce.

Imitation vanilla is man-made and most likely a synthetic vanillin. It is chemically produced using a combination of sugar, corn syrup and other sweetening agents, and is very easy to produce in large quantities. It tastes just like real vanilla and is used in more than 95% of our vanilla-flavored food products. Go ahead and look at the back of your favorite breakfast cereal, cookie or ice cream carton and you will likely see "natural and artificial vanilla" among its ingredients. The average cost of imitation vanilla is about 18 cents per ounce.

So you've done the vanilla/vanillin math on price difference—but nothing can compare to the taste profile of a pure vanilla extract in a recipe. Here is a simple seven-ingredient recipe for Créme Brulee, a creamy custard that will make a dinner complete and also satisfy any sweet tooth. This recipe is provided by Fairchild's talented pastry chef, Frances Brown. Look for her class "The Vanilla Custards—A Very Rich Family" in the fall Classes at Fairchild.



GROWING AND **USING** Vanilla Orchids

South Florida's climate is friendly to growing vanilla orchids, and if you're willing to hand-pollinate, practice patience and carefully cure and sweat the pods, you can even have home-grown vanilla.

Text by Sandra Schultz, Ph.D. | Photos by Georgia Tasker

About 99 species of the vanilla orchid grow in subtropical and tropical regions. The name Vanilla is from the Spanish word *vaina*, meaning sheath or pod. The Maya grew vanilla in sinkholes in the Yucatán; later, the Aztecs wrote that travelers should wear vanilla around their necks for protection.

Spanish explorers brought vanilla pods back to Europe from Mexico during the 1500s. Cuttings were grown in Europe from the 1730s, but the absence of their native pollinators meant that those vines produced no pods. During the 1800s, Charles Morren, a Belgian botanist, went to Mexico and learned that the vanilla flower is pollinated by the tiny, stingless, Melipone bee, which occurs in the neo-tropics. However, Morren also discovered how to artificially pollinate the flower, which led to successful growing of vanilla in French colonies such as Tahiti and Madagascar. Later, a 12-year-old slave on Reunion Island developed a better pollination method. He used a small stick to split the side of the flower, causing the

anther sac to touch the stigma, and then smashed them together with his thumb and forefinger. This is the same method I use to pollinate my flowers, except I use a toothpick rather than a stick.

Cultivation in South Florida

You can grow vanilla plants in your South Florida garden, too. *Vanilla planifolia* is native to Mexico, grows in Florida and is the major commercial vanilla plant. It is a monopodial (growing upward from a single point), climbing, vine-like plant, with thick, leathery leaves alternating along the stem, where aerial roots emerge from each node. These vines can grow quite long—I have some that have reached more than 30 feet, growing on palms, up pieces of board, across a horizontal trellis and even up the metal lathe side of a shade house.

Vanilla grows in warm, humid climates and likes bright sun most of the day, preferring some shade at noon. These plants love palm trees, oaks or any tree that will allow sufficient light for them to bloom and still provide some shade and wind protection.

To make cuttings, remove lower leaves and place the bottom end of the plant in a plastic pot filled with sphagnum moss. Mist the roots daily and keep the media moist.

If your vanilla plant has roots, you may place them directly in soil next to a tree or wooden pole. Add some leaf litter, peat or mulch. Or, plant your vanilla in a pot with a mixture of potting soil, compost and/or orchid mix and tie the vine onto a support such as a stake or trellis. The aerial roots will attach to the tree or other support. Fertilize with 20-20-20 weakly (use one quarter to one half teaspoon per gallon of water) every week. I also top-dress the pot with Nutricote slow-release fertilizer in the spring.

It may take several years for the vine to grow large enough to flower, but I have found that once the vine is established, it grows rapidly. If you plan to pollinate the flowers, train the vine so that you can easily reach the flowers. Trust me, it is hard to climb a 16-foot ladder braced against a palm tree.

TOP-BOTTOM
Using a toothpick to lift the rostellum shielding the stigma of the vanilla flower.

Preparing to press the pollen into the stigma.

Pollination

V. planifolia's fragrant cattleya-shaped flowers form in the spring. They are fairly large, ranging from white to greenish yellow and green. Flowers form at the leaf axils (between the leaf and stem) in clusters, and open one or two at a time. Each flower lasts just one day, opening in the morning and closing the same afternoon. Most commercially grown vanilla is hand-pollinated.

Hand pollinate the flowers in the morning when they are fully open, around 11 a.m. Push the lip of the flower down so it is not in the way and hold the column with the fingers of your left hand. Use a clean toothpick in your right hand to lift the rostellum—a flap of tissue that projects down in front of the anther—and fold it upward. Then, press the anther down onto the stigma, which causes the pollen to contact the stigma. Several good YouTube videos offer step-by-step instructions. When the flower is successfully pollinated, the seed capsule (pod) is formed—thus, the term "vanilla bean" is not accurate.

Preparation

Pick the pods while they are still green, but turning yellow with a dark tip. It took my pods six months to get to this point. Cure the pods on trays in direct sunlight for several hours and put inside a plastic bag to sweat overnight. Repeat this process each day for six weeks. The pods will gradually turn dark brown. Then, dry the pods in a sealed container for three more months. Now you know why vanilla is so expensive!

If stored in an airtight glass jar and kept in a dark place, the pods will last for years. Each pod contains thousands of seeds, which are visible in certain brands of vanilla ice cream. Both the pods and seeds are used to make vanilla flavoring. I put one split pod in a jar of vodka (you can also use rum) and another pod in a jar of sugar.

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Orchid Hunter in the Lab: The Role of Mycorrhizae

Orchid hunters have long known that where resurrection ferns are found, so are orchids. Student orchid hunters are looking for the reasons why—and they've started with shared mycorrhizae.

Text and photos by Thaddeus Foote

"If you're looking for epiphytic orchids in South Florida," shared the orchid hunter, "look for resurrection ferns first. They're easier to find and they usually grow with orchids."

For decades, this trade secret was merely anecdotal advice among those who spent countless hours searching for South Florida's rare orchid jewels. Today, however, five 11th graders from Fairchild's own BioTECH @ Richmond Heights 9-12 botany magnet high school are testing why orchids and ferns tend to cohabitate.

This work began last summer, when Fairchild's summer high school interns put the orchid hunter's advice to the test in the lab. They wondered whether resurrection ferns might share the same mycorrhizae as some Florida orchids.

In Greek, "myco" means fungus and "rhiza" means root. In English, root-fungus or "mycorrhizae" are symbiotic relationships between plants and fungi, beginning at the roots. Although nobody knows for sure how many organisms benefit from these relationships, certainly a large majority of all plants on earth are included among the beneficiaries.

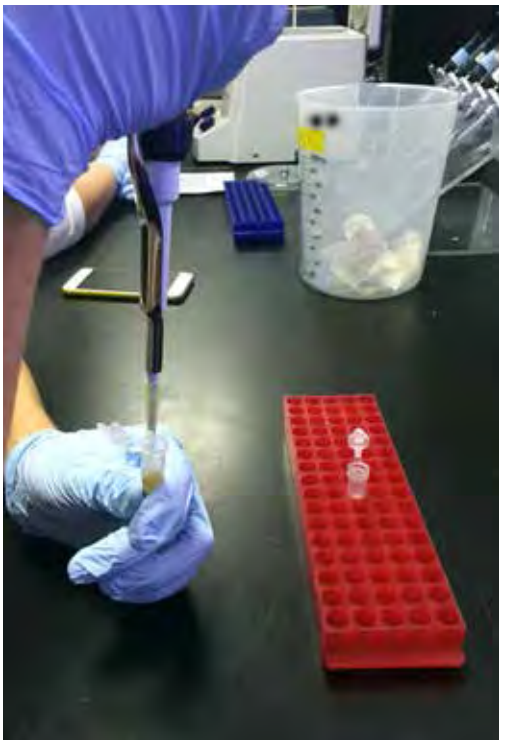
Under the guidance of Fairchild Orchid Biologist Dr. Jason Downing, the BioTECH interns discovered that the resurrection fern (*Pleopeltis polypodioides*) and the Florida butterfly orchid (*Encyclia tampensis*) indeed share the same species of mycorrhizal fungi. This discovery brings scientific evidence and an explanation to the orchid hunters' adage, and opens the door to countless research questions about species connected via mycorrhizae. Now, 11th grade BioTECH students are expanding on the interns' research, and have added a few questions of their own.

"We're studying the ecological relationship between ferns and orchids and the role of the mycorrhizal fungi shared between them," explains Caro V., a BioTECH 11th grade research student. The team of students is exploring which ferns and orchids might share fungi and whether the compositions between different combinations of orchids and ferns are the same. Previous studies suggest that orchids and ferns utilize fungi independent of each other. This study, however, builds upon and improves what we currently know about the relationship and asks new questions. Thanks to the summer intern study, we now have evidence that the butterfly orchid and the resurrection fern share a fungus. Maybe other species do too. "This study documents new relationships between mycorrhizal fungi and different plant species," Downing explains. "The findings could

BioTECH student Kieran collecting orchid root samples at the Garden.

Isolating DNA in the centrifuge.

(L-R) The BioTECH research team (Kieran, Sarah, Carolina, Brianna and Juvianni) in the DNA lab with their mentor, Dr. Jason Downing.



Isolating fungal DNA.

change the way we think about plant/mycorrhizae interactions and biodiversity on a global level."

Because their relationship is symbiotic, both the fungus and host plant benefit from it. The fungus colonizes the roots of the host plant and extends its hyphae—fungal filaments—many feet beyond the extent of the roots. The hyphae collect nutrients and water and share them with the host plant, greatly increasing the host plant's access to vital ingredients. The fungus, in return, receives sugars from the plant's photosynthetic process. Thanks to this relationship, both organisms are healthier, stronger and better-suited to survive. Given the proliferation of mycorrhizae in plant communities throughout the world, ecological systems are therefore healthier, stronger and better-suited to survive.

