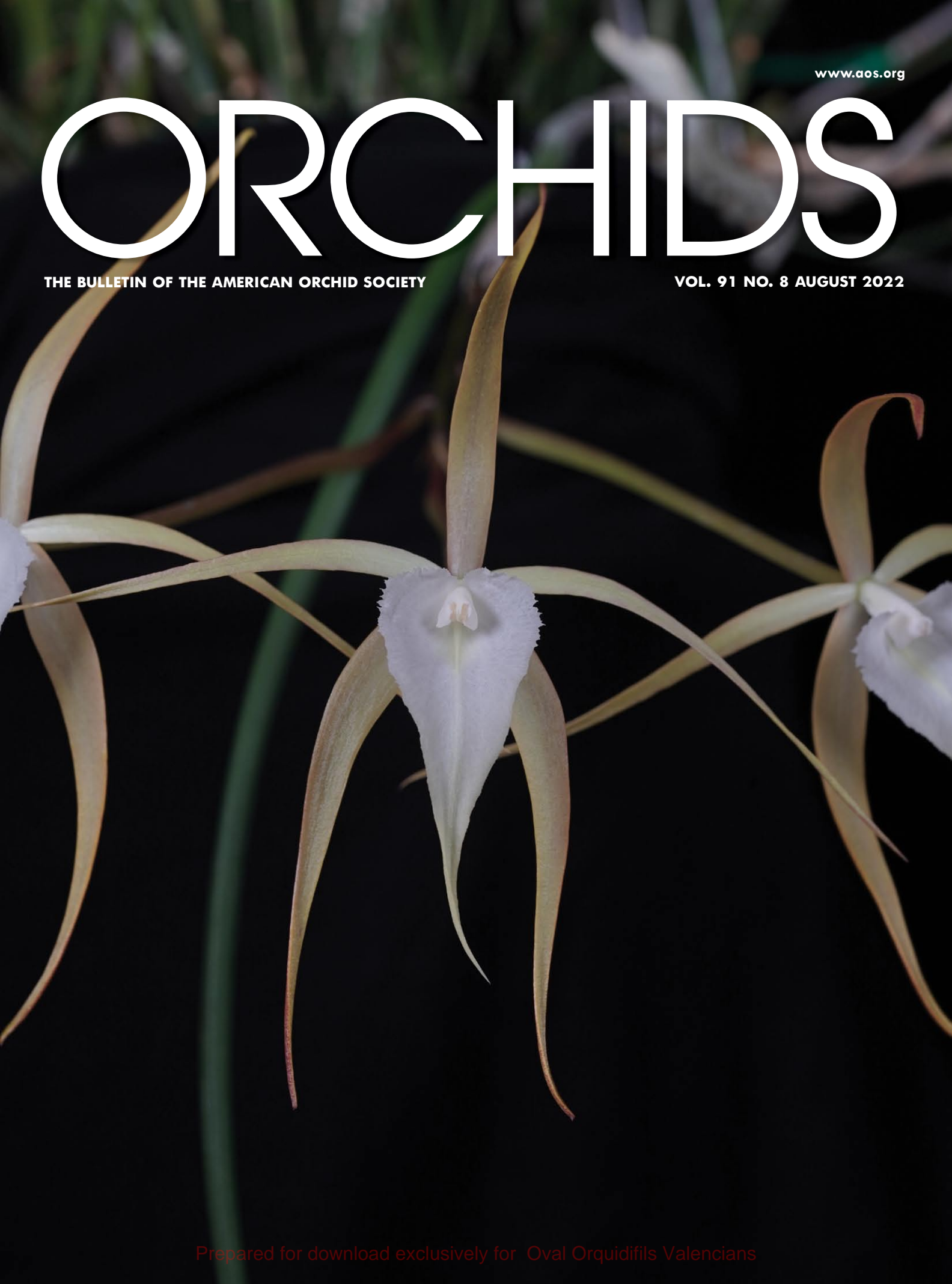


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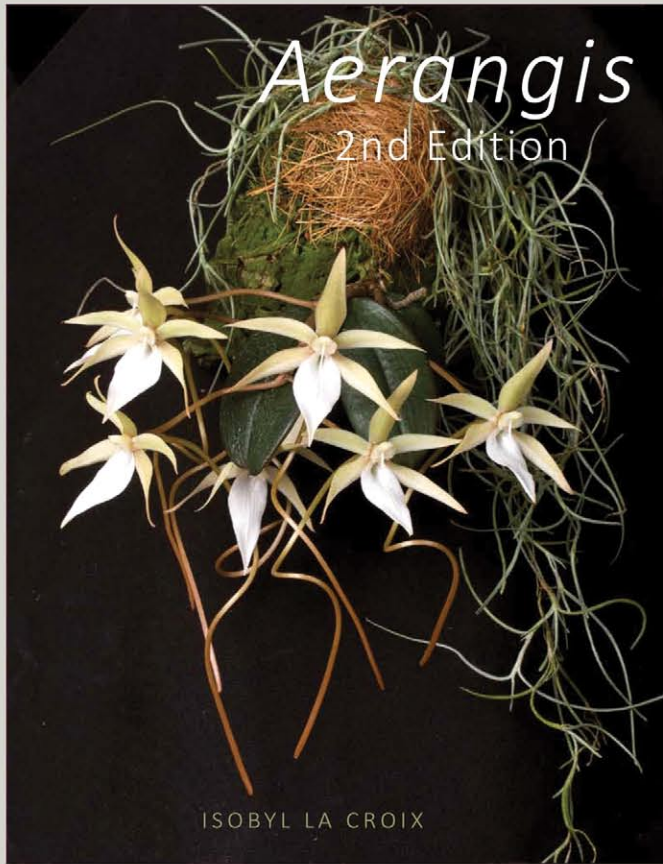
ORCHIDS

THE BULLETIN OF THE AMERICAN ORCHID SOCIETY

VOL. 91 NO. 8 AUGUST 2022



AERANGIS 2nd Edition



Author: Isobyl la Croix

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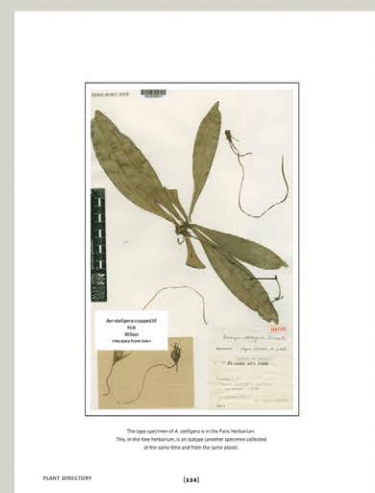
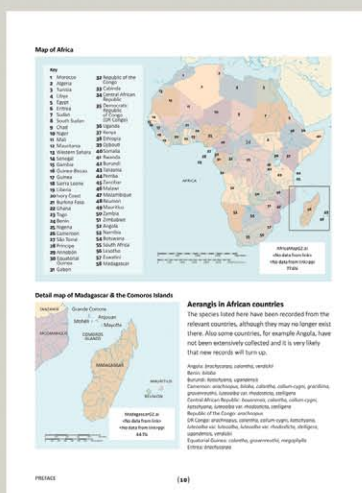
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The genus *Aerangis* is the focus of this spectacular book by Isobyl la Croix who spent many years studying African orchids in their native habitat.

It features detailed descriptions of the 59 species, accounts of the terrain, climate and habitats in which they live, and cultivation advice. These orchids, which grow on branches and rocks in the forests of Africa and Madagascar, have long nectar-filled spurs that release a delicate scent at night attracting hawk moths. This feature, along with their often disproportionately large flowers, make them rewarding to grow and, given the right conditions, they will flower year after year.

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The American Orchid Society provides leadership in orchids

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The Bulletin of the American Orchid Society

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CONTENTS

August 2022 Volume 91 Number 8



592



598



608



614

FEATURES

592 FROM COSTUME TO CLAY: PART 3
Carol Helen Beule

598 ORCHIDS OF BHUTAN
Paphiopedilum

Stig Dalström, Choki Gyeltshen, Nima Gyeltshen, Kezang Tobgay, and Pem Zam

608 ORCHIDS IN MADAGASCAR

Long-term Conservation of the Most Threatened Malagasy Orchids, Part 1
Simon Verlynde, Lalao Andriamahefarivo, Brigitte Ramandimbisoa, Miora Razafindrakotosoa, Josia Razafindramanana, Nirina Rajaonarivelo, Félix Andriatsiferana, Tariq Stévoart, and Vincent Droissart

614 A PLACE OF PRESERVATION AND INNOVATION

The New Orchid House at Longwood Gardens
Greg Griffis, Peter J. Zale with Katie Mobley

DEPARTMENTS

Orchid Myths 570

Fertilizer Should be Applied Weakly, Weekly
Robert Pavlis

Tom's Monthly Checklist 572

August: The Month of the Metaverse
Thomas Mirenda

Genus of the Month 576

Brassavola
Thomas Mirenda

Collector's Item 580

Egret's Flight
Judith Rapacz-Hasler

For the Novice 584

Adaptation: Meeting the Needs of the Grower and the Orchid Collector
Lindsey Paris and Eileen Hector

GREATideas 587

The Eyes Have It
Ed Wright and Bill Tippitt

Orchids Illustrated 588

Pecteilis
Wesley Higgins and Peggy Alrich

Awards Gallery 620

In This Issue

AOS MEMBERSHIP INFORMATION 562

AOS DIRECTORY OF SERVICES 562

AOS NATIONAL VOLUNTEERS 564

PRONUNCIATION GUIDE 565

GIFTS OF NOTE 566

PRESIDENT'S MESSAGE 568

PAST, PRESENT, FUTURE 569

USEFUL TIPS 582

WEBINARS 573

QUESTIONS AND ANSWERS 574

HOME REMEDIES 582

CALENDAR 636

ORCHIDS CLASSIFIEDS 639

AD INDEX 639

BOOK REVIEW 640

Marvellous Malta: Where Wild Orchids Grow
Wesley Higgins

FRONT COVER

Brassavola hybrids are once again gaining in popularity as a result of their ease of culture and often striking flowers. Our cover subject is *Brassavola Crazyarachno* 'Nebulina su Compa Nanzi' AM/AOS (*perrinii* × *appendiculata*) exhibited by Adeljean Ho (Nebulina Orchids) and photographed by Wes Newton.

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PRONUNCIATION GUIDE

Pronunciation of orchid names can be daunting for the novice and experienced grower alike. Presented below is a simplified pronunciation guide specific to the names found in this issue of *Orchids* magazine. An attempt has been made to represent each syllable using easily recognized sounds or words separated by hyphens and not standard phonetic symbols. Check out the Orchidist's Glossary on our website at <https://www.aos.org/orchids/orchidists-glossary.aspx>.

acaulis (ay-KAW-liss)
Aerangis (ay-er-ANG-iss)
aloifolium (al-oh-ee-FOLE-ee-um)
Angraecum (an-GRAY-kum)
Ankeranense (an-ker-an-EN-see)
appendiculata (ap-pen-dik-yew-LAY-ta)
apuahuense (ah-poo-ah-hoo-EN-see)
bicallosum (bye-kal-LOH-sum)
Bonatea (Boh-NAH-tee-ah)
Brassavola (bra-SAH-vol-a)
Brassocattleya (brass-oh-KAT-lee-a)
Broughtonia (brow-TONE-ee-a)
Bulbophyllum (bul-boh-FILL-lum)
Caladenia (kal-a-DEEN-ee-a)
calceolus (kal-SEE-oh-luss)
Cattleya (KAT-lee-a)
Chiloschista (kye-loh-SHIS-ta)
ciliare (sil-ee-AIR-ee)
cilioccidentale (sil-ee-ok-sih-den-TAY-lee)
Coilostylis (koy-loh-STY-liss)
cordata (kore-DAY-ta)
Cordula (KORD-yew-la)
cordigerum (kore-DIJ-er-um)
costaricense (kos-ta-ree-KEN-see)
Cymbidium (sim-BID-ee-um)
Cynorkis (sin-ORE-kiss)
Cypripedium (sip-rih-PEED-ee-um)
Dendrobium (den-DROH-bee-um)
didieri (did-ee-AIR-ee)
Disa (DEE-za or DYE-za)
discilabium (disk-ee-LAY-bee-um)
doroteae (dore-OH-tee-a)
eburneum (ee-BURN-ee-um)
edmundi (ed-MUN-dee)
Encyclia (en-SIK-lee-a)
Epidendrum (eh-pih-DEN-drum)
fairrieanum (fare-ee-AN-num)
falcatum (fal-KAY-tum)
flagellaris (flag-ell-AIR-iss)
foulquieri (fowl-kee-AIR-ee)
gelephuense (gel-ef-yew-EN-sis)
guttatum (gut-TAY-tum)
Habenaria (hab-ee-NARE-ee-a)
helenae (HELL-en-ee)
hirsutissimum (hir-soo-TISS-ih-mum)
hurtadoi (hur-TAHD-oh-ee)
insigne (in-SIG-nee)
ixilum (iks-EE-lum)
lacertinum (la-ser-TEE-num)
Laelia (LAY-lee-a)
Lemurella (lee-miur-EL-la)
martiana (mar-tee-AY-na)
megalemmum (meg-a-LEM-mum)
monantha (mon-AN-tha)
niveum (NEE-vee-um)
nodosa (noh-DOSE-a)

Odontoglossum (oh-don-toh-GLOSS-sum)
oerstedii (her-STED-ee-eye)
Oncidium (on-SID-ee-um)
Ophrys (OFF-riss)
Orchis (ORE-kiss)
Paphiopedilum (paff-ee-oh-PED-ih-lum)
papillosa (pap-ill-LOH-sa)
parkinsonianum (par-kin-sone-ee-AY-num)
Pecteilis (pek-TYE-liss)
Pelexia (pel-EKS-ee-a)
pescatorii (pes-ka-TORE-ee-eye)
Phalaenopsis (fail-en-OP-sis)
Phragmipedium (frag-mih-PEED-ee-um)
Platanthera (plat-AN-ther-a)
pradhanii (prad-HAN-ee-eye)
Prosthechea (pros-THEK-ee-a)
pseudodidieri (soo-doe-did-ee-AIR-ee)
purgioniforme (poo-gee-on-ee-FORE-mee)
pugioniformis (poo-gee-on-ee-FORE-miss)
purpurascens (per-per-ASS-enz)

sandiorum (san-dee-ORE-um)
Satyrium (sa-TEER-ee-um)
scolopax (SKO-loh-paks)
Selenipedium (sell-len-ih-PEED-ee-um)
sphegodes (SFEH-GO-deez)
spicerianum (spy-ser-ee-AY-num)
Stenorrhynchos (sten-oh-RING-kos)
Stimegas (STIH-meh-gas)
subulfolia (sub-yew-lih-FOL-ee-a)
susannae (soo-ZAN-ee)
tenthredinifera (ten-threh-dih-NIF-er-a)
Thelymitra (thel-ee-MIT-rah)
tonsum (TON-sum)
 trianae (TREE-an-ee)
triflora (try-FLOR-ah)
tuberculata (too-ber-kew-LAY-ta)
umlaufti (um-LAUF-tee)
Vanda (VAN-da)
venustum (veh-NOOS-tum)
villosum (vill-OH-sum)
violacea (vye-oh-LAY-see-ah)
viviparum (vye-VIH-par-um)
volutum (vol-YEW-tum)
zeledoniae (zel-eh-DON-ee-eye)

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Greg Allikas (1946–2022)

THIS MONTH, THE AOS lost one of its most iconic and prolific volunteer photographers. Allikas was responsible for spearheading our transition to digital award images, a long-time volunteer on our Publications Committee and chair from 2008-2014 and continued on as the first chair of our newly reconstituted Editorial Board from 2014-2016. Allikas' lasting legacy will be his incredible orchid photograph as it continues to grace our monthly publication.