As with many plant science research projects, the mycorrhizae study process begins in the field. BioTECH students collect root samples throughout the Garden and neighboring public and private lands—including overlaying orchid and fern roots of different species. Orchid and fern roots that physically overlap in their natural setting are more likely to share fungi, so collecting them increases our ability to identify a shared fungal species. Back in Fairchild's Baddour DNA lab, students "surface sterilize" the samples to ensure the DNA collected originates from the inside of the sample and not the outside. DNA on the surface could potentially represent a different organism living in proximity, thereby disrupting the results. After extracting the DNA, students sequence for fungal DNA using fungi-specific primers, thus identifying the shared fungi. Although the extracting and sequencing processes are standard throughout the plant research world, the application is cutting-edge, and our BioTECH students are holding the tools.

Today's research by tomorrow's plant scientists sheds light on both the plants and the classroom. Our collective understanding of the infinitely complex web of plant/fungi relationships continues to grow with every discovery and, as one BioTECH student said, "There's no reason to stop." In the meantime, the orchid hunter will continue looking for ferns first and the BioTECH students will continue asking, "Why?"

HISTORY OF ORCHIDS

Thousands of orchids were ripped from their habitats during Orchidmania.
Photo courtesy of the American Orchid Society

With thousands of species and hybrids cultivated for their flowers, it's no wonder that this plant's place in human culture can be traced back to the time of Confucius, and forward to genetic modification.

By Ron McHatton, Ph.D.

For centuries, orchids have been among the most popular of plant families, with thousands of species and hybrids cultivated the world over for the diversity, beauty and intricacy of their flowers. Literary and artistic references to orchids can be traced back to the time of Confucius (about 500 B.C.). The early Greeks revered the testiculate root structures (paired fleshy tubers that resemble mammalian testicles) of many European terrestrial orchids as a symbol of virility. During the Middle Ages, orchids played a major role in herbal remedies. The earliest orchid cultivated in Japan was probably 'Ju-san Tai-ho' (Thirteen Great Treasures), taxonomically *Cymbidium ensifolium*, and as early as the 10th century A.D., a Chinese book on orchids was published listing many cymbidium varieties and how to successfully grow them. Especially desirable were the variegated leaf forms; even today, whole societies are devoted to them.

"Orchidmania" Catches Fire

By the start of the 18th century, orchid collecting was firmly established in many parts of the world, but, arguably, the event that set fire to the "orchidmania" of the latter half of the 19th century and through the 20th century was the flowering in 1823 of what has become known as the Queen of Orchids, *Cattleya labiata*. In 1818, William John Swainson, collecting specimens in northeastern Brazil, sent a shipment of plants to Scotland's

TOP-BOTTOM
Original drawing of *Cattleya labiata*.

Cattleya hybrid.
Photo by Lisa Matherne

Glasgow Botanic Gardens, with instructions to forward some of them on to William Cattley, a plant collector near London. Cattley was known for his extensive private collection of tropical plants and had hired a young botanist, John Lindley, to catalog the collection. Plate 33 of Lindley's "Collectinea Botanica," published during 1824, illustrates an incredible new variety of orchid that flowered in Cattley's collection in 1823. Lindley described it as a new genus, *Cattleya*, named for his benefactor, Cattley; he gave it the species the name *labiata* in reference to the shape of its leaves. Although it would be 65 years before this species was located again, the plate touched off a mania that resulted in the collection and description of most of the other species in the genus. In Belgium and England especially, vast quantities of tropical orchids from the new colonies were introduced for auction to those wealthy enough to own greenhouses. A commercial orchid nursery in England had two railway sidings that were in use day and night, unloading plants that had been rushed from the docks at Southampton and Liverpool.

Sadly, most of these plants were destined to die in the dark, hot "stoves," as greenhouses in those days were called, because few in Europe understood the real conditions required by most tropical epiphytes (nonparasitic plants which grow above the ground, supported usually on trees). But growers tinkered and adapted and there were successes—not only in growing and flowering imported orchids, but also in producing hybrids. John Dominy, a British horticulturist and plant hybridizer, flowered the first known manmade hybrid, *Calanthe* Dominyi (*sylvatica* × *triplicata*), in 1856. The first *Cattleya* hybrid, *Cattleya* Hybrida (*guttata* × *loddigesii*), followed in 1859. Today, in the most recent count, there are 167,000 registered orchid hybrids.

At first, raising hybrids was a slow, hit-or-miss process, because doing so depended on chance germination on the potting medium of the mother plant. Eventually, two European scientists, working independently, developed a process to germinate seeds in a sterile medium containing a culture of the appropriate fungus. Time-consuming and technically difficult, this, too, was destined to change. In the early 1920s, Lewis C. Knudson of Cornell University discovered a relatively simple, easily followed process to grow thousands of seedlings under sterile conditions. The rest is, as they say, history.

The Modern Age of Orchids

Today's modern age of orchids was ushered in during the 1960s with the development of techniques to rapidly produce large quantities of vegetatively propagated plants—carbon copies, if you will. This process is commonly referred to as mericloning. Thousands of mericlones can be raised; barring genetic mutations, each is identical to the mother plant from which the original tissue was harvested. The result? Today it is possible to buy, at almost any outlet, plants of such high quality that they would have fetched hundreds of dollars only a few decades ago.

The future? No one really has a crystal ball, but one development we are already seeing is genetic modification of orchids to introduce features not normally present. For instance, there is no true blue pigment in the genus *Phalaenopsis*—those gaudy blue phals you see in grocery stores today are dyed, just like carnations. However, researchers in Asia recently debuted an intensely blue-flowered phalaenopsis hybrid resulting from genetic modification. What is next? Perhaps glow-in-the-dark flowers?

TOP-BOTTOM
Cattleya labiata f semialba Waldor.

Mules with orchids.
Photo courtesy of the American Orchid Society

HISTORY OF THE AMERICAN ORCHID SOCIETY

By Ron McHatton, Ph.D.

What is the American Orchid Society and what does it do? Join me in my time machine for a brief look back over the years. Our first stop is April 7, 1921. Thirty-six orchid enthusiasts, predominantly representing the fledgling United States orchid industry, met at the Massachusetts Horticultural Society in Boston to launch the American Orchid Society. The driving force for its formation was opposition to Quarantine 37, a federal government rule restricting the importation of plant material from Europe. Such a rule would have effectively crippled the industry.

This was before Cornell University professor Lewis Knudson's discovery in 1922 that orchid seeds could be germinated on sterile agar without fungus inoculation. Prior to Knudson's work, orchid seeds could be germinated on agar, but germination required the inclusion of a fungus—always a hit-or-miss proposition because of ever-present pathological fungi. Other expressed goals included organizing orchid shows around the country and the establishment of a system whereby the quality of exhibited plants could be judged. The Society also wanted to create a plant register and, of course, increase membership.

Harvard professor Oakes Ames and his wife, noted botanical artist and researcher Blanche, took on the task of compiling the AOS register, and in 1924 "An Enumeration of the Orchids of the United States and Canada" was published. For almost 60 years, the AOS maintained its offices at the Oakes Ames Herbarium of Harvard University.

In June 1932, the first issue of the *AOS Bulletin* rolled off the presses as a quarterly publication. Over the years, it became a major horticultural publication, and is now *Orchids*, a monthly magazine.

In 1949, the first AOS-judged orchid show was staged in New York City. Today there are more than 600 certified and student judges in 34 sites. Judges give around 2,000 awards each year at monthly judgings and shows around the world.

Also in 1949, the AOS established a Scientific Advisory Board. To date, it has provided more than $1 million in grants, supporting students and scientists around the world in their studies of such subjects as tissue culture, seed germination, genetics and pest and disease control.

In 1984, having outgrown our Harvard location, the AOS moved to West Palm Beach, Florida, thanks to the generosity of a past president, Lewis C. Vaughn, and his wife, Varina, who donated their park-like estate. Even this space was destined to be outgrown, and in 2001, the AOS relocated to a new home in Delray Beach, Florida. In 2012, looking forward to the next hundred years, the AOS entered into a long-term partnership with Fairchild to relocate to the Garden. Now, we are enthusiastically looking forward to the next 100 years.

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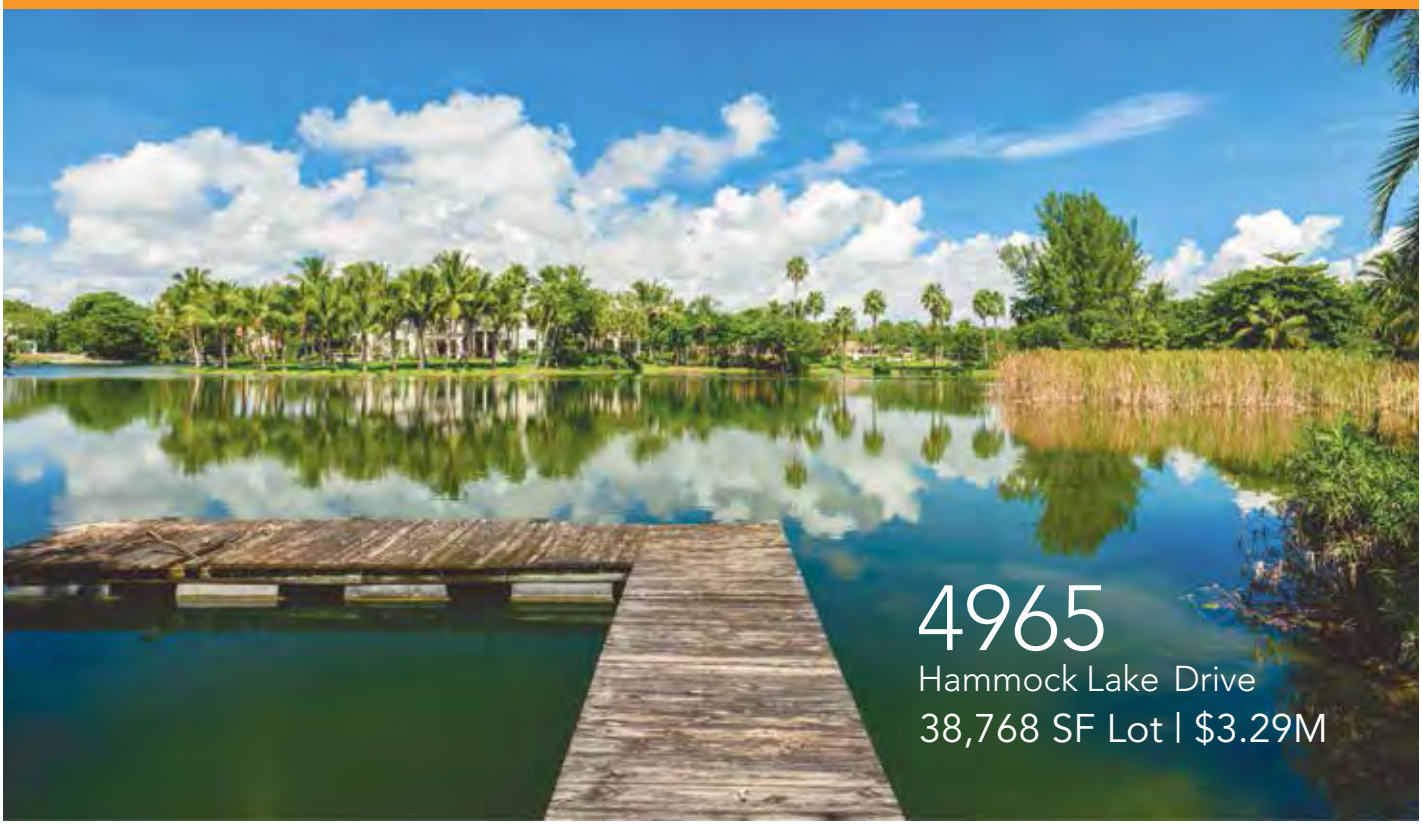

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SOLVING THE *COWHORN* MYSTERY

Cowhorn orchids are no easy grow, but a school in Hialeah may have found the recipe for success.

BY KENNETH SETZER

PREVIOUS PAGE
Cowhorn Orchid.
Photo by Kenneth Setzer/FTBG

TOP
Introducing elementary school students to the wonders of nature and science.
Photo by Andrew Kearns

Of the many orchids grown as part of The Million Orchid Project, the cowhorn orchid (*Cyrtopodium punctatum*) has proven to be a bit of a challenge to keep alive. A teacher and his students may have figured out why.

The cowhorn orchid is easy to like, if not easy to grow. Its flowers are large, yellow, patterned in splotches of reddish brown. Even when not flowering, its pseudobulbs, which serve to store water and nutrients, stand out like green cigars; its other common name, the cigar orchid, reflects this. The orchid was once common in South Florida, growing epiphytically from cypress and other trees in areas like the Everglades, Big Cypress Swamp and Fakahatchee Strand. Poaching and habitat loss, however, have made them rare.

Fairchild's The Million Orchid Project has literally grown thousands upon thousands of orchid seedlings, including the cowhorn orchid, butterfly orchid (*Encyclia tampensis*), pine pink orchid (*Bletia purpurea*) and others. From nearly microscopic seed to seedling capable of survival outdoors, there have been countless orchid restoration successes, but the cowhorn has been a challenge.

Dr. Jason Downing, the Fairchild orchid biologist involved with The Million Orchid Project, says that the cowhorns are often lost "in the transition stage, going from a container-grown situation to a greenhouse. It's difficult to acclimatize any of the epiphytic orchids, but we've lost a lot of cowhorns, in particular, at this transition."

Though native to Florida, Mexico, parts of the Caribbean, and Central and South America, cowhorns in the U.S. are now found growing wild only in remote, protected Florida areas. They tend to prefer mostly rough bark trees like live oak, buttonwood and mahogany. "It makes sense," Downing says, "that the [airborne] seeds would land in the furrows of rough bark. It's a place where their symbiotic fungi might also be present."

It Takes a Village

Through the Fairchild Challenge, The Million Orchid Project has recruited local schools to help with its mission of propagating and reintroducing native orchids into South Florida's urban landscapes. The project is also an opportunity to teach science and botany through the hands-on tactics needed to grow an orchid from seed. Everyone benefits: The students get to conduct and report real science, Fairchild is able to grow more orchids and collect more data than would ever be possible alone, and the community benefits from the restoration of these rare, native plants.

Thanks to Andrew Kearns and his students at José Martí MAST 6-12 Academy, a public magnet school focusing on mathematics and science in Hialeah, Florida, cowhorns are revealing their secrets. Kearns is chair of the mathematics department and also serves as the school's liaison to The Fairchild Challenge. Back in 2014-2015, Kearns says he and his Green Club and AP Statistics students "began to manage and experiment with different manners in which to raise these young orchids."

Under the auspices of The Million Orchid Project, the students began with four trays of cowhorn orchids, and

LEFT-RIGHT
José Martí MAST 6-12 Academy students hanging orchids in the school's shade house.

Cowhorn orchid maturing nicely on cut wood at Martí MAST.

Photos by Andrew Kearns

added their own treatment to the final phase of outplanting, in which they attached the seedlings to the bark of the Florida native buttonwood (*Conocarpus erectus*). Also called button mangrove, buttonwood, predictably, is often found near shorelines and has no problem with brackish water and salt spray. It is found throughout much of the subtropics and tropics of the Americas and parts of Africa. Like mangroves, it stays fairly short and can spread wide horizontally. Key West boasts a champion buttonwood tree, last measured at 35 feet tall with a 70-foot crown spread.

A math background and love for nature make an effective combination: Kearns and his statistics students have "used survivorship data from the 2014-2015 school year to analyze effectiveness of propagation media," he explains. They presented these results at Fairchild's 2016 Orchid Festival. "What Andrew has found is that, instead of transitioning the cowhorn orchids onto sphagnum or expanded clay pellets to grow, as may be done for other species, it's best to get the seedlings out onto pieces of cut wood as soon as possible," says Downing.

The cut wood that seems to be a cowhorn favorite is buttonwood. "Getting these orchids onto cut wood also allows us to attach them directly to their ultimate host trees, without disturbing the roots," Downing adds. "The wood eventually decomposes to provide some nutrients to the orchid, by which time it should have attached itself to its host."

Kearns and his students confirmed what Fairchild's own micropropagation lab volunteers have expressed: There's no instruction book for saving native orchids. "What is particularly motivating for me and my students is the absolute authenticity of this experience," he says. "Many questions we ask are met with a response of, 'We don't know. Why don't you try it?' Our efforts are contributing to the body of knowledge about these rare orchids and that, in and of itself, is exciting."

The authentic experiences and curiosity show no sign of diminishing: "My students and I have created a new botany lab at our school with a goal of being able to propagate native orchids ... from seed to outplanting," Kearns says "Currently, we are comparing the effectiveness of commonly available LED shop lights with fluorescent lights on newly deflasked seedlings—my AP statistics students will soon be analyzing this data. We expanded our shade house facilities to include another 10-foot-by-20-foot space and are maintaining approximately 250 cowhorns in our facility."

Fortunately, buttonwood is not a threatened species and is common in cultivation. It is identified by its deeply furrowed bark and twisted, sometimes gnarled branches; its salt tolerance makes it especially useful for coastal landscaping. Thanks to The Million Orchid Project, teachers like Andrew Kearns and his passionate students, buttonwoods and other trees will host cowhorns en masse again soon.

Follow their progress on Twitter #MakingStatsReal.

THE SHOP AT FAIRCHILD
Spring Favorites!

By Erin Fitts @ShopatFairchild

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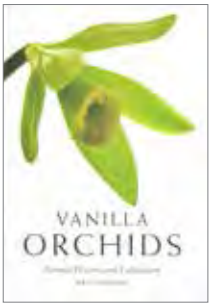

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MASDEVALLIA COCCINEA *Lindl.*

THE LIBRARY OF THE AMERICAN ORCHID SOCIETY AT FAIRCHILD

FROM CLASSICAL TIMES TO THE PRESENT, HUMANS HAVE BEEN OBSERVERS OF ORCHIDS AND HAVE ATTEMPTED TO EXPLORE, EXPLAIN AND DOCUMENT HOW THEY GROW AND WHY THEY GROW IN SUCH VARIED ENVIRONMENTS. THE LIBRARY OF THE AMERICAN ORCHID SOCIETY—HOUSED AT FAIRCHILD—PLAYS A SIGNIFICANT ROLE IN THIS DOCUMENTATION.

BY JOHN E. INGRAM, PH.D.

PREVIOUS PAGE
Life-size portrait of *Masdevallia coccinea* from "The Genus *Masdevallia*."

ABOVE
The American Orchid Society library at Fairchild will have an open house Saturday, May 20 during Garden hours. The AOS will provide a part-time librarian sometime in the future, when appointments may be made to use the collection.