Because of the timing of his passing, it was not possible to include a proper tribute in this issue. The September issue will feature a photographic spread of some of his spectacular work.

— Ron McHatton, Chief Education and Science Officer and Editor, AOS Publications (email rmchatton@aos.org).

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David Butler
 Hybridizing with *Sarcochilus hirticalcar*

Roy Tokunaga
 Hybridizing Orchids -- Past, Present and Future

Rob Shepherd
 A Phalaenopsis
 Hybridizer's Journey

Leon Glicenstein
 An Orchid
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PRESIDENT'S MESSAGE

I HAVE RECENTLY been working on a short talk for my local society on "Hybridizing 101." The talk is for our July meeting, which happens to be the week of July 4th, so you can see my local society is not investing in a high-dollar speaker! With this topic, even in an overview, there is a fair amount of ground to cover...genetics, how to pollinate a flower, flasking, naming a cross, etc.

To gather information for this talk, the first place I turned to was the AOS magazine archive. In case you were not aware, the entire back catalog of *Orchids Magazine*, *The AOS Bulletin*, *Lindleyana*, and all the yearly supplements have been scanned and are available for our members on our website (<https://www.aos.org/about-us.aspx>). There are over 1,100 separate magazine issues available electronically, going all the way back to June 1932 when the first *AOS Bulletin* was published. Just a quick aside, the first article in the first issue was a memorial tribute to Albert Cameron Burrage, the first president of the AOS, and earlier this week, I just divided and repotted my *Cattleya trianae* 'A.C. Burrage' AM/AOS. That shows the longevity of naming a hybrid or cultivar after someone!

To access the e-magazines, you do not need any special software. The software that displays the magazines, FlippingBook, runs on any browser you use to access the website and it is very simple to use.

In addition, the text and pictures have been indexed in every issue. On the magazine archive landing page, there is a full search function where you can search for any keywords just within the article text, just within a picture description, or search for your keywords in both. The search results are presented by default in order of relevance; that is, a measure of how common your search was throughout the article. For the text search, a much higher relevance is given if your search term was found in the title of the article.

It is amazing what information is available to members from our publications. I was able to find great introductory articles on harvesting time for green capsules, along with many articles on flasking orchid seed at home and a wonderful short biography of Dr. Lewis Knudson.

When I searched for "genetics," it really brought home the breadth of information available. There were a number of general articles on orchid genetics, but far more on specific topics

including how color pigments are passed on and numerous articles about famous crosses and what influences specific background species had on them.

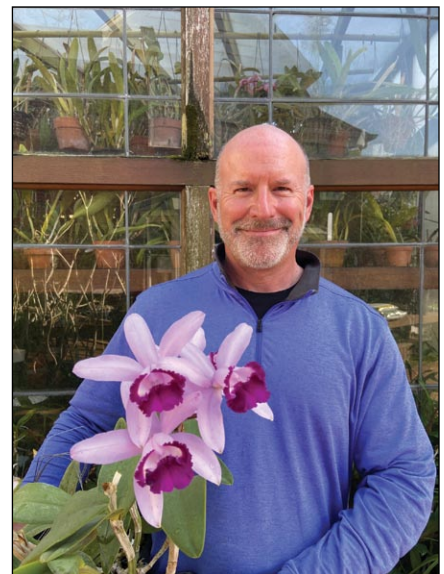
Beyond the magazines, there are over 200 video webinars available for members to watch. I found Doug Martin's webcast on "The Birds, the Bees, and Orchids," which added some additional information for my talk.

And finally, I added a sample family tree and species pie chart, taken from *OrchidPro*, of a well-known cattleya hybrid and in the end, the vast majority of my talk was obtained from AOS materials. I did "borrow" the picture of an orchid artificial insemination device (aka, a toothpick) from the internet!

One of the things we are continuing to do at your AOS is to constantly add information to the website so that you can increase your personal knowledge base. Each month adds many new magazine articles, usually two or more webinars, more awards and pictures in *OrchidPro*, an updated calendar of Affiliated Society shows and events and numerous website content updates.

We also strive to offer an ever-expanding array of capabilities to our membership. One very exciting new feature that is described in more detail on page 569 is a program that allows award recipients to generate and save their own award certificate as a PDF file. Even more exciting, this certificate now includes the award photo of the plant, and certificates can be generated for any of your past awards no matter how long ago they were awarded.

Another new feature that we have added is the ability for you to customize your view of the AOS website to improve



Jay Balchan posing with *Cattleya intermedia* (Orlata) 'Crownfox' AM/AOS

accessibility. You can enlarge the print size and change the color scheme, along with a number of other options. You can access



all of the customizable choices by clicking on the button to the left, usually located on the lower right-hand side of any AOS webpage.

What new functionality would you use? What do you want to see in terms of information and content? I would love to hear from you!

— Jay Balchan (email_jay@aos.org).

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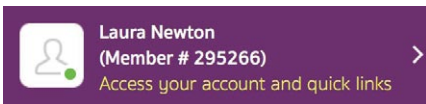
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An advertisement for AOS Affiliated Societies. It features a large, close-up image of a white orchid flower with purple accents. The text is overlaid on the image. At the top, it says "American Orchid Society Education. Conservation. Research." Below that, it says "AOS Affiliated Societies" in large, bold letters. Underneath, it says "Automatically receive 50% off all display advertising!". At the bottom, it says "Advertising — khall@allenpress.com".

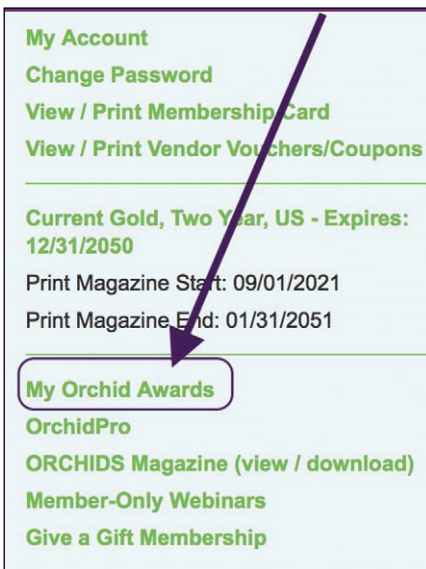
Printable Award Certificates by Laura Newton

THE AMERICAN ORCHID Society is pleased to announce that the long-awaited award certificates with an inset photograph have been created and are now available for download and printing. Not only does this pertain to new awards, but also applies to all previous awards that have photographs available!

To view (and print) your award certificates with a photo inset, simply login to AOS.org and click the dropdown menu next to your name.



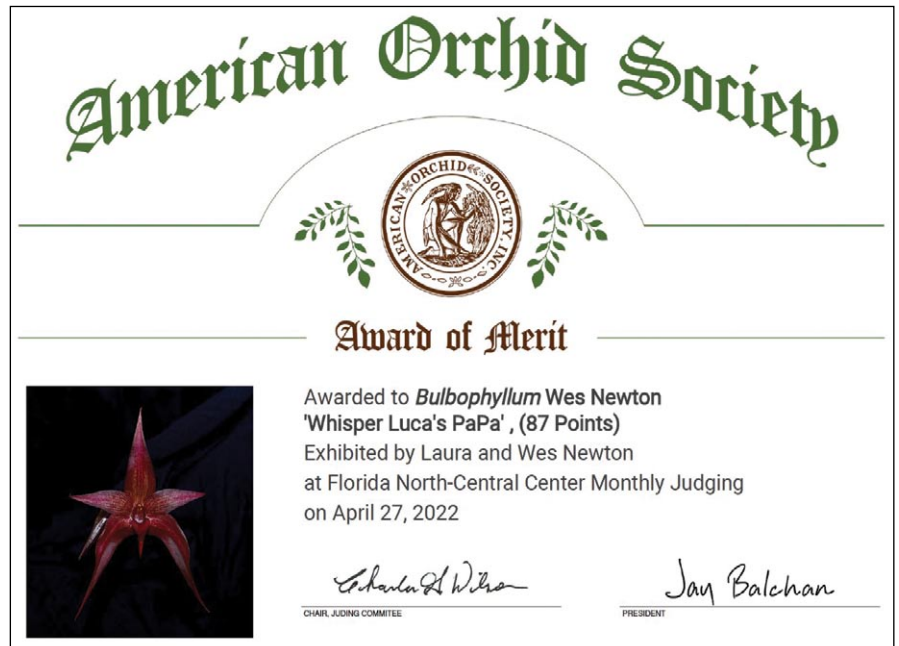
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<input checked="" type="checkbox"/>	20221369	Bulboph... Wes Newton Whisper Luca's PaPa	Bulboph...	Wes Newton	Whisper Luca's PaPa	AOS	AM	87	Paid
<input type="checkbox"/>	20211378	Epidendr... Panama Ruby Hidden Gem	Epidendr...	Panama Ruby	Whisper Hidden Gem	AOS	AM	83	Paid
<input type="checkbox"/>	20211026	Bulboph... Worayuth White Fang Whisper Show Me Some Love	Bulboph...	Worayuth White Fang	Whisper Show Me Some Love	AOS	HCC	79	Paid
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Award No. 20221369
Award Date Apr 27, 2022
Award Name Bulbophyllum Wes Newton Whisper Luca's PaPa
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Like magic, your award certificate will pop up on the screen. You can print it straight from the PDF on the screen, or you can save the PDF to your desktop or a thumb drive and print from there.

This feature has been a long time coming and we are pleased to be able to finally offer this feature to all our fantastic exhibitors.

— Laura Newton, AOS Awards Registrar (laura@aos.org).

Fertilizer Should be Applied Weakly Weekly

By Robert Pavlis

THIS IS COMMON advice and as a general statement, it seems to make some sense because orchids can be harmed by high salt levels, and all of the nutrients in fertilizer are salts. But is it the best advice for growing really healthy plants that flower a lot?

This advice is usually coupled with a suggestion to only use half or a quarter of the amount recommended on the label. I always assumed that the reason for this was that house plants required higher levels of fertilizer than orchids and when you use houseplant fertilizer on orchids you should use less.

Both the Miracle-Gro water-soluble plant food 20-20-20 and Jack's All Purpose 20-20-20 recommend 132 ppm N for indoor plants. If the right amount for orchids is half or quarter of this, one would expect orchid fertilizers to recommend around 50 ppm. Here is what some orchid fertilizers recommend.

- Miracle-Gro Orchid 30-10-10: 100 ppm
- Grow More Orchid 20-20-20: 264 ppm
- Jack's Classic Orchid 30-10-10: 200 ppm
- Plant Products Orchid 25-10-10: 330 ppm for phalaenopsis, cymbidiums, and vandas, and 165 ppm for cattleyas, dendrobiums, paphiopedilums, and miltonias

There are two things to note. First of all, the numbers for orchid fertilizer are inconsistent. How can they all be right?

Secondly, on average, orchid fertilizer values are higher than what is recommended for house plants.

Based on these numbers, the recommendation to use half or one-quarter of what is on the label does not make sense, either for orchid fertilizer or general purpose fertilizer.

Several research studies have determined that a nitrogen level of 100 ppm will produce good phalaenopsis that flower regularly but increasing the level to 200 ppm will produce larger plants and more flowers. Levels above 200 ppm can be detrimental to phalaenopsis. Hobbyists are better keeping levels between 100 and 150 ppm.



There is some evidence that cattleyas and other slower-growing plants do better with levels around the 100 ppm range. What research shows us is that the recommendation of fertilizing weakly, weekly is poor advice and that you should stop using half or one-quarter of the label recommendation. Instead, calculate how much you should use based on nitrogen and set your target at around 100 ppm or slightly higher.

CALCULATING 100 PPM

Scientists measure nutrients in ppm and gardeners measure in teaspoons per gallon. This section will help you convert one set of units to the other.

A teaspoon of soluble fertilizer weighs about 5 g (will vary depending on the product). One tsp of a 10 percent nitrogen fertilizer added to one gallon of water will produce a 132 ppm nitrogen solution. The

same solution will be produced by using ½ tsp of a 20 percent fertilizer or ¼ tsp of a 30 percent formulation.

— Robert Pavlis, has been growing orchids for 30 years and is the author of the popular blog GardenMyths.com as well as several books: Soil Science for Gardeners, Plant Science for Gardeners, Building Natural Ponds and Garden Myths - Book 1 and 2.



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August: The Month of the Metaverse

By Thomas Miranda

MUCH HAS BEEN touted of the progress humanity has made through technology. Personal devices and social media have revolutionized our ability to get whatever information on any subject we might need, and travel virtually to practically any destination, not to mention providing an endless capacity for entertaining ourselves. Some would say we are on the verge of solving many of the ills of mankind. And yet, we seem to be more divided in ideology than ever, more stratified economically, less certain of what is true and what is fake and more prone to depression and anxiety than a generation ago would suggest. The ravages we experienced through the pandemic drove many of us indoors where we immersed ourselves in the perceived reality of the Metaverse, a place we might enjoy visiting, but I suspect you, like me, have no desire to live within.



Thomas Miranda

We who embrace orchids as our companions and avatars have a virtual reality of our own: one that celebrates life, beauty and diversity so vividly expressed

orchidaceously by our plant companions and our fellow orchid enthusiasts. The digital world can never compare with the real one. Indeed, many of us will have to choose in the coming decades whether we prefer the illusion of a safe and sterile virtual world where images of orchid perfection are forever frozen in time, or the organic, messy, slow-motion world where you must have patience, understand biology, ecology and culture to achieve some semblance of success. A world where perfection may be a goal, but an improbable if not impossible one to achieve.

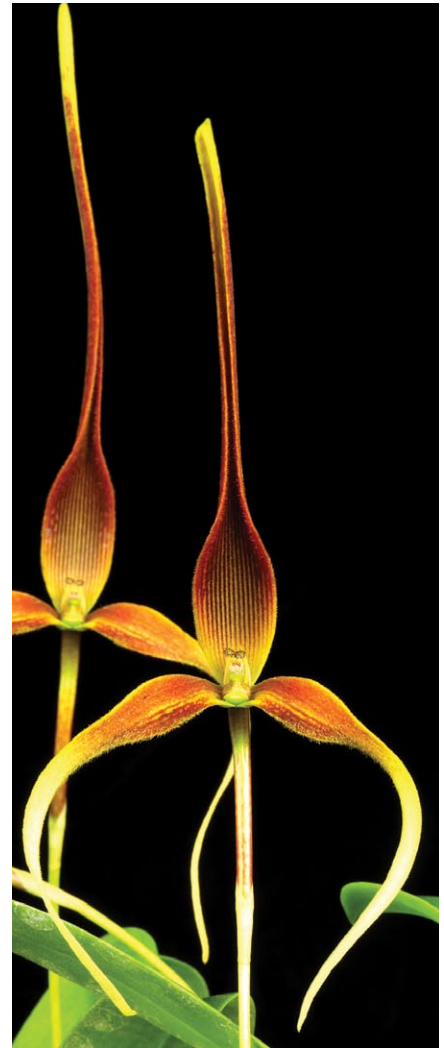
The orchid world, indeed, the entire natural world is vast and complex and, try as we might, unknowable and uncontrollable. Unlike the virtual world, we have so much more to learn, grow and ultimately love from experiencing it in the flesh. It is our pathway to a future where beauty, harmony, love and joy emanate from the wonder we experience as each new blossom unfolds.

DIGITAL CURRENCY Whether or not you invest in cryptocurrency, it is important to stay abreast of what is

currently happening in the world, and yet, it is hard to know what is true, what is helpful and what to do about situations we cannot really affect in a positive way. This uncertainty is mollified by embracing nature and nurturing our plants. While some might say this ignores the problems of the world, I disagree. This is the path towards healing the Earth. This month we experience the most unrelenting heat of the year in the northern hemisphere. In a world where the climate is changing, the issues and ameliorations needed to cope with heat stress will take on increasing importance.