The books and journals in the AOS Library cover the orchids of six continents. The collection houses rare books, contemporary monographs, scientific treatises, theses and dissertations, research, science and popular journals, pamphlets, and ephemera. It represents languages including English, German, Dutch, French, Spanish, Romanian, Polish, Czech, Slovak, Swedish, Norwegian, Russian, Ukrainian, Greek, Turkish, Japanese, Chinese, Thai, Malaysian and Korean. Its books date from the mid-18th century through the present, and range in length from four to more than 1,000 pages, and in size from smaller than a postcard (Chow Cheng's "Formosan Orchids") to the elephant folio of James Bateman's "The Orchidaceae of Mexico and Guatemala." Because this library is predominantly a research library, two copies of each book title, as well as selected journal publications, are available.

The AOS Library comprises two distinct collections: the collection that grew up in the United States, and the collection that the late Ben Singer created as his personal library, which he donated to the AOS. The U.S. collection has grown organically, steadily but haphazardly, during the past nearly 100 years, relying on the serendipity of editorial review copies, outright but limited direct purchases and,

Title page of "The Genus Masdevallia" by Miss Florence H. Woolward, created in 1896.

Front Cover of "Les Orchidees 1 Serie," by Mme. Emilie Vouga, a Swiss botanical artist.

chiefly, the largesse of individual contributions of materials. Major book contributions came from the personal libraries of Gordon Dillon, Lloyd De Garmo and Raymond McCullough, to name but a few.

The Ben Singer collection was born from one man's commitment to acquiring and preserving written and pictorial documentation of the world of orchids. Singer, who ran an orchid business in The Netherlands and sold it to collect orchid books, followed his personal commitment for more than 50 years, creating one of the world's premier private libraries on orchids. With his death in 2012, his library became a physical part of the AOS library. Many of the rarer—but not necessarily most valuable—items in the AOS Library are the result of Singer's well-trained eye for the unusual, seldom-met or early published study on some aspect of orchids.

Among the hundreds of genuinely rare and important volumes in the collection, the following titles represent but a few examples of note: the imperial edition (one of 100 copies) of Frederick Sander's late 19th-century four-volume set "Reichenbachia, Orchids Illustrated and Described," the first edition of Charles Darwin's "Fertilization of Orchids: Various Contrivances by Which British and Foreign Orchids are Fertilized by Insects" and John Lindley's complete folio set of "Sertum Orchidaceum." The AOS Library also holds complete sets of "Lindenia Iconographie des Orchidées" by Jean and Lucien Linden, Robert Warner's 11-volume "Orchid Album," Alfred Cogniaux and Alphonse Goossens' "Dictionnaire Iconographique des Orchidées" and Florence Woolward's "The Genus Masdevallia."

The library currently houses around 4,000 individual titles in its monograph holdings, and perhaps 2,000 bound journals. The collection's real value rests in the many research and scientific materials that have formed its base for many years. Examples include early dissertations and theses from German orchidologists Heinrich Gustav Reichenbach (1852) and Johannes Klinge (1893); American plant pathologist and U.S. Department of Agriculture researcher E. P. (Emilio Pepe Michael) Meinecke (1894); German botanist Rudolf Schlechter (1904); and German botanists F. C. (Friedrich Carl) von Faber (1904) and Hans Edmund Nicola Burgeff (1909). It includes significant modern scientific taxonomic

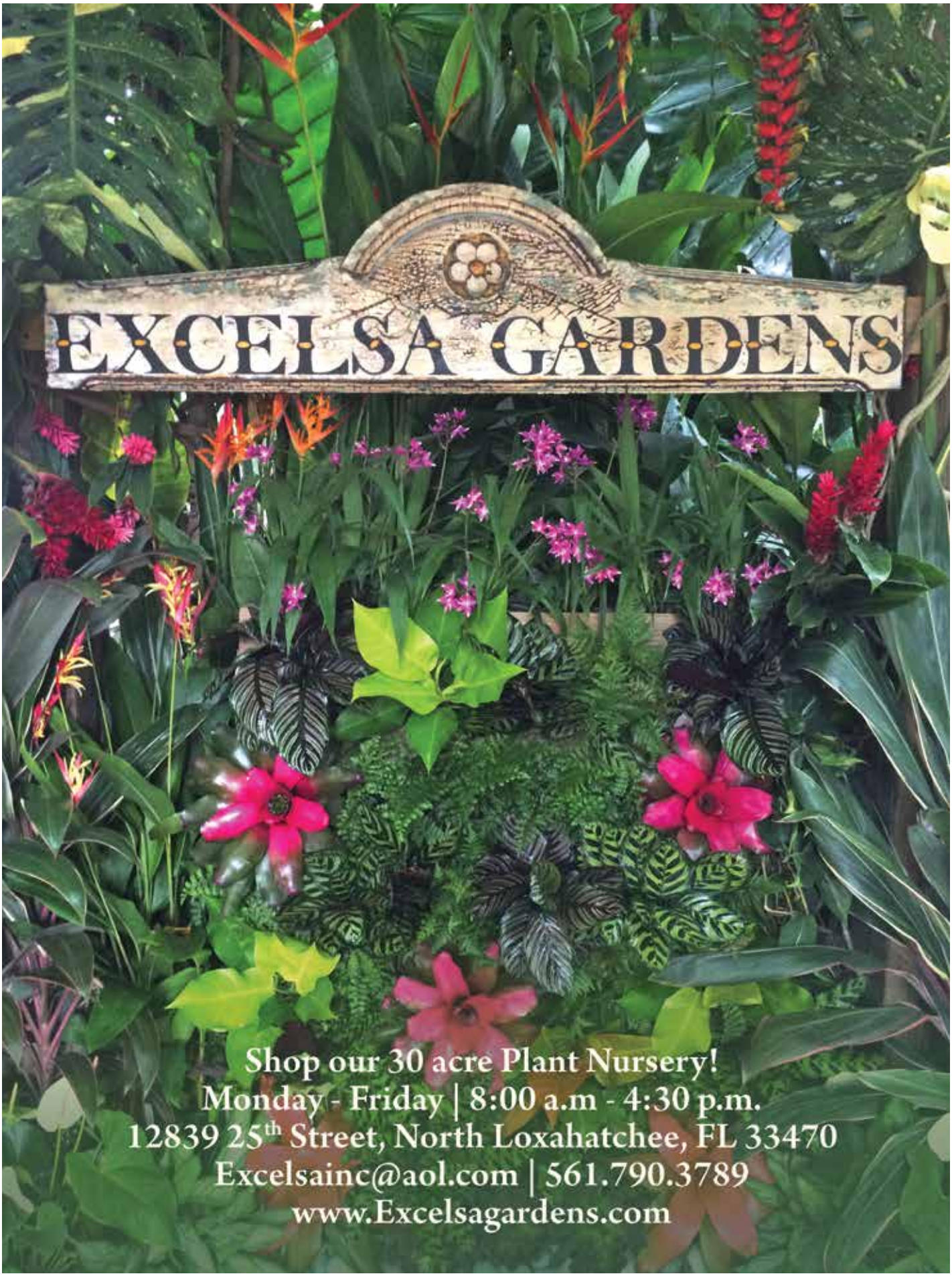
(L-R) Two pages from the notebook of Dutch nurseryman Junk, who specialized in orchids and other exotic plants.

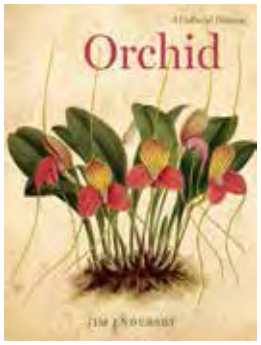
studies, ranging from the more than 30 volumes of Carlyle Luer's "Icones Pleurothallidinarum" to the multi-volume "Thesaurus Masdevalliarum." The library also houses complete runs (bound and unbound) of the AOS *Bulletin*, Orchid Digest Corporation's *Orchid Digest*, Royal Horticultural Society's *The Orchid Review* and several fairly complete sets of journals from Asia, Africa, Australia, Europe and South America. This provides a trove of orchid investigation treasures for both beginning hobbyists and well-established researchers and scholars.

Contemporary technology now gives all orchidists easy access to text and image materials that have been traditionally accessible to only the select few with access to research libraries, or those who, like Singer, created their own research libraries. While there may be less concern over the permanence of electronic versions of our research collections in general, there is little disagreement that technology has made enormous strides in improving and increasing access to information. With the increasing sophistication of automatic translation programs, texts in languages that are unintelligible to a reader can even be made intelligible.

The "old" technology of paper and ink, too, has experienced a monumental transition—from black-and-white woodcuts to stone and metal engravings, from hand-colored engravings to chromolithographic images, and from those chemical processes to both analog and digital photographs. Such technological advances have brought a greater sense of reality to the images—conveying the same information that early taxonomists labored so intently to convey in words. Taxonomic descriptions, still formally written in Latin, allow for a mutually understandable base of orchid description that is used throughout the world of orchids. Combined with unenhanced photographic or digital images, they can achieve a true symbiosis of information transfer to the researcher.

Indeed, technology has exponentially advanced the opportunities to see the world of orchids in new and exciting ways, to compare and contrast information from the past with the latest research, to demonstrate and document efforts at preservation and conservation and, lastly, to support taxonomists, hobby growers, nurseries and research interests worldwide.





Orchid: A Cultural History

By Jim Enders. University of Chicago Press, 2016

Review by Kenneth Setzer

The title reveals the appeal of this book to a non-orchid-expert like myself. "Orchid: A *Cultural* History" (my emphasis) encompasses all that is fascinating about possibly the largest plant family on the planet, its natural history, its relationship to culture and just about every topic in between.