LIMITATIONS Perhaps the most important lesson for successful orchid culture is understanding what you can do in your personal environment. While temperature and humidity manipulations can be done with the help of technology and human ingenuity, it is still difficult to culture draculas in the desert and conversely, hot-growing coastal brassavolas in the high mountains. Understand the climate where you live and choose your orchids based on the extremes they might have to tolerate. If in August you have nighttime temperatures in the 80s F or 90s F (26.7-37 C), your masdevallias and miltoniopsis will certainly perish. If you can grow them under lights in a temperature-controlled setting then you stand a better chance. Warmer growing plants such as encyclias, broughtonias, vandas and hard-cane dendrobiums will be better choices for you.

THE WORKAROUND Many of your plants such as cattleyas, phalaenopsis, dendrobiums and oncidiums are currently in active growth. Even so, extremely hot conditions can shut down plant metabolism and cause a great amount of stress. To avoid heat stresses so prevalent this month, keep plants shaded and provide gentle air movement. Direct sunlight in summer can burn even the most warm growing of plants, most of which as epiphytes are growing under a canopy of leaves. There they are protected from the harshest rays and are beneficiaries of natural air currents and humidity. Most plants are better off outside in the dappled shade of a tree and should make it through the dog days of summer with an occasional, brief cooling mist rather than drenching with water,



Bulbophyllum unitubum 'Krull-Smith' AM/ AOS; grower: Krull-Smith; photogtapher: Ramon de los Santos.

which is often our natural inclination. That being said, do water when plants are drying out excessively, but remember that most orchids are succulent and hold water within the pseudobulbs through torrid weather conditions. Truly cool-growing plants are better off indoors with air conditioning or under lights with supplemental humidity. If plants seem to be halting their growth, withhold feeding them heavily until growth resumes, which will usually happen when nighttime temperatures cool off somewhat.

TOLERABILITY As technology has invaded our lives, even we humans change and evolve. In the developed world, many of us can no longer tolerate

heat and spend the majority of our time in air-conditioned places. Just like I can no longer access my natural sense of direction anymore due to my dependence on a GPS device, we must find the ability in ourselves to sense what our plants are experiencing. Knowing where they come from will inform what they can tolerate. Use your down time this month to read about your plants' natural environments. Even if you do so in the cool comfort of your study and with access to the Metaverse. Someday though, you should actually visit their natural habitats — their reality — to get a tangible sense of what they truly need to grow and bloom.

— Tom Miranda has been working professionally with orchids for over three decades. He is currently an AOS trustee and is a past chair of the AOS Conservation Committee. He is an AOS accredited judge in the Hawaii Center (email: biophiliak@gmail.com).

Webinars-Coming Attractions!

REGISTRATION IS EASY <http://www.aos.org/orchids/webinars.aspx>
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Topic	Choose Your Topic From RECORDED WEBINARS	Greenhouse Chat Orchid Q & A <i>Send in your Questions!</i>	<i>Paphiopedilum venustum</i> The Pauper Prince of the Himalayas
Presenter	Expert Growers, AOS Judges, Hobbyists, Conservationists and more	Ron McHatton Chief Education and Science Officer	Dr. Leslie Ee Accredited AOS Judge, President COC

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DEHYDRATED VANDA



QUESTION

I water this vanda with rainwater and add fertilizer. It recently has begun to lose leaves and I do not see a cause. Any suggestions?

ANSWER

When this happens, it is often a sign the plant is struggling with a fusarium fungal infection in the roots. Low humidity can also do this. Insufficient watering will usually show up as stress in the leaves such as wrinkling or collapse of the surface layers and that does not appear to be visible here. Fusarium infections clog the roots making water transport progressively more difficult as the infection progresses. Eventually, the infected plant begins to lose leaves, beginning with those near the base of the plant and progressively moving up the stem as more of the root system is compromised. New roots that form up the stem start out looking fine but eventually begin to harden and become shrunken as the fungus invades these new roots. Some vandas are much more sensitive to low temperatures and will often shed lower leaves as a result of cold stress and the effect can look very similar. Leaf loss during the cooler part of the year can make distinguishing the cause more difficult but this kind of leaf loss

PAPHIOPEDILUM PROBLEMS



GLEN BARFIELD

during warmer weather is hard to miss. My recommendation is to treat this plant with a good, broad-spectrum fungicide, drenching the leaves and roots. A single application will not cure the problem so you will need to keep at this with an application every few weeks for several months.

QUESTION

I cannot get my paphiopedilums to rebloom. I grow them in low light. My other orchids grow in a room with bright, indirect sunlight. What am I doing wrong?

ANSWER

Paphiopedilums in general will not flower in low light levels where phalaenopsis would thrive. They just do not get enough light to flower. Light levels for paphiopedilum vary considerably depending on the species or hybrid background. Polyfloral paphiopedilums, those that produce multiple flowers open simultaneously on the inflorescence such as *Paphiopedilum rothschildianum* and its relatives need quite bright light — cattleya conditions suit them well. The mottled-leaved and the plain-green-leaved plants need less light than the polyflorals but more than phalaenopsis. The first thing I would do is put your paphiopedilums in the room with bright indirect light and see



NILE DUSDIEKER



SCOTT WEBER

- [1] Vanda hybrid exhibiting signs of serious dehydration. Photograph from the AOS archives.
- [2] *Paphiopedilum rothschildianum* 'Orchid-Fix Idea' AM/AOS; grower: The OrchidFix Nursery; one of the most striking of the polyfloral group.
- [3] *Paphiopedilum sukhakulii* 'Brier Hill' CCM/AOS; grower: Arnold Klehm; an excellent example of the mottled-leaved group.
- [4] *Paphiopedilum insigne* 'TQ's First' CCM/AOS; grower: Tony Quirk; one of the somewhat cooler growing, plain-leaved group.
- [5] Yellow crazy ants feeding on a mixture of powdered sugar and sodium bicarbonate suspended in a little water. Photograph courtesy of wikimedia.

These questions were part of one or more recent monthly webinar Q&As and compiled by Larry Sexton for inclusion here. Each month, a Q&A webinar is held during the first two weeks of the month. To view recorded Greenhouse Chats (Q&A webinars) or register for a future one, see <https://www.aos.org/orchids/webinars.aspx>. Send questions to greenhousechat@aos.org — Ron McHatton, AOS Chief Education and Science Officer.

ANTS



if they do better. You may need to shade them a bit depending on the actual light level but acclimated over time, I think they will do better. You also need to be careful with those that have unmottled foliage as they are sensitive to night temperature and will also not flower if conditions are too warm. Lastly, humidity can be a factor with orchids that will not bloom. Provide humidity greater than 40-50 percent at all times.

QUESTION

What can I do about ants? Spraying them with Orange Guard periodically does not do anything.

ANSWER

Ants can be tough to eliminate

because control requires reaching the queen wherever a colony has been established. This could be terrestrial or even in one of the pots in your growing area. So-called crazy ants can be even more difficult because the remnants of the colony can assimilate themselves into other ant colonies (even those of different species) even if the queen is killed.

Chemicals that contain Bifenthrin afford reasonable control of ants although not for long periods. One such product is Ortho Home Defense. It comes in a one-gallon container and can be used indoors. It comes with a self-contained spray system. Spray around your foundation and windows in the spring and reapply when you see new ants. Some growers have reported that this has provided reasonable control.

Besides the chemicals marketed to kill ants, there are a couple of other possible routes to control. Insect growth regulators (IGR) designed to deal with ants and fleas are fairly easy to find through do-it-yourself pest control companies. These should be sprayed on everything; leaves, roots, pots, and any obvious ant runs. The ants will take the IGR back to the colony,

where it will interfere with egg, larval, and nymph development. This will VERY slowly bring the colony under control. Just be prepared — it will take quite a while to see results.

You can also try a 1:1 mix of powdered sugar and sodium bicarbonate. Make sure to use powdered sugar not a granulated form or the ants will separate the sugar from the bicarbonate. They will carry this mixture back to the colony where it will be consumed. Once ingested, the bicarbonate will react with the ant's digestive system. You can also put out bicarbonate in small pans along the ant runs. If you can locate the colony, you can try treating the nest directly.

Thirdly, ants do not invade a growing area indiscriminately. They are there because of a food source, and if you can control that source, the ants will look elsewhere. The food source is often another insect colony — scale insects, mealybugs, or aphids that the ants farm like cattle. If you minimize such insects, it will go a long way to controlling an ant problem.

International Palm Society Biennial in Hawaii

October 9th–15th, 2022

Experience the lush, tropical Hawaiian Islands with the International Palm Society (IPS).

The IPS will host its 32nd Biennial meeting on Oahu and the Big Island with an optional pre-Biennial tour to Maui. We shall tour the most important private and public palm collections and gardens, enjoy knowledgeable and entertaining evening speakers, visit a world-renowned nursery, and reconnect with palm and tropical horticulture enthusiasts from all over the world. It will be a week-long immersion in tropical horticulture at its best!

Registration opens March 1st, 2022 and is limited to the first 150 participants. For more information and the full itinerary, please visit the IPS website, www.palms.org.



Photo by Dean Ouer

GENUS OF THE MONTH

Brassavola

by Thomas Mirenda

Easy-to-Grow Cattleya Relatives with Benefits



LACKING A POOL, lake or nearby beach to plunge into this summer, the average person will just stay inside in the air conditioning and possibly venture out in the evening when it is less scorching. The same is true in many of the warmer habitats in the world where going out at midday puts you at risk of overheating or dehydration. Many plants that flower in these torrid climates evolved to take advantage of the insects and other creatures of the night shift. Brassavolas fall into this category, with their delicious nocturnal fragrances and their elegant pale colors that signal pollinators best in the moonlight. To survive the heat, plants such as these, including many cacti and succulents, also have developed an amazing physiological strategy known as crassulacean acid metabolism (CAM). They transpire at night. If their stomata open during the day, they would shrivel up. By respiring at night, they avoid losing excessive moisture to evaporation in the intense heat.



Thomas Mirenda

Named for Venetian nobleman and physician Antonio Musa Brassavola (b. 1500 in Ecrara, Italy), *Brassavola nodosa* was probably one of the first orchid species grown in Europe. Imported to

Holland from Curaçao in 1698, this species has a long history of cultivation. With its tough, succulent, coriaceous leaves, it was easily able to survive the long overseas voyage by ship. It will grow and bloom in warm or intermediate conditions as long as it is given adequate light, such as that given cattleyas.

The genus currently circumscribes 20 accepted species and two varietal forms of *B. nodosa*. All the species have their charms, and most are easily grown and bloomed, often forming large and impressive specimen plants in just a few years. Aside from the *B. nodosa*, there is *Brassavola subulifolia* (*cordata*), a floriferous subject with its apple-green sepals and petals and heart-shaped white lip. Although the flowers are smaller than those of *B. nodosa*, there will often be more than a dozen per inflorescence. Their hybrid, *Brassavola* Little Stars, is intermediate between the two, and easy to grow.

Many hybrids have been made with these two species and colorful members of the Cattleya Alliance. The results are usually shaped like brassavolas, but with the colors of the other parent, curiously often with amazing spots such as those



GREG ALLIKAS



LYNN O'SHAUGHNESSEY



TOM KULIGOWSKI

- [1] *Brassavola acaulis* 'Deanna's Prodigal Quiver' CCM/AOS; grower: Dr. Lawrence Schweitzer; photographer: Teck Hia.
- [2] *Brassia subulifolia* 'Whimsy Floribunda' AM-CCM/AOS grown by Whimsy Orchids, Inc. Also known by its synonym *Brassavola cordata*, this is a small-flowered, multifloral species best grown in a basket under high light. It increases flower count when used in hybrids.
- [3] *Brassavola nodosa* is perhaps the most common species in cultivation. Pictured is 'Wesley Rayan' CCE/AOS grown by Hossein Noorbakhsh.
- [4] *Brassavola tuberculata* 'Happy Birthday Ben!' AM-CCM/AOS; exhibitor: Juraj Kojs.



CLAUDE W. HAMILTON



MICHAEL BLIETZ

seen on many cultivars of *Brassocattleya* Hoku Gem (*Cattleya* Tangerine Jewel × Richard Mueller). Newer hybrids of brassavolas have proven to be really spectacular and popular thanks to the efforts of many modern breeders such as Allen Black.

Other species are trickier but worth the effort. *Brassavola acaulis* is an outstanding Central American beauty with fascinating and incredibly long, terete and pendent growths. Said to be found on the north side of trees, these leaves would be shaded most of the day. In cultivation, this plant should be grown cooler and shadier than most of the other species. The lovely flowers cluster on a short peduncle emerging from the newest growths.

Brassavola martiana from Brazil shares the torrid habitat of *Cattleya violacea* and should be grown warm with nights around 65 F (18 C) and days of 85 F (C) days. Its flowers have fringed lips. Other species with long whip-like leaves include *Brassavola tuberculata* and *Brassavola flagellaris*, both of which grow into spectacular specimens.

My favorite of all these species is *Brassavola appendiculata*. This species has long been available in cultivation under the incorrect name *Brassavola cucullata*, a very different Caribbean species. For me, the elegantly formed spidery flowers of *B. appendiculata* are the essence of exoticism. More colorful than many of the other species, freshly opened flowers are sometimes flushed or rimmed with red, orange or yellow shades that eventually fade to ivory as the flower ages. Combine the lovely flowers with their strong nocturnal perfume and strange, pencil-thin foliage, and you have



CARMEN JOHNSTON



ARNOLD GUM

a most unusual and striking orchid. So much so that a portrait of this species was used as the logo for the 2007 Smithsonian Orchid Exhibit.

— Tom Mirenda has been working professionally with orchids for over three decades. He is currently an AOS trustee and is a past chair of the AOS Conservation Committee. He is an AOS accredited judge in the Hawaii Center (email: biophiliak@gmail.com).

[5] Left: *Brassavola appendiculata*, long known in cultivation by the misapplied name *Brassavola cucullata*. Right: a true *B. cucullata*.

[6] *Brassavola martiana* 'Mint Mist' AM-CCM/AOS; grower: Michael Blietz.

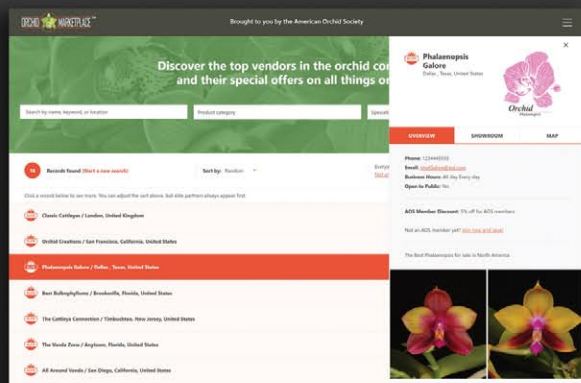
[7] *Brassavola* Little Stars 'Jill Marie' CCM/AOS (*nodosa* × *subulifolia*); grower: Jill Koerber.


[8] *Brassocattleya* Hoku Gem 'Freckles' AM/AOS (*Cattleya* Tangerine Jewel × Richard Mueller); grower: Betty Kelepecz.

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COLLECTOR'S ITEM

Egret's Flight

Two *Epidendrum* Species with Look-alike Flowers but Vastly Different Growth Habits

By Judith Rapacz-Hasler



BRYON RINKE



2

Epidendrum oerstedii Rchb.f (1852); Oersted's *Epidendrum*, named after a Danish Botanist from the 1800s.

SYNONYMS *Coilostylis oerstedii* (Rchb.f) Withner & P.A. Harding (2004), *Epidendrum costaricense* Rchb.f (1852), *Epidendrum umlaufti* Zahlbr. (1893) and *Epidendrum ciliare* var. *oerstedii* (Rchb.f) L.O. Williams (1946).

Epidendrum parkinsonianum, Hook. (1840); Parkinson's *Epidendrum*, named after an English Consul in Mexico and orchid enthusiast in the 1800s.

SYNONYMS *Brassavola pescatorii* Rchb.f. (1878), *Coilostylis parkinsoniana* (Hook.) Withner & P.A.Harding (2004), *Coilostylis pugioniformis* (Regel) D.P.Banks (2004), *Epidendrum aloifolium* nom. illeg. Bateman (1841), *Epidendrum falcatum* var. *zeledoniae* Schltr. (1923) and *Epidendrum pugioniforme* Regel (1891).

The genus *Epidendrum* was established by Carl Linnaeus in 1753 to include the mostly epiphytic orchid plants being sent to him from tropical America. The genus has grown to include more than 1,000 species of evergreen, epiphytic, lithophytic or terrestrial orchids. Some of these epidendrums have transferred to other genera and others have yet to be divided into natural subgroups, which

could be split off into their own genera.

There are 17 species in the group (Pfahl 2022) *Coilostylis*. Thirteen of them characterized by sympodial, caespitose (tufted or turf-like, e.g., the growth form of some grasses) plants, the stems forming a fusiform pseudobulb, with an apical, racemose, distichous inflorescence, the peduncle covered by large bracts and large, stellate flowers with long, narrow sepals and petals. They include: *Epidendrum apuahuense* Mansf. (1930); *Epidendrum ciliare* L. (1759); *Epidendrum cilioccidentale* Hágsater & L.Sánchez (2008); *Epidendrum × doroteae* P.H.Allen (1958); *Epidendrum foulquieri* Chiron (2005); *Epidendrum hurtadoi* Hágsater, Uribe Vélez & De Arcos (2020); *Epidendrum megalemmum* Carnevali & G.A.Romero (2008); *Epidendrum oerstedii* Rchb.f (1852); *Epidendrum pugioniforme* Regel (1890); *Epidendrum purpurascens* H. Focke (1851); *Epidendrum sandiorum* (Hágsater, Karremans & L. Sánchez) Hágsater, Karremans et L. Sánchez (2013); *Epidendrum volutum* Lindl. & Paxton (1851-1852) and *Epidendrum viviparum* Lindley (1841).

Epidendrum parkinsonianum Hook. (1840) has very similar flowers but belongs to a separate subgroup of four



LARRY VIERHELIG

3

- [1] *Epidendrum oerstedii* and *Epidendrum parkinsonianum* (inset photograph) have very similar flowers. Photographs by the author.
- [2] *Epidendrum oerstedii* 'Sarah & Bryon' CCE/AOS illustrating the short cattleya-like growth habit of this species.
- [3] *Epidendrum parkinsonianum* 'Egret's Flight' CCE/AOS illustrating the distinctly different growth habit from *Epi. oerstedii*.

species, *Falcatum* (Pfahl 2022), which also includes *Epidendrum falcatum* Lindl. (1840); *Epidendrum ixilum* Hágsater, Archila & Chiron (2015) and *Epidendrum lacertinum* Lindl. (1841). These species are characterized by their pendent, sympodial, caespitose growth habit, roots only at the base of the first stems, a single, fleshy, succulent, lanceolate leaf and large stellate flowers with deeply trilobed lip.

The growth habit of *Epi. oerstedii* is reminiscent of a cattleya and native to Central Mexico, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama.

The apices of the elongated, chartreuse sepals and petals are pointed and the lip is creamy white with a bright yellow crest and apex. The column and anther cap are white. These long-lasting, simultaneously opening, citrus-fragrant flowers arise from a newly forming pseudobulb and may be 6 inches (15 cm) or more across with up to four flowers on a short inflorescence.

Epidendrum parkinsonianum grows in oak-pine cloud forests at elevations of 3,280 to 7,550 feet (1,000-2,300 m) hanging from tree trunks and main branches along rivers. Its pendulous stems form a hanging clump that may be up to 80 inches (2 m) long. The leaves are narrow, almost terete and fleshy. The pendent inflorescences create a lovely cascade, especially on mounted plants where the 2-3 flowers per inflorescence display especially well. A well-grown plant may have dozens of lovely flowers. The late Larry Vierheilig named his clone 'Egret's Flight', which surely describes the beauty and charm of this species.

There are many AOS awards to these and other *Epidendrum* species as well as many lovely hybrids involving *Cattleya*, *Encyclia*, *Prosthechea*, *Brassavola* and *Laelia* species in the crosses. Searching the AOS awards database, the West Coast appears to provide an ideal outdoor summer climate for epidendrum species. This cooler climate with high humidity seems to be comparable to the native habitat of many species.

CULTURE Southern Central America has a climate that is wet during the summer months, but constant wind dries plants quickly. The winter months are relatively dry, but morning mists and nightly dews keep plants damper than rainfall totals would suggest. New growths appear in early March and, by mid-May, produce these lovely flowers that indeed look like 'Egret's Flight'.

Day temperatures during the summer

range from 77 to 90 F (25-32 C) and night temperatures from 50 to 70 F (10-21 C); however, they may prefer cooler temperatures. The plants prefer a shady spot to bloom well. Mounted plants should be watered prior to fertilizer applications to minimize the potential harmful effects of the fertilizer solutions on the dry roots. Fertilize once a week when plants are actively growing, using a good water-soluble fertilizer containing trace elements. Fertilize less often, no more frequently than every other week, when plants are resting.

References and further Reading

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— *Judith Rapacz-Hasler is a member of the AOS Editorial Board. She spends the winter months in Florida's west coast and the summer in Europe. Among her most rewarding experiences are frequent travels to observe orchids in their native habitats. (email jorapacz@wisc.edu).*

**Winter will be here
before you know it.
Does your greenhouse
run too cold? Now is
the time to prepare.**

Stick one side of Velcro disks a foot apart onto the inside of the north side of the greenhouse to fit the shape of the foil-covered, bubble-wrap-type batts like the material used as jackets for hot water heaters. It can be purchased in rolls. The foil will reflect light back into the greenhouse and the bubble wrap will help insulate against the cold. It may also be used to insulate the west side of the greenhouse on the outside to help keep the greenhouse cool during the summer months.
 — *Jean Allen-Ikeson*

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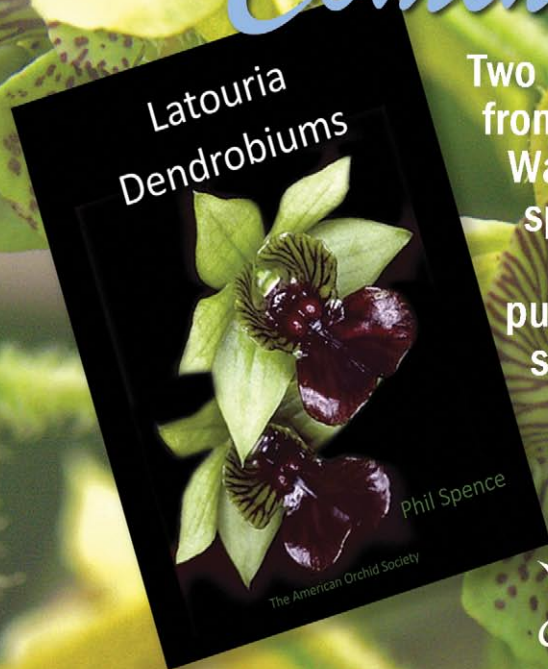
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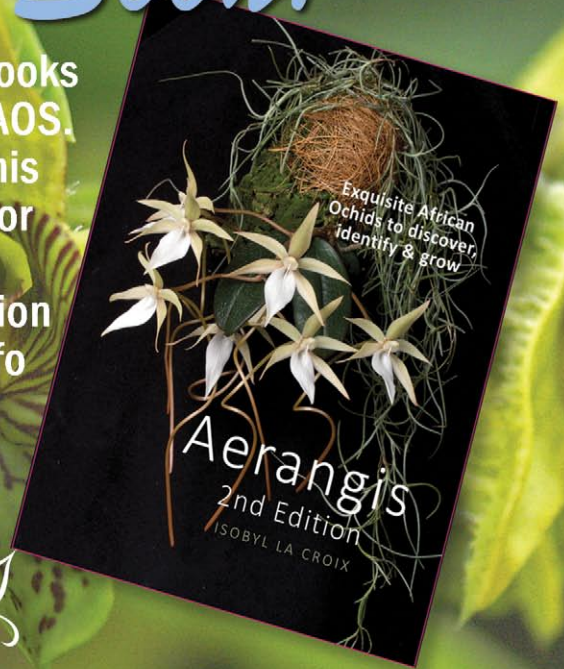
**HOME
REMEDIES**

- Rather than expensive and potentially dangerous herbicides, spray full-strength vinegar to kill weeds between pavers and on greenhouse floors. (Do not spray on orchids.)
- Aspirin (just ¼ of one 325 mg tablet per gallon of water) helps protect plants from fungal and viral pathogens when used as a spray. More is NOT better. Do not exceed this amount.
- Homemade insecticide (mix in a 1 gallon [3.8 L] jug): 1 pint (0.5 L) rubbing alcohol, 1 pint (0.5 L) 409 spray cleaner, and 3 quarts (2.8 L) water. Apply as a spray.
- Isopropyl (rubbing) alcohol can be put into an empty spray bottle and used to treat scale, mealybugs, thrips, aphids, red spider mites and perhaps other pests. It works only while wet and must contact the insect.
- Neosporin has been reportedly used to treat orchid crown rot; remove rotted area of plant before treatment.

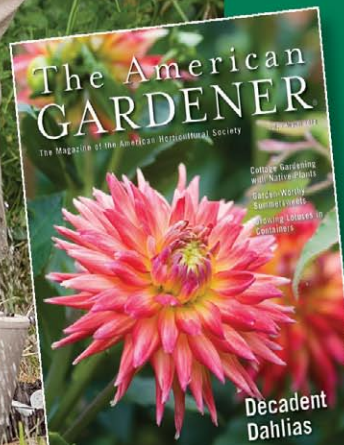
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Adaptation

by Lindsey Paris and Eileen Hector/Photographs by Lindsey Paris

Meeting the Needs of the Grower and the Orchid Collector

MOST EVERYONE IS aware of Facebook, which has many pages dedicated to specific orchid genera. Florida orchid growers have a page referred to as FOG (Florida Orchid Growing; www.facebook.com/groups/fl.orchid). The group was created in June 2011. To become a member of the Facebook group, you must reside in Florida. Florida Orchid Growing has over 17,000 members. That is a large concentration of people growing orchids. When most of us think of Florida, we think sun, sand, surf and palm trees. The truth is, Florida growing conditions can be brutal at times. Frequent torrential downpours, dodging hurricanes and protecting from unexpected freezes can wreak havoc on both the orchids and the grower. Florida is a peninsula, which is 447 miles (721 km) long and 381 miles (582 km) wide at the widest point. Florida goes from sea level (0 m) to 345 feet (105 m) above sea level at its highest point. Orchid-growing conditions can vary quite a bit from north to south and east to west. Every area has its pros and cons.

Each year the FOG Facebook group has a feature for members called "Show 'Em Where You Grow 'Em." Group members are invited to post pictures of their orchid growing areas. The results are as varied as the orchids each person grows. One central Florida page member, Lindsey Paris, who chronicled the development of her growing area over a 5½ year period, shares some great ideas for successful growing, and the adaptations she has made for her orchid collection.

THE LIGHTNING ROUND Q & A — An Interview with Lindsey

EH: Hey Lindsey, it is obvious even from your email address that you are serious about growing things. When did you first catch the orchid bug?

LP: While we were living in Boston in the early 1970s, my dad took me to one of the huge international orchid shows in Miami. Soon after that, I got a few different orchids to grow on my windowsill. They included cattleya and phalaenopsis. In 2009, I moved to Greenville, North Carolina. In 2011, still enamored with orchids, I had a small hobby greenhouse built.

EH: Is growing orchids in a greenhouse easier than growing outdoors in Florida?

LP: I found it much easier in the



[1] The winter weather here in Tampa Florida is much colder than I anticipated. After several failed attempts at enclosing my existing space, I asked my handyman for an extension to the growing area. It was designed to blend with the original structure but could be enclosed with 6mm plastic and Wiggle Wire track. Weed cloth, river rock, a small heater and a remote weather sensor gives me peace of mind on those cold nights. Wire grid mounted on the rafters is perfect to hang those small cold sensitive plants.

[2] When I moved to Florida 7 years ago, I naively thought all I would need to grow orchids were benches. My handyman made these out of pressure treated wood. The lower part in the foreground is my work bench..

greenhouse. There were drawbacks. It was crazy expensive though. Electric heat in January and February was usually \$300-\$600. My collection got moved outside in the spring and returned to the

greenhouse in the fall.

EH: Did any of those orchids move with you to the Sunshine State?

LP: Yes, I had about 300 plants in my North Carolina greenhouse. Before I made



my home full-time in Florida, I took on a new job as a crew member on a 64-foot (19.5 m) catamaran, cruising between the US Virgin Islands and down to Grenada for the hurricane season. At that time, about 100 of them were sent to my sister in Miami (who knew nothing about orchids). The rest of them were distributed to local orchid friends before I left North Carolina. My sister put those I sent her under a huge mango tree for three years while I was sailing in the Caribbean. She and I stayed in touch by email. She would send me photos when something bloomed or if she had a cultural question. Most of the Miami collection survived. Now she has her own collection. We usually get together and shop at the Tamiami or Redland Orchid Festivals every year.

EH: Did you retrieve any of them when you finally settled in the Tampa area?

LP: Once I left the boat and made my decision to move to Tampa, I drove down to Miami to collect my plants. Of the 100 or so I sent, I picked up about 85. I was amazed, most still had their tags!

EH: Were you a member of an orchid society in your former home?

LP: No. The only support I had was from online forums like Dave's Garden and the National Gardening Association. Those people were a huge help in encouraging me and problem solving. There were no nearby places to buy orchids, so everything came by United Parcel Service, sight unseen. I am still active with the orchid forum on the National Gardening Association site.

EH: Are you a member of a local orchid society now? What attracted you to joining an AOS-affiliated orchid society?

LP: The first month I was in Tampa (August 2015 in an Airbnb), while I decided if I was going to settle here or not), I saw a notice for the Tampa Orchid Club's monthly meeting in a local paper. The contact person listed for the club was a familiar name from the online National Gardening Association group (Jim Hawk). I attended my first orchid club meeting after I saw that announcement. It almost made me cry to be in a room with 45



people, all passionate about orchids. During the meeting, the club president was asking for a volunteer to be the club photographer. I had my camera with me and was hopping up and down yelling "ME!!!!...ME!!!" Everyone thought that was hysterical but that is when I made the decision to stay in Tampa.

EH: When did you realize that you needed someplace to corral and organize your Florida orchids?

LP: I knew before I got here. I inherited my mom's house in Florida, so I knew the location and conditions. I knew it would

[3] A panoramic view of the author's growing space.

[4] Where I live we get wind with every rain. I was losing lots of clay pots from being blown over. These 'lifelines' made from stuff at the hardware store keeps everything on top of the bench.

[5] The tarp to shelter the plants during the monsoon season did not work at all. My handyman came up with a pergola design that slopes away from the house and would be covered with clear polycarbonate panels.

PARIS AND HECTOR

be good for the cattleyas that proved to grow so well for me.

EH: You are often awarded the Judge's Choice or Members' Choice ribbon from the show-and-tell table at your local orchid club monthly meetings. How encouraging is that?

LP: It is encouraging. But more importantly, getting cultural tips from the experts has helped me be a better grower. Clerking at orchid shows has helped me be a more discerning orchid shopper.

EH: You have four AOS awards. How excited are you about that? Who urged you to exhibit and enter your orchids for judging?

LP: My first two awards were granted at my club's orchid show on the same day, and it was a shock. Well-known grower, exhibitor, international guest speaker and bulbophyllum hybridizer, Bill Thoms, has been my most important mentor. What good fortune it has been to learn from expert growers.

EH: Have you ever considered joining the AOS judging program?