Endersby traces the magic and influence of orchids back to the ancient Greeks and their desire to catalog and categorize all things in nature—a precursor to modern taxonomy. Writing from a Eurocentric base, the polymath and philosopher Theophrastus, who was a student of Plato and Aristotle, worked with local orchids, having no idea about the tropics and the multitude of strange orchids they harbored. *Orchis* was the name given to the local terrestrial orchids, for the tuberous organs these orchids use to store starch and water. It means testicle, which the observers apparently thought the orchid part resembled.

From antiquity through the 16th century and later, there was a European belief that divine messages were encoded into plants, to be read by the intelligent observer. It was God's way of leading people to the proper plants to cure all sorts of ills. Called the "Doctrine of Signatures," the belief was that a plant's appearance mirrored its medicinal efficacy. Orchids, therefore, were believed to enhance male virility, or reduce it, depending on which tuber one consumed and how.

Endersby illustrates how the flood of plants entering Europe during the age of discovery (15th through 18th centuries) was in no small part the impetus for the Linnaean binomial system, and orchids naturally play a starring role as novel plants needing efficient classification.

But be assured, the book is no dry text on plant cataloging; at times it's pretty funny: the author relates that Francisco Hernandez, physician to the King of Spain, observed Montezuma drinking cacao with vanilla, noting among its many medicinal qualities "Vanilla also 'expels flatulence' and (rather fortunately, given the previous property) was highly aromatic."

The Europeans exposed to the New World wonder of tropical flora and fauna associated much of the tropics with lusty sensuality, inhibition and hedonism. It's no wonder, then, that orchids, so plentiful in the Neotropics compared to Europe, became linked to the fantasy of the jungle and its libertine "noble savage" free from prudish constraint.

The "orchidmania" of the late 18th and 19th centuries is also explored, as Endersby shows how it overtook the wealthy of Europe, particularly Britain, and was made possible by increased world trade, accumulation of wealth and cheaper, stronger glass and iron that could be used to build the large hothouses needed for tropical orchids. He also shows how those hothouses led ultimately, and ironically, to the democratization of orchids. Interestingly, Endersby notes that, most likely, the first tropical orchid to flower in Europe in 1731 was then called *Helleborine americana,* and today is *Bletia verecunda* or *Bletia purpurea*, the pine pink orchid—a Florida and Caribbean native!

The orchid became even more entwined into both learned and popular culture after Charles Darwin's work on how orchids lure insects for pollination and his famous prediction that a moth with an exceptionally long tongue must have evolved alongside the orchid *Angraecum sesquipedale* in order to reach the plant's pollen, which is secreted in an exceptionally long nectary. This saw the rise of orchid fiction and lurid accounts of explorer-botanists resorting to all sorts of unpleasantries—including death—to find the next new and valuable orchid.

There's also a brief but interesting overview of orchid mass production, made possible partly by the work of biologist Lewis Knudson's discovery in the 1920s that beneficial fungi don't themselves cause orchid seeds to germinate, but rather feed already-germinated seedlings. This allowed growers to help the process along with sugars and other fungi proxies. Whether you're an orchid fanatic or not, "Orchid: A Cultural History" combines the qualities of sound scholarship, enjoyable text and humor with fascinating bits of information connecting it all.

Sometimes plants are grown for their beauty and uniqueness long before they are understood botanically. Living collections provide a unique opportunity to observe the growth and development of plants over the long term, as well as to conserve threatened species for future study. Among the collections in the Garden are examples of plants that were cultivated for many years before botanists used those collections to solve important mysteries.

BOTANICAL *DISCOVERIES* FROM HORTICULTURE

Text and photos by Chad Husby, Ph.D.

Describing a new species at Fairchild: *Rhaphidophora cryptantha*

In 1974, the Garden received cuttings of an unidentified aroid from the Lae Botanic Garden in Papua New Guinea. This plant had been wild-collected in that nation's East Sepik District years before and cultivated at Lae. It has prospered in the Clinton Family Conservatory at Fairchild ever since. Its shingling leaves and silvery veins have long piqued the curiosity of visitors, yet its identity remained a mystery for 25 years. In 2000, Craig Allen, who was curator of the Conservatory (then called the Rare Plant House), noticed this plant's unusual inflorescences, which are almost entirely covered by its leaves. He shared this observation with an authority on Asian Araceae, Dr. Peter Boyce. Boyce determined it to be a new species and included its description in his revision of the genus *Rhaphidophora* in New Guinea, Australia and the tropical western Pacific. Its unique "hidden/cryptic" inflorescences inspired the specific epithet *cryptantha*. Allen was made a co-author on the species name and the type specimen was obtained from the plant growing in the Conservatory. This same plant still climbs the wall just to the left of the main entrance to the Conservatory as one walks in (the northeast wall).

A 200-year-old botanical mystery solved: *Dracaena umbraculifera*

In 1968, the Garden obtained a *Dracaena* species from Bob See, a plant collector who had obtained the plant near Calcutta, India. According to Garden records, the plant had originally been grown from seed from "some remote place (South Pacific?)." It grew into

LEFT TO RIGHT
Rhaphidophora cryptantha
Dracaena umbraculifera

a big, bold and beautiful specimen, and can be found in the Garden today (Plot 27). The identity of this plant was not determined until recently. I had become interested in the species *Dracaena umbraculifera*, which was presumed extinct in the wild, but was known from a few specimens around the world in botanic gardens and private gardens. While studying the Garden's *Dracaena* collection, I noticed that our specimens closely resembled *D. umbraculifera* collections at other botanical institutions, as well as one I had seen in a private collection in Florida. In 2016, I sent leaf specimens of this plant, along with specimens of two very similar plants in the nursery that we had recently obtained as donations, to researchers at the Missouri Botanical Garden (MOBOT) who were assessing how much genetic diversity remained of the presumed extinct species *Dracaena umbraculifera*. MOBOT has a large, old specimen of *D. umbraculifera* in its Climatron—a geodesic dome used as a conservatory.

D. umbraculifera was described in 1797, but was not known as a wild plant. Specimens cultivated in Vienna, Austria, were the source of the initial description. These were thought to have been shipped with other plants from Mauritius, but the species has never been known in the wild in Mauritius. Studies of the DNA of the species by MOBOT scientists determined that *D. umbraculifera* is more closely related to *Dracaena* species in northeastern Madagascar than to those in Mauritius. This result prompted the researchers to explore sites in northeastern Madagascar, where they discovered four populations of *D. umbraculifera*, a species formerly thought to survive only in cultivation. Thus, thanks to horticulturists—who for centuries have grown, propagated and shared this beautiful plant in botanic gardens—and to botanists intrigued by its mysterious origins, a species that might otherwise have never been discovered can now be conserved in the wild.

These are just two examples of how horticulture and botanical garden collections can make important contributions to both botanical science and conservation. This synergy will likely become increasingly important in the 21st century, as we face growing challenges and opportunities.

ORCHIDS

Through the Artists' Eyes

A new American Orchid Society show at the Garden showcases the flowers in forms from glass and porcelain to paint and photos.

By Georgia Tasker

Given the exquisite forms and colors of orchid flowers, it is little wonder that artists for generations have depicted them in porcelain, glass, metal, batiks, ink, etchings, watercolors on canvas and photographs. The American Orchid Society's new exhibition will bring all of these media together in a show now open in the Adam R. Rose and Peter R. McQuillan Arts Center. The show will run through June 25.

Third-generation orchid grower Bob Fuchs, president of R.F. Orchids, remembers that his grandmother, Louise Fuchs, collected Bavarian orchid porcelain and orchid-etched Heisey glass. She set an example that he has followed, and many orchid collectables in the exhibition belong to him.

Heisey glass was made in Newark, Ohio, from 1896 to 1957 by A.H. Heisey and Co. The orchid pattern was not introduced until 1940, but it became the company's most popular design. Today, there is a Heisey Museum in Newark and collectors' clubs across the country.

Boehm porcelain followed a similar path from small factory to international fame. In Trenton, New Jersey, veterinarian Ed Boehm made small animal figures as a hobby. His wife soon took over the marketing of the figurines, and they opened a studio. A second was opened in England. Today, the small figurines are on display at the Museum of American Porcelain Art in Cleveland. "I started collecting Boehm 30 years ago at antique shows, especially those on Miami Beach," Fuchs says. He has loaned three Boehm porcelains to the show, each with delicately painted phragmipediums, dendrobiums and cymbidiums. "Hardly any [examples] remain of these, with three orchids in one piece," Fuchs says, explaining that they were issued in limited editions and signed by Helen Boehm, who ran the company after her husband's death.

It's possible that the story of orchid art began in ancient China. It certainly continues there today. Confucius (551—479 BC) is credited with saying "An orchid in a deep forest sends out its fragrance even if no one is around." Chinese cymbidiums, which are terrestrial and have slender leaves and delicate flowers, are displayed in vases especially designed to balance and accommodate the plants. (The flowers are prized for their

PREVIOUS PAGE
Japanese cloisonné with sterling silver, 1987.

LEFT (TOP-BOTTOM)
Artist Mary Rudin painted these native Florida orchids.

Artist Angela Mirro's painting of *Phragmepidium kovachii.*

fragrance.) Fuchs loaned two Chinese porcelains for the exhibit: a 500-year-old Tang Dynasty bowl and 600-year-old Nan Dynasty teapot. Both depict the elegant lines and restraint found in Chinese calligraphy.

Other works in the exhibition showcase different facets of orchid art. For instance, you'll find many orchid illustrations by Blanche Ames. Ames, who was married to Harvard botanist Oakes Ames, illustrated her husband's seven-volume treatise on orchids, beginning in 1902. Over several Christmases, Blanche and Oakes also sent a series of her orchid drawings to friends, including Dr. David and Marian Fairchild. Blanche Ames' oil portrait of David Fairchild hangs in the Garden's Davis House conference room.