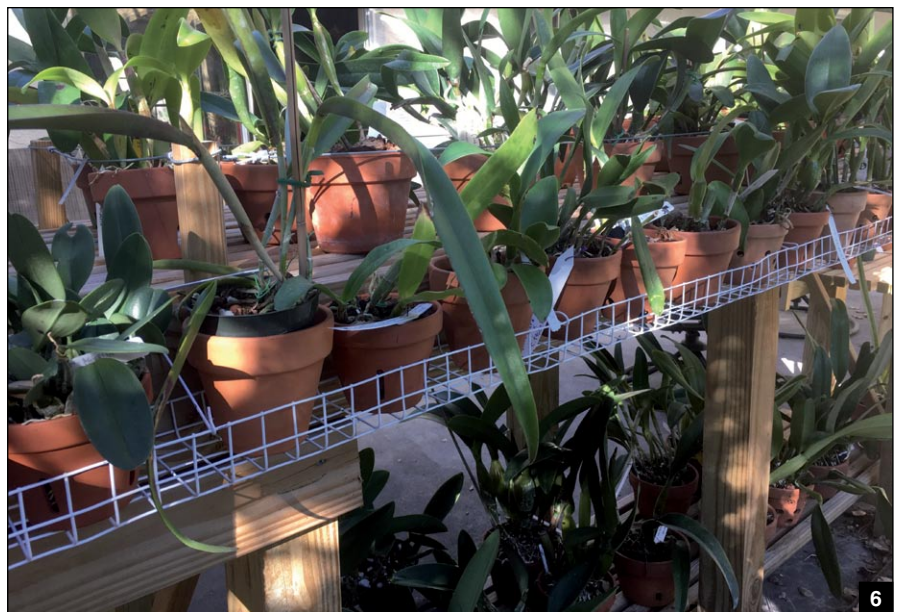
LP: Yes, I have. That was before I found out how much time, driving and night driving would be involved. Now, I am way too busy in my retirement. To help me in my cultivation, I always ask the growers I buy from, how they grow the plant I am buying. I also have very experienced grower friends. Some are AOS judges and student judges.

EH: We start out loving all our plants, but I have seen your Facebook posts about the orchids that do not love you back or perform poorly in your growing space. Since orchid real estate is at a premium — they are destined for sale, a trade, the trash or tacked on trees. That might seem brutal to some growers who think they need to rescue every nonperforming orchid they find. What do you consider an underperforming orchid?

LP: I want to see growth while the plant is with me. I want to see more growing points and more blooms, maybe more than once a year. The orchid needs to show me its full potential. A plant that continues to produce only one flower once a year is very quickly rehomed. Flowers that are so small they need cheater glasses to be seen are instantly rehomed.

EH: Why is it necessary for some orchids to move on?

LP: We are fortunate to have some outstanding orchid breeders nearby and almost weekly, we have opportunities to shop for spectacular plants. Why keep something that is struggling when



6



7

someone else might enjoy the challenge?

EH: Once in Florida, did you start out with specific orchids in mind? Or like most of us — whatever caught your eye? Give some examples of bad and best choices you made in building your collection.

LP: Bad choices: phalaenopsis, phragmipediums, most dendrobiums and most species. My one size fits all cultural approach does not work for these! Cattleya hybrids are so forgiving and easy going. My light here is perfect for them. My miniature vandaceous plants are also doing well.

EH: What do you feel is the key to growing orchids successfully in your central Florida geographic location?

LP: Observing your plants is crucial. I look everything over at least twice a day. The color and shine of the leaves tell you a lot. Look at the roots and check the condition of the potting mix periodically

[6] My friend, Bill Thoms made these baskets to hold small pots and they are screwed right onto the outside edges of the bench.

[7] All ready for summer!

and, of course, look for buds and bugs. Because I grow outdoors, fungus is a real concern. Pick up and throw away dead leaves and sheaths. It is important to keeping a growing area healthy. Staying ahead of the problems is easier than dealing with a major problem later.

EH: What has been your biggest challenge?

LP: Initially, there was too much wind in the growing area, then too much rain and then too cold for too long. My space has evolved over the past 5½ years to address these challenges.

At first, I thought all I would need were benches to grow outside. Very quickly I

discovered that my clay pots were blown over and broken. My handyman and I came up with “lifelines” borrowed from my sailing days, to hold the plants from going overboard. Then the monsoon season arrived, and the pots were getting waterlogged. A tarp worked for about 6 hours before it got shredded. Going forward, all the plants were hand carried around to the front of the house every few days so they could dry out on my front porch.

The next year we worked together to build a pergola structure that could be covered with clear polycarbonate panels. That took care of the monsoons. Then I started to run out of room. More benches were added, pot clips were added, and wire baskets were fabricated and attached to the sides of the benches to hold small pots.

I still had to deal with cold winters and four or five times a winter, I had to bring them all inside (500+ plants by now!). The first two attempts at enclosing the space did not work at all. The next season we came up with an addition that could be enclosed using “Wiggle Wire” and ¼-inch (6 mm) plastic. It was designed to have roll up sides that zipped close. I am still working through some problems with the adhesive on the zippers, so next winter there will be a new solution. Fingers crossed! A small heater and a remote temperature sensing device with an alarm let me know when the conditions outside were getting too cold.

The moral of the story is, like orchids, we must adapt; adapt our growing areas toward the best growing conditions or adapt what we grow to make sure we are getting the most out of our plants. We need to concentrate on what will thrive in the existing conditions, or those conditions we have created for our orchid collection.

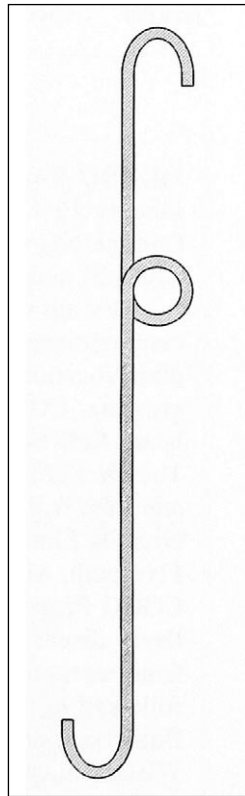
— *Lindsey not only grows great orchids, she also takes great photos of her collection and posts them on her Facebook page (www.facebook.com/lindsey.paris.14). She volunteers on a regular basis at the University of South Florida Botanical Gardens where she and other Tampa Orchid Club members maintain and display the orchid collection for garden visitors. (lindseylovesplants@gmail.com).*

Citations

Florida Orchid Growing FOG. 2022. Facebook. May 10, 2022. <https://www.facebook.com/groups/fl.orchid>

GREATIdeas by Ed Wright and Bill Tippit

The Eyes Have It (Reprinted from the April 1993 AOS Bulletin 62[4]:409)



POTS NEVER HANG at just the right level in a greenhouse. For years we have used that high-tech marvel, “The Bent Wire Extender,” an elongated s-shaped hook, to make the necessary adjustment. For just as many years, the hook on our long reach pole has been getting caught between the extending wire and the support wire. Finally, a solution: make an extra loop in the extender wire, as shown to the right. The extra eye loop, about one third of the way down the wire, is perfect for the long reach pole. The pot hanger goes into the bottom turn of the s; the top turn of the s hooks over the support wire. The hook, or bent nail, in the end of the long reach pole slips in and out of the intermediate loop quickly and easily. The pole no longer binds in with the pot hanger. To bend a number of identical extenders, cut a piece of PVC pipe 3 inches (7.5 cm) longer than the extender is to be. Fit a cap on one end of the PVC pipe, then wire can be inserted the length of the pipe and cut to a standard size. Empty the pipe each time four or five wires have been cut to permit production of additional wires.

IX International Conference on Orchid Conservation “Soroa 2022”

NEW DATES

THE SOROA BOTANICAL and Orchid Garden and the University of Artemisa IX International Conference on Orchid Conservation “Soroa -2022,” has been postponed from February 2022 to **NOVEMBER 2022** with exact dates to be determined soon.

This second postponement has become necessary due to damage caused by a recent tropical weather system as well as the COVID-19 pandemic situation in Cuba. Vaccinations are underway in Cuba but February was too soon to safely hold the Conference.



HABENARIA SUSANNÆ.

Pecteilis by Wesley Higgins and Peggy Alrich

Far Eastern Russia to Tropical Asia



PECTEILIS

Rafinesque • *Fl. Tellur.*, 2:37 (1837).

ETYMOLOGY From the Greek for a comb (*pectein*). Descriptive of the much-divided, lateral side lobes of the lip.

LECTOTYPE *Pecteilis susanna* (Linnaeus) Rafinesque (*Orchis susanna* Linnaeus) designated by Butzin, *Taxon*, 32(4):631 (1983); P.J. Cribb, *Taxon*, 48:49 (1999); and type selected by Schlechter, *Repert. Spec. Nov. Regni Veg.*, 4:120 (1919).

Ten terrestrial species that are morphologically similar to *Habenaria*, but differ by concave, sessile stigma lobes. The species are found in low to upper elevation, hill scrub, grassy slopes to montane forests from southern China (Yunnan to Jiangxi), Japan, northeastern Pakistan, northern India (Kashmir to Assam), Nepal to Vietnam, Malaysia, and western Indonesia (Sumatra, Java, and Sulawesi).

These perennial plants have fleshy tubers that are solitary or paired, oblong, ellipsoid or subglobose, undivided and neck with several slender roots. The erect plants have stout, unbranched stems that are leafy throughout or with a basal rosette. The few to numerous-flowered inflorescence bears large, usually white, yellow, or pale green resupinate flowers with small, narrow sepals and petals that converge, forming a hood over the erect column. These nocturnally fragrant flowers have a distinct trilobed lip with extravagantly fringed or minutely toothed (rarely entire) side lobes. The long, much smaller midlobe is entire and bears a long, pendulous, slightly curved spur longer than the ovary. The flowers have a broad, erect column, stigma lobes adnate to the base of the lip. Pollinia two, club-shaped, each with a caudicle and a long, small, ovate to oblong viscidium.

Phylogenetic studies by Jin et al. (2017) found that *Pecteilis* is not monophyletic

and is deeply nested within the *Habenaria* group. The results also indicated that *Habenaria* itself is polyphyletic and is divided into two well-supported clades. However, the analyses also indicated a hard incongruence between nuclear and the plastid topologies. Future studies may shed light on the geographical origin of the various clades and the timing of their divergence.

The two divergent Linnean taxonomic options are:

1. Expand the delimitation of *Habenaria* diagnosed by the characters formerly used to delimit *Habenariinae*. The result of placing all the species of *Habenaria* within a single genus would lead to the loss of the generic name *Habenaria* or

2. Perhaps a more disruptive option would be to split *Habenaria* into at least two genera, a decision that would likely result in no agreement over the number of segregate genera and how to recognize



Drawn by G. C. Dass.

HABENARIA TRIPLORA, Don.

Lith by K.D.Chandra

2



HABENARIA SUSANNAE R. BR.

G. Patey pinx.

P. De Penningmaker chrom.

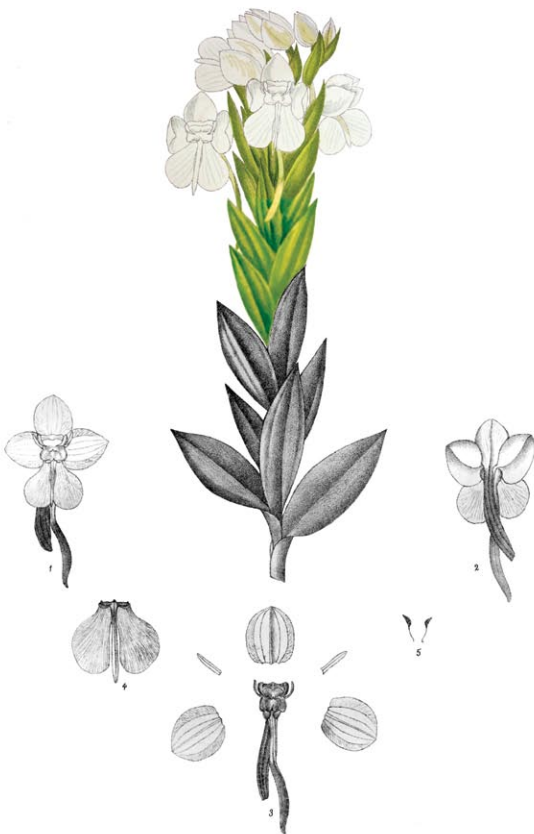
3

Pecteilis

ANTIQUÉ PLATES

- [1] *Pecteilis susannae* as *Habenaria susannae*, Cleary & Co. Auctioneers Catalog, p. 23 (1902).
- [2] *Pecteilis triflora* as *Habenaria triflora*, *Annals of the Royal Botanic Garden (Calcutta)*, 5: t.99 (1895), black and white.
- [3] *Pecteilis susannae* as *Habenaria susannae*, *Lindenia*, 14: t.642 (1898).
- [4] *Pecteilis triflora* as *Habenaria triflora*, *Annals of the Royal Botanic Garden (Calcutta)*, 5: t.99 (1895), color.
- [5] *Pecteilis susannae* as *Orchis susannae*, *Herbarium Amboinense*, 5: t.99, p. 286 (1747).
- [6] *Pecteilis susannae* as *Orchis amboinensis*, *Paradisus Batavus*, t.73, p. 209 (1698).
- [7] *Pecteilis susannae* as *Platanthera susannae*, *Orchideen Java, Figurenatlas*, t.10 (1908).

4



Drawn by G. C. Dass.

HABENARIA TRIPLORA, Don.

Lith by K.D.Chandra



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6

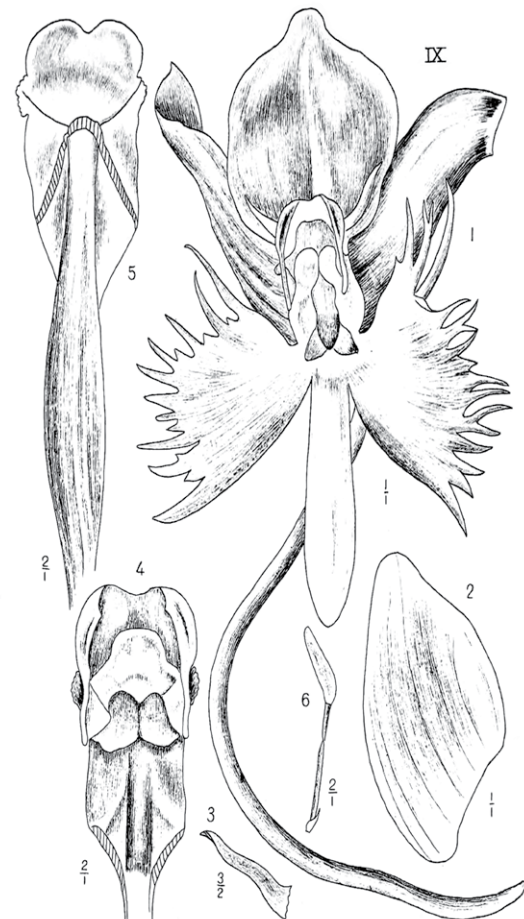
them. Instead of having two difficult to define genera, it may end up with five or more difficult to define genera. This would only increase the potential for misidentifications.

Currently, *Pecteilis* remains an accepted genus in the World Checklist of Selected Plant Families.

CULTURE The species come from tropical to subtropical humid environments, (55-70 percent humidity) with temperatures averaging 77 F (25 C) during the day and 68 F (20 C) at night. Plants are hardy in USDA zones 3b to 11, depending on the species and can be purchased as small pea-sized tubers or seed in the horticultural trade. Plant tubers in pots with a fibrous mixture rich in leaf mold. Provide light to medium shade and keep moist throughout the growing season; only fertilize during the growing period. During the winter, reduce watering and keep in intermediate conditions as the plant goes dormant, until the spring.

Reference

W.-T. Jin, A. Schuiteman, M.W. Chase MW, J.-W. Li, S.-W. Chung, T.-C. Hsu, and X.-H. Jin. 2017. Phylogenetics of Subtribe Orchidinae s.l. (Orchidaceae; Orchidoideae) Based on Seven Markers (Plastid matK, psaB, rbcL, trnL-F, trnH-psba, and Nuclear nrITS, Xdh): Implications for Generic Delimitation. *BMC Plant Biology* 17(1):222-222.



7

J.J. Smith del.

M. Kromoharjo lith.

From Costume to Clay

Part 3

BY CAROL HELEN BEULE
PHOTOGRAPHS BY THE AUTHOR UNLESS
OTHERWISE CREDITED



雷紅

16

四国山草園

雷紅

宇田川滋充

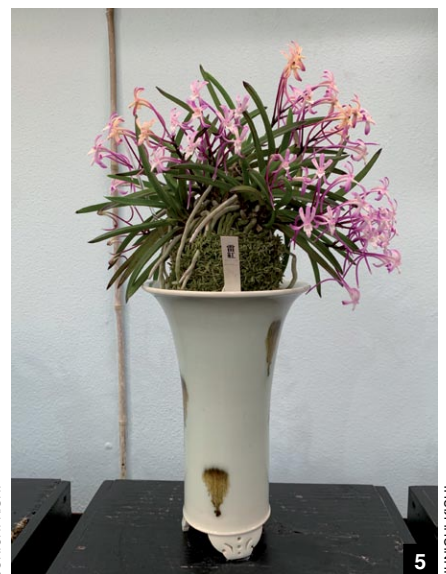
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BEULE

IN MAY OF 2019, I became a member of the Japan Fukiran Society (JFS), which meets twice a year to celebrate this orchid species. The main meeting for the JFS takes place in May in a different city every year, just like the American Orchid Society normally does. So far, I have been to Hamamatsu, Osaka and Nagoya for their meetings. The meetings were to be held in Tokyo in 2020 but were canceled due to Covid-19. Canceling in 2021 was obvious. For 2022, it is again planned for Hamamatsu and I am dreaming of that breakfast bar if it is held at the same hotel as previously. In the heat of July, the JFS has a special exhibition at Ueno Park in Central Tokyo that is specifically for flowering plants. However, the major awards are given to plants in May, when few are in bloom. This shows the importance of the leaves, the culture and the shape of the overall plant, along with its pot. The Ueno Park July exhibition is very small compared to the meeting in May. Throughout the summer months, some garden centers organize exhibitions of Fukiran for their patrons and to bring in more visitors to admire and browse. There are many smaller local exhibits.

The history of this orchid is fairly well known, I believe. Briefly, it is one of the endemic Japanese, Korean and Chinese orchids found growing on branches of trees in regions from about 30 miles (48 km) north of Tokyo (in Japan) and most areas farther south. Similar temperature climate zones of Korea and China also find this orchid growing on trees. The species tolerates growing without substrate and attaches itself to trees. It forms a root mass that collects debris like many similar epiphytic orchids. And, they are small.

A 30-year old plant can be the size of a soccer ball. In Japan, it is called Fukiran (Fu-Ran) or wind-orchid. (Fuukiran, with 2 “u”s, denotes a registered, named variety.) Prized by the emperor, his samurai and other wealthy individuals from the 1600s on, this orchid has been cultivated and cherished for years. The species tolerates the heat and humidity of the summer, and the cold and dry conditions in winter. It is a very forgiving plant. There is great tradition and poetry in their growing, exhibition and especially naming. Names such as “Dancing Cranes” (cultivar Maizuru), “Green Folding Fan” (cultivar Suisen), “Golden Peacock” (cultivar Kinkujaku) and “Red Spider” (cultivar Manjusage) are typical. Beautiful names for beautiful plants that often indicate what the leaves or flower of any cultivar looks like.



Growers in Japan grow their plants in plain clay pots with fans generously blowing, and Japan is one of the hottest and most humid places I have visited. But to flower well, they need a certain amount of winter cold. Not always ice and snow, but a definite chill that makes them go dormant for several months during which they are kept relatively dry, but in a semihumid greenhouse or on a semidry balcony, and they are thus often misted lightly through the winter, all depending on the ambient temperature and humidity. These plants thrive in a wide variety of conditions but need excellent air flow to allow their roots to thrive. As such, they are true epiphytes.

What most of us in the United States do not know about the presentation of these plants is the need to present them in as small a pot as practical, especially when a big plant is involved. It is important to make the plant the main focus no

- [1] The decorative backgrounds used at various venues always complement the plants and pots. Photograph by Junichi Kishi.
- [2] A plant in full bloom at one of the large regional nurseries hosting summer Fukiran exhibits.
- [3] Summer flowers in July show this plant off, displayed in an exquisite Tenzan pot.
- [4] An unusual pot design mirrors the “outstretched fingers” of the plant’s fans. A well-thought-out presentation.
- [5] An unusually tall pot with simple designs puts emphasis on the flowers and the plant.

matter how decorative the pot might be. Normal growing conditions that allow the roots to become dry between waterings with a central air space near the roots are not the same as placing a plant with many roots into a relatively small pot for



6 JUNICHI KISHI



7 JUNICHI KISHI



8 JUNICHI KISHI



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[6] A more formal setting for the summer flower meeting shows the names of the plants presented.

[7] Close-up of an individual plant that was singled out for particular interest. Note the wood stands that the pots are shown on all vary and show their grower's individuality. The off-center placement was intentional.

[8] A large regional nursery in Kanagawa Prefecture can find the space for many growers to show off their plants and pots.

[9] Wild Fukiran growing on branches of trees on the Izu Peninsula.

[10] If a tree is cut or falls and plants are found growing on them, they are often taken to the home of someone who grows and appreciates these plants

[11] Large logs or branches are suspended to show off Fukiran that have been found on the ground. These logs with plants were given to the grower and displayed in his backyard.



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show purposes. Placed in a pot like that, the roots are not able to breathe properly and must not remain this way for long. Big plants are traditionally remossed for showing and placed into the perfect pot to allow for a blending of plant and pot. They are then returned to their previous growing conditions. With some exceptions, smaller plants are remossed in February or March and used in May for exhibit with their newly growing roots showing out of the moss.

The annual JFS meeting is usually a three-day affair. One day to set up and register, the second day for judging and the grand awards banquet, and a third day for the general public to visit and to stage the auction of plants and antique pots. In the background of all of this, and around the perimeter, are sellers of both pots and plants vying for attention and growers meeting and talking to old and new friends. In the center of the hall, there are tables and chairs for friends to gather and snack.

Judging is done in groups of at least three judges and sometimes five to six. The plants to be judged are placed in the area for that type of variety and are reviewed by the judges. I have seen as many as 14 plants in one category and as few as three. Each year, different varieties of plants are emphasized by the group organizing the meeting for their local importance and general popularity. Judging is done much as it is done in England at Royal Horticultural Society Orchid Committee judgments, with judges quickly eliminating exhibited plants to find their three top-rated plants in a specific category. That is when it becomes animated. Because Peter T. Lin and I are both accredited AOS judges, we are allowed to observe the judging from the standpoint of the plants and watch the judges' interaction. Such interactions are sometimes extremely animated. A given plant may be moved to third place and then back to second place or up to first, and it can go this way until all judges agree on the three places. It is not always the biggest plant that wins. It is the most "beautiful" in the judges' eyes. From the first-place winners of each of the various categories, the grand champion and special prize winners are chosen.

The morning following judging, the exhibition opens for the public to look at the plants and buy what might be left from various vendors of both pots and plants in the exhibit hall. An auction is held in the afternoon, open to anyone to watch, but only to members of the JFS to buy. It is a "cash-only" auction and it has



been suggested to me that only serious buyers with at least 3.9 million yen (the equivalent of about US\$30,000.00) need participate. Any less might price someone out of what is wanted. I personally asked a Korean gentleman who I knew spoke some English how much he had spent. The answer was US\$73,000.00! This is not a casual hobby for many and the JFS receives 10 percent of the profits, with the seller pocketing the remaining 90 percent.

Because I have also traveled around Japan as a tourist before and after each show, I now have an extensive collection of books about all types of Japanese art forms that were purchased from every Japanese museum and bookseller I ever visited. Were I to be able to live for another 40 years, I would think about going back to college for a degree in Asian art history. Recently, a friend in Southern California pointed me to a website that sells antique Japanese texts and design books. I have

- [12] The right side of the Chairman of the JFS's greenhouse. Some of the most expensive plants in Japan are found in the lower right of this photo (the large, variegated bean leaf Fukiran).
- [13] Very large plant is displayed in a not-so-large pot. This is a typical presentation for a large plant. This plant won first place in its division at the Osaka Meeting in 2018.
- [14] A typical presentation for a large plant specifically remossed for the meeting. This plant won 1st place in its division at the Osaka Meeting in 2018.
- [15] The author bought 'Dong-i' in 2017 from these Korean growers as a single growth with a "baby." The plant, now registered in Korea, is wonderful a wonderful specimen, and featured on the opening page of the first part of this series. They have been at every meeting the author has attended with great plants for sale.



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TAKESHI OTSUKA



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TAKESHI OTSUKA



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TAKESHI OTSUKA

been buying them as my yearly trips to Japan have been interrupted during these last 2+ years of Covid-19.

As I write this, I am hopeful that in 2022 I will again be able to eat my favorite noodles and go shopping for desired Japanese kitchen utensils and shoes. By the time this is published, I will have either traveled to Japan or not. Perhaps one of the new virus variants will get their way.

Lastly, there are few makers of pots for Fukiran in the world. Most are centered in Japan, and each has a unique style that identifies the maker; all very different from one another. In Japan you find both individuals and companies. There are larger companies and several smaller collectives of individuals who work together or individually. There are also several gentlemen of some renown. Outside of Japan there are only a few who make pots for Fukiran. Two live and work

in Korea and one in the Ukraine; all men. I make the number one more but am the only woman making such pots. I am sure I have missed some and would gladly mention them if they were known to me.

It would have never crossed my mind at the age of 20 that a love for the music of Puccini's *Madam Butterfly* would lead me to a second career designing pots for an orchid prized by any Asian culture. This has opened an entire world of friends to me, and I have embraced the cultures of this orchid and learned to think differently about all orchids in the process. Orchids are not just beautiful, but the extension of any culture that honors them. Who would have thought that a girl from a small Midwest farming community would become entranced by orchids? Thanks to my love of this plant, orchids have changed my life and added many new friends.

The American Fukiran Society, centered in Southern California, has been

[16] Mr. Meikan Nobori manned a booth at the 2017 JFS meeting with Fukiran as well as other common orchids for sale.

[17] Judges compare the attributes they deem important in a selected group of plants. A great deal of comparison went in to determining the award winners at this 2019 show in Nagoya.

[18] Plants lined up, segregated by cultivar, and ready to be placed in their respective divisions.

[19] Grand Champion winner in 2017; plant owned and presented by Mr. Shimizu.

[20] Grand Champion winner in 2018; plant owned and presented by Mr. Nakajima.

[21] Grand Champion winner in 2019; plant owned and presented by Mr. Nakata.



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grateful to participate in the annual Cal-Orchids summer open house for the past 12 Julys. Pictured are some of the group's regular participants.

Acknowledgments

I would like to thank the following for their help and advice: In alphabetical order: Scott Barrie, Deborah Bodei, Ken Cameron, Michelle Dobard-Anderson, Jason Fischer, Wendy Fisher, Craig Malcolm Gibbon, Guy Gottschalk, Norito Hasegawa, Satomi Kasahara (Davis), Alan Kenwood, Junichi Kishi, Scott Laskowski, Jennifer Leitzke, Peter T. Lin, Hiroshige Matsuoka, Duane McDowell, Tom Mirenda, Kiyoshige Negi, Takeshi Otsuka, Phyllis Prestia, Randall Robinson, Hideki Shimizu, Stephen D. Ward and Claire Wolfington.

My additional thanks to both Takeshi Otsuka and Junichi Kishi for their unparalleled assistance in obtaining images for this article.

— Carol Helen Beule is an award-winning costume designer who retired after a 45+ year career and moved on to making pots for *Vanda falcata*, Asian cymbidiums and other small plants. She both makes what she likes and takes on commissions. She travels to Japan whenever possible to do more research and learn about what they call their *Fukiran*, our *V. falcata*, and is a fully accredited AOS judge in the Pacific South region. All pottery is handmade, not on a wheel but in a process known as "hand built" or by molds (website: firsthousefurnishings.com; email: cbeule@sbcglobal.net).

[22] The auction in 2019. Nursery growers, who spend large sums of money on plants, behind the podium. They feel the need to see plants very closely if not possible beforehand. Plant and pot sales go on for hours at a time and are carefully inspected by prospective buyers as they are generally expensive.

[23] Plants lined up for sale. This year, looking at possible purchases was easy. In some years, such as 2017, plants are easy to see beforehand. That is not always the case.

[24] A grouping of the older books I have purchased. Some are very old. From 1807 - 1860's.

[25] A page from the oldest book I own. Believed to have been printed by the woodblock method about 1807. The pages are paper thin and are almost transparent.

[26] Tat Li, winner of 1st place this year posing with Mr. Shigeru Kasahara, Chairman of the Japan Fukiran Society, who tries to always join us.

[27] The author with Richard Shafer. Photo by Andrew Kim, the unofficial photographer of the group.

Orchids of Bhutan

The Genus *Paphiopedilum*

STIG DALSTRÖM, CHOKI GYELTSHEN, NIMA GYELTSHEN,
KEZANG TOBGAY, AND PEM ZAM/PHOTOGRAPHS BY STIG DALSTRÖM
UNLESS OTHERWISE CREDITED



IN 1753 A Swedish son of a priest published in his *Species Plantarum* the scientific description of an attractive plant that was familiar to him. The man's name would have been Carl Nilsson after his father, but he was to become better known as Carl von Linné in his homeland. Internationally, he is known as Carl (or Carolus) Linnaeus, which is the name he received at his baptism (Broberg 2006). The plant in question was an orchid that he named *Cypripedium calceolus* L. (Linnaeus 1753). Linnaeus established the generic name in reference to the "slipper of Aphrodite," the Greek Goddess of beauty, because the flower was attractive and the lip of it reminded Linnaeus of a slipper. The generic name itself refers to the island of Cyprus where the Goddess Aphrodite supposedly first appeared. By the end of the 19th century, the genus *Cypripedium* L., consisted of about 100 species, and included plants from Asia, Europe and the American continent (Braem 1988). Eighty-five years after the Linnaeus publication, the Turkish scientist Constantine Samuel Rafinesque published two tropical "slipper orchids" in his *Flora Telluriana* (Rafinesque 1836). These were *Stimegas venustum* (Wall. ex Sims) Rafinesque and *Cordula insignis* (Wall. Ex Lindl.) Rafinesque. Today we call these taxa *Paphiopedilum venustum* (Wall. ex Sims) Pfitzer and *Paphiopedilum insigne* (Wall. ex Lindl.) Pfitzer. The reason why these orchids lost their original names appears to be because they were simply ignored by most and subsequently forgotten (Braem 1988).

The orchid genus *Paphiopedilum* Pfitzer was established by Ernst Pfitzer (1886) in his *Morphologische Studien über die Orchideenblüte*, and this time our beloved Goddess Aphrodite came from the Greek island of Paphos. In a subsequent treatment of the genus (Pfitzer 1903), he included 47 tropical and subtropical species from Asia. The rest of species that were previously included in *Cypripedium* sensu lato were divided into three genera: the Old and New World *Cypripedium* L., and the New World *Phragmipedium* Rolfe, and *Selenipedium* Rchb.f. The rules of the International Code of Nomenclature, however, are clear about nomenclatural priorities concerning which name was published first, and, therefore, Rafinesque's "*Stimegas*" should have been accepted instead of Pfitzer's "*Paphiopedilum*". But in this particular case the International Botanical Committee chose to accept *Paphiopedilum* instead of the earlier



published but lesser known *Stimegas* (Braem 1988).