Contemporary artists also are represented in the exhibition, including Angela Mirro, a textile designer and watercolor artist. Her orchid paintings have been featured in *Orchids*, the magazine of the American Orchid Society. Her work has been exhibited at the New York Botanical Garden, The Smithsonian Institution and the Shirley Sherwood collection in London.

Mirro began painting orchids grown by her late mother, Marilyn Mirro. She was an accomplished *Vanda* grower who exhibited in South Florida orchids shows. "The experience of painting orchids is energizing and magical," she says. By day, Mirro works at Ralph Lauren Home in Manhattan creating designs for the home furnishings market, but continues to paint orchids and landscapes. In pursuit of her goal to paint orchids in their habitats, she has made nine trips to Peru, and has given painting and drawing workshops for children who live in Aguas Calientes, a town at the base of Machu Pichu, and Huilloc, a remote village near Cusco.

"Art is a vehicle for enlightenment and education," Mirro says. "I stress that it is important to protect the environment. That's why it's important to work with the children. I try to impress upon them how very special their environment is and how lucky they are to have it." Her poster for the 2008 World Orchid Conference in Miami was a scene from the Fakahatchee Strand featuring the ghost orchid, dollar orchids and *Epidendrum tampensis*. Its creation involved three trips into the Fakahatchee with Florida State Parks biologist Mike Owen; her eyes swelled shut for days after one mosquito-infested visit.

LEFT (TOP-BOTTOM)
Limited-edition centerpiece with cympidiums and other orchid flowers by Boehm, hand-painted and signed by Helen Boehm, 1984.

A Bavarian handle vase from the 1880s.

Another contemporary artist in the exhibition is Mary Ruden, a Miami-educated artist who moved to Tennessee a few years ago. For the centennial of the National Park Service, she curated a 32-artist show in Tennessee of plants native to the Great Smoky Mountains National Park. For the AOS exhibit, she will show a bronze lady slipper, paintings of ghost orchids and several silk textiles with orchids such as cattleyas, phalaenopsis and vandas. "One of the ghost orchid paintings was in an exhibit at the National Botanic Garden in Washington, D.C., for almost a year to honor the Centennial of the National Park Service in 2016," she says.

Orchid photographs will be on display from South Florida photographer Paul Marcellini, who as a youngster grew miniature orchids. Marcellini specializes in photos of South Florida's natural areas. One of his photos of sunrise in the rock pinelands of Everglades National Park was selected to represent the park for the centennial stamps issued by the U.S. Postal Service. His orchid images are delicate and ethereal, with the flowers photographed against a white background.

BELOW
Contemporary photo of *Phalaenopsis* by Paul Marcellini.

Phais orchids from "Reichenbachia."

"Reichenbachia"

Henry Frederick Conrad Sander was born in Germany in 1847. Within two decades, he was working in nurseries in England. In another two decades, he was recognized as "the Orchid King" with orchid businesses based in England, Belgium and the United State. He sent orchid hunters throughout South America and Asia. *Vanda sanderiana* and a dozen other species are named in his honor.

But his greatest achievement was the publication of "Reichenbachia, Orchids Illustrated and Described," produced in London between 1888 and 1894. It is a monumental publishing production that is a "holy grail" of magnificent proportions, issued in two editions: a simple folio edition and a limited imperial edition of 100 copies signed by Sander.

The plates were printed (some through a 20-color sequence of inks) in chromolithographic reproductions from original paintings, of most which were watercolors by H.G. Moon. Each volume has 49 plates, for a total of 192 chromolithographs. The four volumes were dedicated to Queen Victoria; Augusta Victoria, Empress of Germany and Queen of Prussia; Maria Feodorovna, Empress of Russia; and Marie Henriette of Austria. The books were named in honor of a German orchidologist, H.G. Reichenbach.

Sander died in 1920. At one point in his life, he had employed 23 full-time orchid collectors and filled 60 greenhouses with thousands of plants.

—John Ingram
Chair of the Library and Archives
Committee of the American Orchid Society

COMING TO GRIPS WITH ORCHID NAMES

Text and photos by Georgia Tasker

1. *Phalaenopsis* **2.** *Oeceoclades maculata* **3.** *Paphiopedilum* **4.** *Cycnodes* **5.** *Angracum* **6.** *Trichoglottis*

7. *Dendrobium* **8.** *Stanhopea*

Orchid names are on the slippery slope of confusion, given the changes in taxonomic relationships wrought by the use of DNA to establish evolutionary kinship. Some of the unpronounceable names may have fallen into the pit of "Huh?"

Take *Jackfowliara,* for instance. OK, don't. It's a complex hybrid anyway.

But how about *Jejewoodia*? This genus is dedicated to the British orchidologist Jeffrey James Wood, who has explored Mt. Kinabalu, Malaysia and Singapore.

Here's an easy one: *Cooktownia*. Named for Cooktown in eastern Australia, near where the orchid was found. The town, in turn, was named for Capt. James Cook—who twice sailed around the world.

Oeceoclades is that wayward little African thing that keeps popping up in mulched beds. The *Oeceo* part is from the Greek for house or dwelling, while the *clades* half is from *kladion,* Greek for branch. The Illustrated Dictionary of Orchid Genera says this possibly alludes to the separation of certain species from the genus *Angraecum*.

Angraecum is a Malay word used by botanist Georg Eberhard Rumphius in describing the genus. *Anggrek* is a Javanese word for the same orchid.

Robert L. Dressler, distinguished orchidologist, is honored with the name *Dresslerella*. *Ella* is Latin for diminutive.

The genus *Paphiopedilum* refers to a Cypriot name for the goddess Aphrodite, who was worshipped at the city of Paphos on Cyprus. *Pedilum* means slipper.

Stanhopea is named for the fourth Earl of Stanhope, Philip Henry, a 19th-century British lord.

The meaning of *Phalaenopsis*, the moth orchid, is derived from the Greek word for moth and *opsis*, or like.

Acampe is a genus of small-flowered orchids that roam around Africa, Madagascar, the Seychelles, India, southern China, Thailand and Myanmar. The name is from the Greek word for rigid, as the flowers are inflexible.

Dendrobium combines the Greek word *dendron*, meaning tree, and *bios*, meaning life. These orchids live on trees, which is where many hobby growers attach them.

Trichoglottis is a genus of orchids that look as if they have hairy tongues. *Tricho* means hairy and *glottis* is tongue. Take a close look at the lip and you will find the "hair."

Cycnodes is a manmade genus that is a cross between *Cycnoches,* which means swan, and *Mormodes*, meaning phantom or frightful object, alluding to strange flowers.

Alex Hawkes and Dr. David Fairchild

Sharing a love of orchids, palms and tropical fruits

By Georgia Tasker

Alex Hawkes preparing canapes.
Photo courtesy of Jorge J. Zaldivar

Late July, 1943.

A 16-year-old high school student typed a letter to Dr. David Fairchild from his Orlando home. "I am coming to Miami sometime in August, and I would like to see you and the 'Tropical Garden' and the Montgomery Palmetum, if I can," he wrote. "I am quite interested in palms, although orchids are my great love, and I hope to become an orchidologist someday."

Fairchild told him to telephone. A postcard then followed. "Your kind note did give me courage," the young student wrote back. "I shall come and pull on your coattails and introduce myself."

Thus began correspondence between Alex Hawkes and David Fairchild. It would continue for a few years, with Hawkes' letters arriving from Orlando and throughout

his Coast Guard tour of duty during World War II, mailed from India, Brazil, California and other locales. At 16, Hawkes already was writing about orchids for the American Orchid Society's *Bulletin*, and in September 1943, he told Fairchild that the September article would be the second in a series of monographs of the *Orchidaceae* of Florida. He added, "I am reading 'The World Was My Garden' again and enjoying it so much more now that I have seen some of the plants you write about."

The *Orlando Sentinel* also carried a small story about Hawkes working at Mead Garden, studying orchids. By October of 1943, he wrote to Fairchild that he had asked orchid scholar Oakes Ames at Harvard University about a scholarship to that school, hoping, he wrote, "that when I come out, I may know something about systematic orchidology." Hawkes wrote of wanting to go to the island of Halmahera (in Indonesia) to search for *Cirrhopetalum* orchids after reading Fairchild's "Garden Islands of the Great East."

In early 1944, Hawkes sent Fairchild a copy of Mulford Foster's "Bromeliads of Brazil," adding that he had worked for Foster for two summers. That same year, he contributed to the AOS *Bulletin* an article entitled "An Orchid Hunting Trip in Central Florida," in which he described a bicycle trip outside of Orlando where he encountered three species of *Calopogon* orchids, as well as *Pogonia ophioglossoides*, snakemouth orchid.

Later, Hawkes entered the Coast Guard and wrote to Fairchild from the Brazilian cities of Recife and Rio de Janeiro: "I am the only member of the crew that speaks Portuguese, I am swamped all the time with translation jobs." He asked a Brazilian crewmember to tell him all the fruits he knew, and the man responded by listing 33, including jaca (jakfruit). He spoke of tasting Jaca ice cream, "with a most delicate and wonderful flavor, naturally impossible to describe." In one of his "occasional papers" written for Garden members, Fairchild described jackfruit and quoted his young pen pal on the topic of jaca ice cream.

By 1946, Hawkes was discharged from the Coast Guard Reserve. He went to Cuba on a plant-collecting trip. A letter from 1945 bears a New York Botanical Garden letterhead, tells of two books he had completed and asks Fairchild to write a letter of introduction to Mr. Scribner, as he was "trying to peddle them to a publisher." Hawkes also produced a checklist of Cuban orchids, "Studies in Antillean Botany" and "The Major Kinds of Palms" during 1950 and 1951.

By 1961, Hawkes had published "Orchids: Their Botany, Culture and Hybridization," followed by "Encyclopedia of Cultivated Orchids" in 1965. He was a co-founder and first president of the South Florida Orchid Society, as well as a co-founder of the South Florida Bromeliad Society with Nat DeLeon and Bob Wilson.

By the mid-1960s, however, Hawkes' interests turned to food. "South Florida Cookery," written by Hawkes and published in 1964, was dedicated to the Fairchilds. He wrote "Sub-tropical Cookery" columns for the *St. Petersburg Times*, the *Lakeland Ledger* and the *Miami News*. He authored "World of Vegetable Cookery" (now called "Cooking With Vegetables"), "The Shrimp Cookbook" and "The Rum Cookbook." In the late 1960s, Hawkes began traveling to Jamaica, where he wrote about cooking for the newspaper *Jamaican Gleaner*. He also wrote "Wild Flowers of Jamaica" in 1975.

At age 50, Hawkes died in Jamaica. After his death, Elizabeth Lambert Ortiz published Hawkes' "The Flavors of the Caribbean and Latin America, A Personal Collection of Recipes."

Perhaps long overlooked, Hawkes now has a new enthusiast: contemporary Miamian Jorge J. Zaldivar. Zaldivar, a cookbook collector, discovered Hawkes through an interest in guavas. Zaldivar makes guava products and has a 2 ½ acre guava orchard in the Redland. In researching guavas, he found that Alex Hawkes' favorite fruit was guava and uncovered his many cookbooks. Now, Zaldivar hopes to write Hawkes' biography.

Learn more at Jorge Zaldivar's webpage about Hawkes at www.subtropiccookery.wordpress.com.

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Invite your guests to step into the Garden and feel the urban world fade away. With five reception areas and multiple outdoor spaces among Fairchild's 83 acres, the possibilities are limitless. Whether it's an intimate gathering of 10 or a large-scale event with hundreds of guests, Fairchild is the perfect place to hold a variety of special events.

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FTBG

Valentine's Day Concert at Fairchild

Romance was in the air as guests gathered at the Valentine's Day Concert, featuring award-winning jazz vocalist Nicole Henry. Couples danced under the stars and moonlight, while Henry performed a repertoire of classic and contemporary jazz pieces.

15th Annual International Orchid Festival at Fairchild

More than 10,000 orchids adorned the Garden during the 15th Annual International Orchid Festival in March. The three-day festival highlighted the achievements of The Million Orchid Project, an initiative to place 1 million native and endangered orchids back into South Florida's urban areas. Guests were able to tour the most recent addition to the project, the Fairchild STEMLab, a mobile tissue culture lab in partnership with Miami-Dade County Public Schools. The Garden House was filled with stunning prize-winning orchid displays by the Orchid Society of Coral Gables and judged by the American Orchid Society. Vendors from all over the state set up striking orchid displays, and orchid specialists gave gardening demonstrations and lectures on how to grow and care for orchids. For a quick respite, guests enjoyed sweet pastries and savory bites at the Orchid Tea Garden. The Garden House Lawn was filled with dancing and laughter, and Garden visitors left the weekend with carts filled with new additions for their own gardens.

Fellows Brunch

Fairchild Fellows celebrated the beginning of spring with the annual Spring Brunch at the Glasshouse Café. The event was deliciously catered by Le Basque, featured moving tunes by multi-talented Brazilian duo Medeiros and included a fascinating lecture by Rosetta Elkin. Elkin's lecture, "The Theories of Plant Life," was inspired by her teaching and research at Harvard University's Graduate School of Design.

Members Annual Meeting

Fairchild staff and Board of Trustees gave updates about Fairchild's recent accomplishments at the annual meeting for members in March. This year's announcements included the progress of The Million Orchid Project, Fairchild's partnership with NASA to grow edible plants in space and new educational offerings for South Florida students, such as the Edible Learning Garden.

Fairchild COO Honored during Women's History Month

Fairchild is pleased to congratulate our chief operating officer, Nannette Zapata, for receiving an award at the 29th Annual "In the Company of Women" ceremony, on March 8—International Women's Day. The ceremony recognized women with outstanding achievements and accomplishments in fields like law, business, health, science and education. Zapata received the Arts & Entertainment award for her distinguished efforts in bringing art in various forms to the Garden and community. Congratulations, Nannette!

wish list

Fairchild has a wish list of items that will enhance our programs, but we need Wish Makers. We hope you see a wish that you can help fulfill.

FOR OUR HORTICULTURE OPERATION

- 2 Tablet Notebooks, $1,500
- 12 Golf Cart Batteries, $1,200
- Walk-Behind Aerator, $1,500
- Hardware for Accession Tag Embossing Machine, $2,000
- Plant Transport Van, $20,000

FOR CONSERVATION, RESEARCH AND THE HERBARIUM

- Extra-Tall Tripod, $150
- Laptop Computer, $2,000
- GPS Unit (GeoXT 6000), $8,000

FOR THE RESEARCH LIBRARY

- World Checklists for: Araliaceae, Conifers and Fagales, $300

FOR THE FAIRCHILD FARM

- Golf Cart, $7,000

FOR MEMBER AND DONOR SERVICES

- Laptop Computer/LCD Projector, $2,000
- Digital SLR Camera, $1,000

FOR OUR STUDENTS

- Solar Conversion Kits for Education Golf Carts, $4,000
- iPads for Explorer Field Studies Program, $2,500
- Dark Field Microscope, $600
- Canon Double-Sided Feed Scanner, $3,000

FOR OUR VISITORS

- Golf Cart, $7,000

To fully fund a wish, donate a portion of the cost or donate the actual item, please contact Leslie Bowe at 305.667.1651, ext. 3338, lbowe@fairchildgarden.org, or please visit www.fairchildgarden.org/Donate

Fairchild Artist in Bloom Art Exhibit

The Garden House transformed into a gallery featuring more than 150 original works from more than 50 artists and instructors at the 11th Annual Fairchild Artists in Bloom exhibition and sale. This year's sale took place during the Spring Garden Festival, with a special opening held on April 7. The pieces were created during art classes held at Fairchild as part of the continuing education program. All of the pieces had a botanical connection and utilized media such as watercolors, oils and acrylics.

Spring Garden Festival Featuring the 38th Annual Spring Plant Sale

April showers brought flowers and blooms to this year's Spring Garden Festival. The 38th Annual Spring Plant Sale featured hundreds of healthy plants grown by Fairchild staff and local vendors. To celebrate National Poetry Month, Fairchild partnered with O, Miami Poetry Festival and each plant purchased came with a poem written by local high school students. Expert-led gardening demonstrations taught guests how to prepare their gardens for spring, while Garden Market vendors offered everything from fresh fruits and vegetables to handmade products. Local chefs demonstrated creative ways to cook with fresh spring ingredients, while Equinox held exciting fitness classes for those looking for a workout with a view. The Spring Tea Garden allowed guests to escape the heat with sweets and treats.

Celebrating a Garden of Volunteers: Fairchild's Annual Volunteer Appreciation Brunch

By Niki Saylor
Photos by Maureen Tan

(L-R) 2017 Volunteers of the Year George Andrykovitch, Kasha Abbott and Glenn Huberman with Garden Director Dr. Carl Lewis.

As morning sunlight filtered through soft clouds, cool breezes and acoustic guitar strumming welcomed volunteers at the Lakeside Marquee Tent for Fairchild's Annual Volunteer Brunch on March 29. It was an idyllic day to celebrate a garden-full of volunteers, who contributed 71,000 hours of volunteer service in support of Fairchild's programs and mission during 2016.

Volunteers were welcomed by staff eager to show their appreciation with beautifully decorated tables adorned with jade vine, monstera and blue tang clippings; cups of the famous brunch punch; and a generous spread of homemade fare. The volunteer-favorite menu items included Mango Bread, Mediterranean Couscous Salad, Bridgette's Collard Greens and Sweet Corn Soufflé.

While the volunteers feasted, Bruce Greer, president of Fairchild's Board of Trustees, addressed the volunteers. "This is the most important day of the year," he said. "A day to celebrate your contributions to making this a world-class institution—and everyone here, as well as our visitors and members, understands how important you are to Fairchild."

Garden Director Dr. Carl Lewis echoed Greer, saying, "Of all the events we do during the year, this is the staff's favorite. Our organization is volunteers. Volunteers have always vastly outnumbered staff, and as a result, we have a vibrant, fun institution that reflects the joy and optimism of our community." Lewis also thanked the volunteers, "for inspiring visitors with the beauty and biodiversity of the tropics and contributing to Fairchild's role in the South Florida community as a place of learning." He noted that volunteers maintain the beauty of the Garden's horticulture collections, explain its mission and history via tram and walking tours, explore with students on field trips and interpret the plant collections and exhibits.

Lewis went on to announce the Bertram Zuckerman Volunteers of Year, who represent Fairchild as exemplary ambassadors, team members and friends of the Garden through their leadership and dedication: Kasha Abbott, George Andrykovitch and Glenn Huberman.

Abbott was incredibly honored to be named a Volunteer of the Year, which in part recognized her 15 years of service. Over the years, Abbott has volunteered in many program areas, including membership, horticulture, special events, visitor services and volunteer services. Staff members are quick to praise her reliability, dependability and generosity of spirit, with her time always given with a smile and good humor.