The genus *Paphiopedilum* has been monographed several times since then and the number of accepted species fluctuates. Lance Birk (1983) accepted 77 species, Phillip Cribb rejected some of Birk's species but added others and originally accepted 60 species in his first treatment (Cribb 1987) and later 69 species (Cribb 1998). Guido Braem (1988) listed 55 accepted species, and Harold Koopowitz (2008) listed about 106 species. The number of accepted taxa keeps changing depending on authors' subjective opinions, but also because there is currently a much more intense and ruthless hunt for new species. Today, about 109 species together with numerous forms, varieties and subspecies are accepted. In addition to these, there are about 39 alleged natural hybrids with varieties that are also accepted (WCSP 2022). *Paphiopedilum* is widespread from Nepal and southern India in the west and eastward throughout the Himalayas, through much of tropical and subtropical Asia, and to the Philippines, the Solomon Islands and New Guinea in the east. Most species seem to prefer a close association with limestone, but there are some exceptions that prefer more acidic growing conditions, and in a few cases, an epiphytic habitat. The rapid increase of accepted species from 1903 until present days parallels the intense popularity of these orchids. With popularity also follows a demand



- [1] An attractive color form of *Paph. fair-rieanum* photographed in situ by Stig Dalström.
- [2] *Paphiopedilum* (as *Cypripedium*) *fair-rieanum*, featured in *Curtis's Botanical Magazine*. 83, plate 5024 (1857), and illustrated by Walter Hood Fitch.
- [3] *Paphiopedilum* (as *Cypripedium*) *venustum*, featured in *Curtis's Botanical Magazine*. 47, plate 2129 (1820), and illustrated by John Curtis.
- [4] *Paphiopedilum spicerianum*. Photograph by Jan Sönnemark.

for new species, forms and varieties, which in turn lead to over-collecting and extirpation of entire populations of already rare and endangered plants. The destruction of the natural habitats in favor of golf courses and other tourist attractions, industrial-sized monocultures of single-species crops, deforestation and road construction also constitute serious threats not only to orchids, but to other vulnerable plants and wildlife as well.

In Bhutan, however, the situation is not so bleak. Much of the preferred habitats of *Paphiopedilum* are well protected, even though occasional, and accidental local destructions may occur, primarily due to road constructions to isolated villages. Only two *Paphiopedilum* species are currently confirmed for Bhutan: *Paphiopedilum fairrieianum* (Lindl.) Stein, and *Paphiopedilum venustum*. A third species, *Paphiopedilum spicerianum* (Rchb.f.) Pfitzer has also been recorded from Bhutan (Boyle 1901, Swinson 1970, Fowlie 1970), but Cribb (1998) considers this report doubtful, although Pearce and Cribb (2002) include this species in *Orchids of Bhutan* as “unlocalized” and cite Fowlie (1970). Because plants of *Paph. spicerianum* were originally collected in the nearby State of Assam, India, it seems plausible that plants may also occur in unexplored areas in the southern parts of Bhutan, as described by Boyle, Swinson and Fowlie. This hypothesis is supported by the fact that *Paph. venustum* occurs on both sides of the border in this region. In fact, there are several Indian *Paphiopedilum* species that may very well also end up being discovered in Bhutan one day, such as *Paphiopedilum hirsutissimum* (Lindl. ex Hook.) Stein, *Paphiopedilum insigne* and *Paphiopedilum villosum* (Lindl.) Stein. Orchid seeds do not respect border controls and need no passports to migrate. Bhutan is also a sparsely populated country and paphiopedilums often grow in remote and difficult-to-reach areas.

John Lindley described “*Cypripedium fairrieianum* Lindl.” in *The Gardener’s Chronicle and Agricultural Gazette* (1857). The species was based on a plant belonging to a M. Fairrie and exhibited by the Horticultural Society in London. The spelling of the species name is considered to be an orthographic error and should therefore be “*fairrieianum*” because it was named in honor of the plant’s owner (Cribb 1987). It was subsequently transferred to *Paphiopedilum fairrieianum* (Lindl.) Stein (1892). The origin of the plant was unknown, but it was believed



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- [5] The isolated village of Jangbari (red oval), in the center of potential *Paphiopedilum* habitat in Bhutan.
- [6] *Paphiopedilum fairrieianum* habitat in the Mongar District, here with Biodiversity Officer Pem Zam.
- [7] *Paphiopedilum fairrieianum* in a typical habitat, with the leaves slightly shaded by grass and a flower fully exposed.

that it had come from somewhere in the northeastern part of the Indian subcontinent. Eventually all plants of this species vanished in England, save for a single plant in the collection of Sir Trevor Lawrence. What happened next is a long, convoluted and very intriguing story that has been told by many authors (Swinson 1970, Cribb 1987, Braem 1988, Kapfer 2021), so it is not necessary to add one more version here. Plants were eventually rediscovered in Bhutan and reintroduced into cultivation en masse in the early 20th century by Fredrick Sander, the famous Orchid King of that era. But despite the long and complex horticultural history of *Paph. fairrieianum*, much of its current distribution and status still appears to be poorly understood. As an example, it was recently listed in the IUCN Red List as critically endangered and possibly extinct in Bhutan (Rankou and Kumar 2015a). Rankou and Kumar wrote: "*Paphiopedilum fairrieianum* is very local and very rare with a restricted distribution area in India. It is probably extinct in Bhutan." They continue: "The estimated area of occupancy (AOO) of the species is 8 square km (3.1 square miles), the population is severely fragmented, and there are two threat-based locations. There is continuing decline in the number of mature individuals and the quality of habitats. There has been a population reduction of 95% over the last three generations and this species is on the verge of extinction in the future with a projected decline of 95% in the next three generations. There are under 50 mature individuals. Therefore, *Paphiopedilum fairrieianum* is assessed as Critically Endangered (CR)." (Rankou and Kumar 2015a) p. 1

So, what then is the current status for *Paph. fairrieianum* in Bhutan? Well, not so critical, and one may quote Mark Twain here: "The reports of my death are greatly exaggerated!" In fact, this showy orchid thrives in numerous locations and new populations are discovered every year as the search for them continues. The challenge of correctly estimating the status of a species such as *Paph. fairrieianum*, and to truly understand the threat against it, is that it takes time and a lot of blood, sweat and hard work to find them. Concerned by past rumors that this orchid was extinct in Bhutan, the Thunder Dragon Orchid Team (the authors of this article) of the National Biodiversity Centre (NBC) in Serbithang, Thimphu, has made it a priority to inventory the existence of all slipper orchids in Bhutan. The team



- [8] A more common color form of *Paph. fairrieianum*.
- [9] Paphiopedilums do not necessarily grow where they want to grow, but they grow where they can grow.
- [10] A very healthy group of *Paph. fairrieianum* loading energy for the next flowering season.
- [11] Plants of *Paph. fairrieianum* are tough and can handle brightly exposed conditions.

started more than a decade ago by visiting the few and historically already-known locations with mixed results. But as time went by and experience gained, the team became better in finding potential habitats for the orchids. Gradually, more and more populations were discovered as the search could be focused on dolomite limestone areas primarily, which is the natural habitat for *Paphiopedilum* in Bhutan. It turns out that some locations have large and healthy populations with an estimate of more than 1,000 plants in each, while other locations, some that were long known by commercial collectors, are almost depleted with only a few plants left (Gurung et al. 2016, 2019; Ghalley 2017). In summary, however, the fortunate conclusion is that *Paph. fairrieianum* is currently safe in Bhutan. In addition to ensuring a better protection of the wild populations, a project to micropropagate vulnerable, rare or horticulturally attractive species has been initiated by the NBC. So far, the result is promising, particularly for *Paph. fairrieianum* but also for species such as *Cymbidium eburneum* Lindl., and the extremely vulnerable and apparently locally endemic *Chiloschista gelephuense* C.Gyeltshen & Dalström.

The preferred habitat of *Paph. fairrieianum* is on limestone outcroppings mostly along the southern border of the country at altitudes ranging impressively from 900 to 6,600 feet (300–2,200 m), (Pearce and Cribb 2002 pers. obs.). We have never seen plants growing on gneiss, granite or any other type of acidic rock, however, which is often stated in publications. Plants frequently grow on vertical cliffs or on large boulders on steep slopes where the roots dig into cracks or bury under patches of more or less decomposed vegetation. Plants are sometimes fully exposed to the sun, but commonly protected by thick stands of grass. Plants also grow in mulch or mixed gravel below the cliffs and in more shaded locations. During the wet summer monsoon, new growths develop and when the drier season begins in late October–November, buds have formed deep in the rosettes and begin emerging. The flowering season begins in December and can last until February. Enormous amounts of water are poured over the plants during the summer monsoon together with high temperatures, which last from June to October. The reverse situation characterizes the drier season when temperatures drop significantly and little rain falls from November to



April or May. During the rainy season, the leaves are usually rigid and leathery, while sometimes shrink to being papery thin during the dry season. The shape of the flowers of *Paph. fairrieianum* is fairly consistent, but they can vary somewhat in coloration, ranging from pure white with green to deep-burgundy bold markings and with the slipper-shaped lip grading from pale brownish to clear yellow, sometimes flushed with purple. A natural hybrid between *Paph. fairrieianum* and *Paph. venustum*; *Paphiopedilum xpradhanii* U.C.Pradhan, is documented from the Baliapara Frontier Tracts, Assam, India, and illustrated in *Indian Orchids: Guide to Identification & Culture* by Udai C. Pradhan (1976). Because these two species do occur together in Bhutan as

[12] Prime slipper orchid habitat in the Samtse District, with *Paph. fairrieianum* growing in the sun and with *Paph. venustum* preferring a more shaded position below.

[13] Biodiversity Supervisor Nima Gyeltshen examining a sturdy and fully exposed clump of *Paph. fairrieianum*.

[14] The same clump of *Paph. fairrieianum* as in Figure 12, but this time in full flower.

[15] About 15 tiny seedlings of *Paph. fairrieianum* can be seen in this photo. This is an encouraging sight at a formerly stripped location.

[16] Head orchid grower Dupchu Wangdi demonstrates how well camouflaged and difficult to spot plants of *Paph. venustum* are.

well, the potential for finding this hybrid there exists. The artificial cross between these two species was registered in 1972 by Wyld Court and named *Paphiopedilum* Pandion.

The current situation for *Paph. venustum*, on the other hand, looks dramatically different in Bhutan, and probably elsewhere as well. But let us start from the beginning. This species was originally described as *Cypripedium venustum* Wall. ex Sims, (the “Comely Lady’s Slipper”), in *Curtis’s Botanical Magazine* (1820). The editor John Sims writes: “Native of the East Indies. Communicated by Messr. Whitley, Brames and Milne, in November: who received it from the botanic garden at Calcutta. It was brought here by Captain Craigie. The only account we can find of this plant, is a mere notice by Dr. Wallich in a letter to Dr. Francis Hamilton, published in the first volume of the *Edinburgh Philosophical Journal*, of a *third* new species of *Cypripedium* from Nepal, to which we understand from Mr. Brown, the Doctor has given the name, which we have adopted” (Sims 1820). pl. 2129

The plant on which the description is based was apparently discovered by Nathaniel Wallich or one of his two companions, a “faithful Rajput” named Bharat Singha and a “Portuguese lad” during a plant collection expedition to Nepal in December of 1817, “and before the 9th of October 1818, they had forwarded to the Botanical Garden [in Calcutta] upwards of 900 species, ‘most of which,’ says Dr. Wallich, addressing Dr. Hamilton, ‘are new to every person except yourself, who are the best judge of what vegetable treasures that country affords.’” It seems clear therefore that the first plant of what became “*Cypripedium venustum*” and later *Paphiopedilum venustum* was collected during this trip to Nepal.

Because *Paph. venustum* is also considered to be the first *Paphiopedilum* to be described (Cribb 1998), we can therefore conclude that the other two first “new species from Nepal” were members of the currently accepted genus *Cypripedium*; presumably *Cypripedium cordigerum* D. Don and *Cypripedium guttatum* Sw., which both occur in Bhutan as well. *Paphiopedilum venustum* occurs from Nepal in the west, “Sikkim, through Bhutan and the foothills of Darjeeling districts, and further east through the Khasi and Garo Hills, Jaintia Hills and further south of this area into Sylhet, now under Bangladesh” (G.M. Pradhan 1974). Plants grow in shade along streams and on



14



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16

cliffs at between 900 to 3,900 feet (300-1,300 m) elevation (Cribb 1998). Most of the exported wild-collected plants of *Paph. venustum* originate from the Meghalaya State (Cribb 1998). A natural hybrid between *Paph. venustum* and *Paph. insigne* (*Paphiopedilum* × *venustoinsigne* U.C.Pradhan) is documented and illustrated from Meghalaya at around 2,460 feet (750 m) growing with plants of the former parent (U.C. Pradhan 1976). A natural hybrid between *Paph. venustum* and *Paphiopedilum spicerianum* (*Paphiopedilum* × *spicero-venustum* U.C.Pradhan) is documented and illustrated from the Sonai River in the Assam Himalayas (U.C. Pradhan 1976).

Ganesh Mani Pradhan (1974) writes in an excellent article published in the *Orchid Digest*: “From personal experience and from validated reports of collectors, we know that the distribution of *Paphiopedilum venustum* ranges from Sikkim through Bhutan and the foothills of Darjeeling districts, and further south of this area into Sylhet, now under Bangladesh. . . . The greatest population group of *Paphiopedilum venustum* has developed around the Khasia Hills, Garo Hills area, south of the Brahmaputra River in the State of Meghalaya in northeast India. As the population advances west towards Bhutan, one finds isolated populations, sometimes in small colonies but never in the mass as found in Khasia Hills. Further west along the foothills of Darjeeling/Kalimpong, small populations have been recorded. . . and of course, these were wiped out by collectors” (G.M. Pradhan 1974). p. 195

Today *Paph. venustum* is considered to be endangered due to ruthless overcollection and habitat degradation in much of its distribution, and no records of existing populations from Bangladesh or Bhutan were known to Rankou and Kumar (2015b). This is a drastic decline in a relatively short period of time. The reason can certainly be explained by the popularity of this strangely attractive orchid among growers, both professional and hobbyists. This inevitably leads to overcollecting for domestic and international markets. But the plants also apparently suffer from negligence by those who are supposed to protect them: “All *Paphiopedilum* species in India are protected by Wildlife Protection Act of India under Schedule VI and hence illegal collection and propagation is banned. However, this law and the enforcement agencies are not strict” (p. 3, Rankou and Kumar 2015b).



- [17] A good example of how adaptable orchids can be. *Paphiopedilum venustum* has found a home among the limestone rubble.
- [18] A couple of healthy-looking *Paph. venustum* plants in the Samtse location.
- [19] Close-up of a colorful form of *Paph. venustum*.
- [20] *Paphiopedilum venustum* in the Zhemgang District.
- [21] *Paphiopedilum venustum* habitat.
- [22] *Paphiopedilum fairrieianum* (lower left) and *Paph. venustum* (upper center) grow together in some locations and can occasionally produce natural hybrids. But so far none have been documented from Bhutan.