A unique ambassador for the Garden, six-year volunteer Andrykovitch interprets the Tropical Plant Conservatory as an educator on weekends, and maintains Fairchild's plant collections at the Tropical Plant Conservatory and Sunken Garden on weekdays. Visitor Experience Coordinator William Navas noted Andrykovitch's curiosity about and love of tropical plants, as well as what Navas described as "his ability to catch visitors' attention as they venture into the Conservatory and have them leave with a touch of tropical wisdom." In his thank-you speech, Andrykovitch modestly explained that his love of plants brought him to Fairchild to volunteer, and he is grateful to the Garden for providing him a place to share his love and knowledge of botany with people.

2017 Award Recipients

2017 Volunteers of the Year

Kasha Abbott
George Andrykovitch
Glenn Huberman

2017 Volunteer Team of the Year

Plants and People
Suri Alexander
Carl Bauer
Karen Bradley
George Gates
Nazy Given
Gloria Greene
Ann McMullan
Cristina Moran
Bob Petzinger
Esteban Pi Jhones
Mike Reeve
Jill Sidran
Philip Sidran
John Soliday
Joan Spector
Danielle Strickman
Ted Weiss
Molly Whitman

Service Pins

45 years
James G. Stewart, Jr.
Roberta Turner

40 years
Linda Evans

35 years
Ken Graves

30 years
Sylvia Baltin
Polly Herr

25 years
Anne Baddour
Ken Barrus
Faye Bennett
Janina Campbell
Bruce Matheson
Mary Jean Risi
Vickie Siegel
Everett Skinner
Judy Stewart

20 years
Phyllis Cohen
Yvonne Fischer
Bruce S. Foerster
Judith Futerfas
Robert Kramer
Petsy Mezey
Sima Miska
Joe Pommer
Jeff Wasielewski

15 years
Kasha Abbott
Karen Alexander
Raymond Baddour
Norman Benford
Fred Brenner
Mary Brenner
Jeanne Bunten
Kathy Lary
Susin MacDonald
Dan McGillicuddy
Tanya Masi
Paul Michel
Al Oreamuno
Bob Petzinger
Dora Piccini
Mary Rivenbark
Maria Valls
Kathy Weiss
Brenda Whitney
Hallie Yanno

10 years
Annelies Beckerich
Katy Boyle
Carin Chassman
Anita Cody
Letty Delaney
Carol Dietrick
Maria DuQuesne
Susan Hills
Yvonne Houseknecht
Kathy Jones
Betty Modugno
Catherine Pendlebury
Patty Phares
Liana Primelles
Tom Privett
Doris Rudnick
Susan Shapiro
Patricia Shaw
Diana Shinaberry
Dorothy Thomas
Geri Wegner
Susan Wilson

5 years
Shirley Bowers
Janet Brown
Kathleen Burkhart
Ella Carson
Bob Chemaissem
Dan Coogan
Danielle Coogan
Martiza Rosana Coogan
Amanda Crider
Marisa Dal Pan
Michel de Vallois
Betty Dobie
Marilyn Dulman
Kathleen Dunleavy
Pauline Ferris
Linda Fink
Carol Goldman
Humberto Gomez
Leonor Gonzalez
Jane Harris
Michael Hass
Julieta Jacob
Saralee Lamb
Richard Lane
Adena Leal
Carol Levin
Helen Levy
Lew Meyer
Nancy Mintz
Sue Palmer
David Piper
Dolores Quintero
Lucy Ramirez
Carole Reddish
Adair Reeve
Andrew Reeve
Mike Reeve
Nora Robbins
Gina Santibanez
Sylvia Severdija
Tere Sproul
Clarice Strang
Anita Thompson
Liz Trifiletti
Ann Vaske
Cathy Viar
Richard Warren
Wendy Zepernick

(L-R) Mary-Anne Goseco, Mary Teas, Linda Kirshenberg, Victor Biver, Jane Bleakley, José Garrigó and Ginger Diamond.

Huberman, a Wings of the Tropics day captain and Native Butterfly Garden walking guide, was elated to be named a Volunteer of the Year in recognition of the way he educates visitors about plants, birds and butterflies, in addition to taking time to learn about guests' experiences—often with some light-hearted humor. In his role as a volunteer during the past six years, he has combined optimism, encouragement and delight to make the Garden stronger, healthier and more welcoming to a broader community.

The 2017 Volunteer Team of the Year, the People and Plants Program, was chosen for distinctively contributing to the Garden by helping those with Alzheimer's disease and autism, as well as their caregivers, recapture memories and experience the transformative power of plants. Since the program's inception in 2010, this group of volunteers has communicated and cooperated as a team to help 2,300 program participants enjoy the Garden via a custom tour that connects plants and people with the beauty of Fairchild.

In addition to the Volunteer of the Year and Volunteer Team of the Year awards, more than 100 volunteers received service pins marking their anniversaries, extending from five to 45 years. Five-year pin recipient Ann Vase expressed her appreciation for the annual brunch, saying, "Thank you for the beautiful luncheon and all of the work the staff put forth. I really appreciate how the Garden reminds us that we are important as volunteers." Volunteers Jim and Freddie White also enjoyed the celebration in their honor, exclaiming, "Delicious homemade food! Good friends! A truly wonderful garden! It just doesn't get any better!"

It is our pleasure as a staff to work with so many talented, kindhearted and caring volunteers. Thank you, volunteers, for helping Fairchild grow. Each day we are grateful to you for your dedicated work helping us achieve our mission, and the Volunteer Brunch is one way to honor you—our garden of volunteers.

WHEN LEAVING **A LEGACY** MATTERS

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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.

IN MEMORIAM

REMEMBERING Dorothy Errera

By Arlene Ferris

Dorothy Errera, who graced Fairchild's pathways for more than 60 years as a Garden member, fellow and volunteer extraordinaire, passed away peacefully on March 3, 2017. She leaves a garden of cherished memories for her devoted circle of family, friends and neighbors. An accomplished woman professionally and personally, her dedication to Fairchild's mission was most evident in her tireless work to support The Ramble.

A graduate of the Peter Bent Brigham Hospital School of Nursing in her hometown of Boston, Errera was on a groundbreaking team of medical researchers at Harvard Medical School. She later wrote, edited and translated articles for medical journals. When she moved to Miami in the 1950s, she immediately joined Fairchild and became involved with The Ramble. She was also a founding member of the Vizcayans, serving on its board for 22 years.

For the past 26 years, Errera served as the standard-bearer and chair of the Ramble Antiques and Collectibles Committee. To this job, she brought a love of antiques as well as outstanding leadership and organizational skills. All who worked with her were in awe of her knowledge and energy. Errera networked among friends and acquaintances to obtain valuable, one-of-a-kind donations for the sale. She researched the provenance of donated items, searched diligently each year for free "work and storage space" and gave forgotten treasures new life by revealing the stories behind them. There is no way to calculate the thousands of hours she gave, or the many miles she drove, to make each year's sale a financial success for the Garden.

One favorite story is of a beautiful antique mahjong set donated to the Ramble. Errera showed it to her friend and fellow volunteer Helene Pancoast. Pancoast, Dr. David Fairchild's granddaughter, recognized it as something she had played with as a child and happily bought it back for future generations of the family to enjoy.

Errera cultivated a dedicated and talented team of co-chairs and volunteers, and with them, she made Antiques and Collectibles a mainstay of each year's Ramble. She cared deeply about Fairchild's science mission, and was encouraged by the recent involvement of so many young people in its science programs. I am sure the Garden will continue to grow in ways that would make Errera proud, as we were immensely proud to have her as part of the Fairchild family.

Gala in the Garden 2017

February 4 saw Fairchild's annual Gala in the Garden held at the Garden's Lakeside Marquee under a perfectly clear, moonlit sky. This year's theme of "Inspiration" was reflected in the party atmosphere enjoyed by guests with music, food and dancing, all in support of the Garden's science, education, conservation and horticulture efforts. We thank everyone for a magical night!


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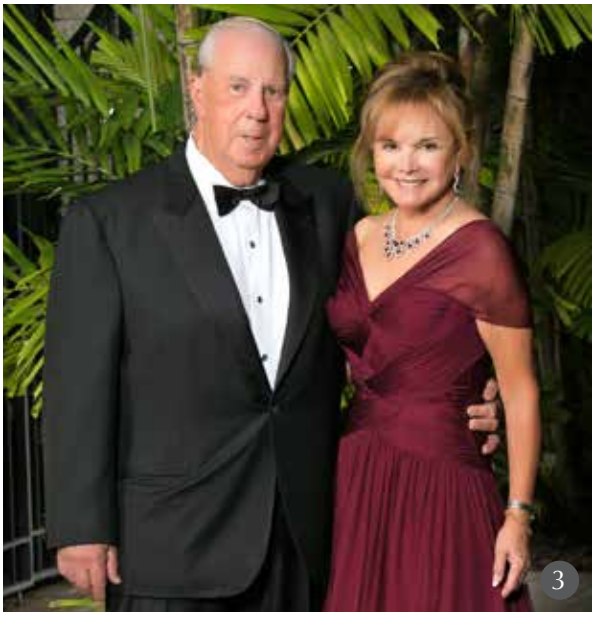
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1. Guests dancing among the decor

2. Jan Risi Field; Louis Risi Jr., senior vice president and treasurer, Fairchild Tropical Botanic Garden; Sarah Frey; James Field; Mary Jean Risi

3. Paul and Swanee DiMare, co-chair of Gala in the Garden

4. Daysi and Stefan Johansson

5. Joyce Burns, philanthropic chair of Gala in the Garden, and Tony Burns

6. Raphael Bastian and James Boink

7. Nancy and Jon Batchelor

8. Evelyn and Bruce Greer, president, Fairchild Tropical Botanic Garden

9. Terry Buoniconti and Chris Pedersen

10. Margaret and Mike Eidson

11. James Murphy and Bunny Bastian

79th Annual MEMBERS' DAY PLANT SALE

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