Returning to the current situation for *Paph. venustum* in Bhutan, little seems to have happened since 1974. Due to the collection of plants in the 1960s and 1970s (G.M. Pradhan 1974; U.C. Pradhan 1976; Gurung et al. 2016, 2019), the known populations of *Paph. venustum* probably disappeared altogether. But fortunately, some smaller groups of plants were overlooked, survived, and constitute what we today know about this orchid in Bhutan. Only one confirmed small group of about 20 plants was known in 2008 until a serious attempt was made to search for more. Thanks to the detective work by Forest Ranger Bhakta Bdr. Ghalley, an old and well-known location for *Paph. fairrieianum* was rediscovered recently (Ghalley 2017). When this discovery was shared with the NBC orchid team, Ghalley was encouraged to return to the site and look in the shaded area below the exposed cliffs where *Paph. fairrieianum* grows to see if there would be any plants of *Paph. venustum* there. This turned out to be a lucky strike and, in 2018, the NBC orchid team visited the area together with Ghalley and Forestry Officer Ngawang Gyeltshen. Thanks to the help from interested local relatives and friends of Ghalley, about 20 plants of *Paph. venustum* could be found, some of them in flower. This showed that *Paph. fairrieianum* and *Paph. venustum* share the same kind of habitat, with the former growing slightly above and more exposed than the latter. This observation also agreed with experiences from the previously confirmed population where the two species occasionally can be found growing and flowering side by side.

Encouraged by finding a second population, a decision was made to revisit a location where a larger group of *Paph. venustum* plants once was reported farther to the east (D.B. Gurung pers. comm.). Due to the construction of a farm road that went straight through the population, no surviving plants had been found on several previous visits. It was not until the winter of 2020 when the site was visited again that a large clump consisting of several blooming shoots was discovered in a fortuitous way. Having walked the narrow road back and forth several times looking for ways to either climb up or find a way to climb down the almost vertical slopes on each side of the road, an excited shout came from Dupchu Wangdi, NBC's eagle-eyed orchid grower, who spotted something high up on the steep slope. As the group gathered and eagerly scanned the slope, nothing could be seen by anybody that would



21



22

explain Dupchu Wangdi's excitement. But Dupchu insisted and eagerly pointed almost straight up, claiming that there was a *Paph. venustum* plant up there! Not until after a careful examination of the rocky slope through a binocular was it possible to see what Dupchu had discovered. And sure enough! A large "clump" of a *Paph. venustum* with two open flowers, two buds and one old seed capsule was revealed, well protected by shrubs and the steep cliff. This, in itself was great news. But what was even more encouraging was the fact that this clump appeared to have germinated *after* the road was constructed. This means that the seed must have arrived from somewhere else, most likely from below the road as that is the common wind direction at the site. Unfortunately, no further exploration could be made during that trip, and, since then, the coronavirus pandemic has effectively prevented additional attempts. But knowing that the "clump" is well protected, the Thunder Dragon Orchid Team anxiously waits for the health situation to clear up.

The successful cultivation of *Paphiopedilum* much depends on which species or hybrid to be grown, kept alive for any length of time and hopefully flower. The genus is widespread over a large area in southeastern tropical and subtropical Asia and growing conditions vary considerably. Therefore, rather than trying to provide some general suggestions here, we strongly recommend studying some of the excellent, already existing publications of how to successfully grow these sometimes rather tricky orchids. Some insight into the natural growing conditions for the species presented in this article, however, may help making cultivation less complicated and more rewarding.

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23



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- [23] Deputy Chief Biodiversity Officer Choki Gyeltshen and Biodiversity Supervisor Nima Gyeltshen critically examine some healthy-looking *Paph. venustum* plants growing in limestone gravel in deep shade.
- [24] Hope for the future! One of the first *Paph. fairrieianum* seedlings, artificially propagated at the lab of Bhutan's National Biodiversity Centre in Serbihang.
- [25] Although still in a juvenile and vulnerable stage, *Paph. venustum* plants are also artificially propagated in Bhutan.
- [26] The first artificial hybrid between *Paph. fairrieianum* and *Paph. venustum* was registered by Wyld Court in 1972 and named *Paph. Pandion*.
- [27] The happy Slipper Orchid Team during the Samtse expedition in 2018. Lower left: Bhakta Bdr. Ghalley, Thomas Höijer, Nima Gyeltshen. Upper row from left: Ngawang Gyeltshen, friends and relatives of Ghalley from the nearby village.

commenting on the manuscript.

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Orchids in Madagascar

Long-term Conservation of the Most Threatened Malagasy Orchids, Part 1

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Angraecum bicallosum; photograph by Haingo Rasoazanany

MADAGASCAR IS THE fourth-largest continental island in the world. It separated from Africa 165 million years ago and lies around 248 miles (400 km) east of the continent, separated by the Mozambique Canal. Despite its small land area, representing 0.4 percent of the world's landmass, Madagascar is an exceptionally diverse island with more than 950 vertebrate species (Myers et al. 2000) and around 12,000 vascular plant species (Madagascar Catalogue Project 2021). At the current species discovery rate, it is estimated that the flora could be comprised of at least 14,000 vascular plants species (Lowry II et al. 2018). Isolated from other landmasses for the last 100 million years and with a wide topographical variation and a range of different habitats and elevations, a significant portion of the species found in Madagascar are endemic to the island. As such, Madagascar is one of the world's most important biodiversity hotspots and ranks third in terms of plant endemism (Myers et al. 2000). Orchidaceae, the largest and one of the most charismatic plant families, represent about 8 percent of the vascular flora of Madagascar, with an estimated 1,000 species, of which 85 percent are endemic to the island.

Malagasy orchids, most of which are epiphytes, are threatened by deforestation and degradation of natural habitats. It is estimated that the island has lost more than 40 percent of its forest cover in the past 70 years, and that the deforestation rate has only increased these past years (Vieilledent et al. 2018). Slash-and-burn agriculture, small-scale logging and transformation of natural forests in eucalyptus plantations for charcoal production threaten most Malagasy orchids.

Some species are also popular with local and international growers and collectors, which places a high demand for wild-collected material (Hinsley et al. 2018). Rapid Red Listing based on the information available in Tropicos (Missouri Botanical Garden Database) has shown that around 68 percent of Malagasy orchid species might be threatened, although full IUCN Red List assessments have only been done for a small portion of these and are badly needed for the remainder. To make matters worse, an important knowledge gap precludes conservation work, from collecting effort bias between Malagasy regions and little-known species with taxonomical issues.

In recognition of this, a joint project between the French Institut de Recherche

pour le Développement (IRD) and the Missouri Botanical Garden was designed in 2019 to address these issues. The long-term conservation of the most threatened Malagasy orchids project (COMALO), funded jointly by the National Geographic Society and the American Orchid Society, was implemented the same year with the main goals to assess IUCN conservation status of around 200 preidentified threatened species, to develop a local pollen and seed bank and to conduct fieldwork in poorly sampled forest.

Our first step was to assess the collecting effort previously done in Madagascar. For this, we gathered and compiled available online information on orchid collection on three major databases: Tropicos, GBIF [Global Biodiversity Information Facility], and Sonnerat, the Paris herbarium specimen database. Particular attention was made to check or add georeferenced GPS coordinates when locality information was precise enough to do so. This allows us to map collection points in Madagascar, have a better understanding of sampling bias on the island and to use these occurrences in the IUCN Red Listing process.

Based on this new comprehensive database of Malagasy orchid collections, we targeted undercollected forests in the eastern escarpment forests in which we conducted field trips to collect living plants to be monitored in our shade-house network. Several hundred living specimens and hundreds of liquid-preserved specimens were collected and brought to cultivation in our three shade houses in Madagascar. New locations were found for many described species and two taxonomic novelties were even discovered!

The distribution data gathered from both our occurrence database and the results of our field work campaign were then processed by the ConR package (Dauby et al. 2017), an automated algorithm calculating the two main parameters used to assess threat levels under criterion B of the IUCN Red List categories and criteria. While not a full IUCN assessment, this method allows us to preidentify which among the 900 orchid species might be threatened and focus our efforts on them. The results of these Rapid Red List assessments show that about 67 percent of orchid species are potentially threatened with extinction in Madagascar. Full assessments will be prepared for these species to verify if they are threatened or not. Since the beginning of the project, 73 of these species (39

already published on the IUCN Red List website) have been fully assessed. We confirmed that 80 percent of the species (58 species) that we fully evaluated were indeed threatened. Here, we will focus on five of the most threatened species of Madagascar and how our project is helping in their long-term conservation by implementing this ex situ conservation approach:

Angraecum bicallosum

Angraecum bicallosum was described in 1938 by Henri Perrier de la Bâthie from his specimen collected in 1932 at the Montagne d'Ambre in northern Madagascar. Although its vegetative and floral morphology is quite like closely related species (e.g., *Angraecum ankeranense*, *Angraecum didieri*, *Angraecum pseudodidieri*), it is characterized by its thin, leathery and unequally bilobed leaves, its flowers with cream-color sepals and petals, and a white lanceolate lip with two calli at the entry of the spur. Seventy-five years later, the second herbarium specimen of *Angcm. bicallosum* was collected at the Montagne d'Ambre forest. More recently, we collected several individuals along the eastern escarpment forests, on the footprint of a mining site near Moramanga, in the Protected Harmonious Landscape of the Anjozorobe-Angavo complex, the Ankeniheny-Zahamena Corridor, the Mangabe-Ranomena-Sahasarotra Natural Resources Reserve and the Ambositra-Vondrozo Forest Corridor. These individuals were brought to cultivation in two of our Malagasy shade houses; fruits were obtained and are waiting for storage for long-term conservation in our seed bank in Antananarivo. *Angraecum bicallosum* is an epiphyte growing on trunks and branches of trees or shrubs in the understory of humid and subhumid mossy forests at elevations from 1,738 to 4,652 feet (530-1,418 m) above sea level. The main threat facing the species is habitat destruction due to logging, timber harvesting for small-scale subsistence, annual bushfire and mining. According to the IUCN Red List categories and criteria, we assessed this species as Endangered (Verlynde et al. 2019a) and this result was published in the IUCN Red List in 2019, <https://dx.doi.org/10.2305/IUCN.UK.2019-RLTS.T68501323A68710319.en>.

Angraecum edmundi

Although Jean Bosser, a famous French orchidologist working on the Malagasy flora, drafted a description for *Angcm. edmundi*, it was not published before he passed away. This draft was



brought to our attention in 2015, after we found in our shade houses that we had several cultivated individuals of this still-undescribed species. This species was finally described in 2016 from specimens collected in the Tampoketsa d'Ankazobe, the Angavobe Inselberg, and the Ambatovy forest, near Moramanga. More individuals were recovered last year on the edge of a protected area, the Torotorofotsy Protected Area when our team of botanists was on the lookout for new populations of threatened orchid species. The species was then transferred back into the larger genus *Angraecum*, waiting for more information on its phylogenetic relationship to be brought to light. This minute epiphytic plant is characterized by its dark-green, fleshy and navicular leaves, small white flowers appearing all along the stem, nested between the leaves and its short and globose spur. This mid-to-high elevation (2,296 to 5,577 feet [700-1,700 m] above sea level) epiphytic plant can be found growing on the trunks and lower branches of humid and subhumid forests. The habitat of *Angcm. edmundi* is threatened by logging, timber harvesting for small-scale subsistence, slash-and-burn agriculture, and mining. According to the IUCN Red List categories and criteria, *Angcm. edmundi* was recently assessed as Endangered (Verlynde et al. 2019b), <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T110059834A110059867.en>.

Bulbophyllum discilabium

Bulbophyllum discilabium was described in 1951 by Henri Perrier de la Bâthie from two specimens collected by Henri Jean Humbert in 1948 in the Marojejy Massif in Northern Madagascar. Numerous *Bulbophyllum* species from Madagascar are characterized by being small plants with unifoliate, flattened discoid bulbs. *Bulbophyllum discilabium*, with its vinaceous flowers, can easily be mistaken for other closely related species at first glance. Decades after the three first collections in the northern forests of Madagascar, we collected several individuals along the eastern escarpment, on the footprint of a mine site near Moramanga, in the forests of Vohibe-Ambalabe and Ankerana both belonging to the Ankeniheny-Zahamena Corridor, and in the Fandriana-Vondrozo-Midongy forest corridor. These individuals were brought to cultivation in three of our Malagasy shade houses and fruits were obtained to be stored for long term conservation in our seed bank in Antananarivo. *Bulbophyllum discilabium*



is an epiphyte growing on trunks in the understory of humid and subhumid mossy forests at elevations from 1,929 to 5,577 feet (588-1,700 m) above sea level. The main threat *Bulb. discilabium* faces is habitat destruction due to forest exploitation and mining. According to the IUCN Red List categories and criteria, we recently assessed this species as Endangered (Ramandimbisoa et al. 2021a), <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T64563571A64578450.en>.

Lemurella papillosa

While revising the genus, Jean Bosser described *Lemurella papillosa* in 1970 from two of his specimens collected between 1954 and 1964. The type specimen was collected in northeast Madagascar near Maroantsetra and the second in the eastern escarpment forests

[1] *Angraecum edmundi*; photograph by Brigitte Ramandimbisoa.

[2] *Bulbophyllum discilabium*; photographs by the author.

south of Moramanga. A third specimen, also collected south of Moramanga in 1963, was identified by Bosser before the publication of the species but not mentioned in the description. Forty-six years later, the Missouri Botanical Garden team collected *Lla. papillosa* once again on the footprint of a mining project near Moramanga, and eight individuals were also collected in two protected areas, the Ankeniheny-Zahamena Forest Corridor and the Fandriana Vondrozo Midongy forest corridor, and put into cultivation in two of our shade houses for study and ex situ conservation via our seed bank. Last year, while searching for new populations

of threatened orchids, our team found an individual of this rare species in another part of the Ankeniheny-Zahamena Forest Corridor, the Ankerana forest, 53 miles (85 km) from the other population of this protected area. *Lemurella papillosa*, a recognizable species with its papillose inflorescence, is found in the humid forests between 984 and 3,280 feet (300–1,000 m) as an epiphyte close to the ground. The main threats *Lla. papillosa* faces are slash-and-burn agriculture and small-scale logging. We assessed this species as Endangered (Ramandimbisoa et al. 2021b), <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T64594022A64612543.en>.

Aerangis monantha

Aerangis monantha is a well-known species in the horticultural world, but it is rare in its natural habitat in Madagascar. This species was described in 1925 by Rudolf Schlechter based on a specimen collected by Henri Perrier de la Bâthie near the Ankazobe forest. Fifty years later, Jean Bosser found two other specimens, one in the type locality and one in the Mandraka forest, between Antananarivo and Moramanga. The collecting effort deployed in Madagascar over the last 20 years has allowed this species to be found in several other localities in the central plateau region and the eastern escarpment forests. Several specimens of this species are cultivated in our shade houses in Ambatovy. *Aerangis monantha* is a sciophilous (shade-loving) epiphytic species found in the shady understory of mid-altitude, humid and subhumid forests on mossy trunks of trees between 3,280 and 4,921 feet (1,000–1,500 m). This desirable species is mainly threatened by mining activities, but also by collection for the international trade, shifting agriculture, and small-scale logging. *Aerangis monantha* was assessed in 2018 as Endangered (Ramandimbisoa et al. 2019), <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T68501372A68694793.en>.

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[3] *Lemurella papillosa*; photographs by the author.

[4] *Aerangis monantha*; photograph by Nirina Rajaonarivelo.

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A Place of Preservation

The new Orchid House at Longwood Gardens


BY GREG GRIFFIS, PETER J. ZALE WITH KATIE MOBLEY



New lighting helps guests appreciate the orchids after dark. Photograph by Carol Gross.

Prepared for download exclusively for [Oval Orquidifilts Valencians](#)

And Innovation

A large, multi-tiered display of various orchids and ferns in a greenhouse setting. The plants are arranged in black pots on a metal frame, creating a dense wall of greenery and colorful flowers. In the foreground, there is a wooden bench with a decorative, carved base. The background shows the glass and metal structure of the greenhouse, with a dark sky visible through the windows.

WHEN DISCUSSIONS BEGAN at Longwood in 2018 concerning restoration of the iconic Orchid House, none of us could have imagined the incredible space we have built today. Not only was the project one of restoration, but it also served as an opportunity to reimagine this century-old space and its display capabilities — as well as share the beauty and wonders of orchids with our guests. Legacy and innovation are an intrinsic part of the character of Longwood Gardens, and the reimaged Orchid House most definitely achieves that balance and more.

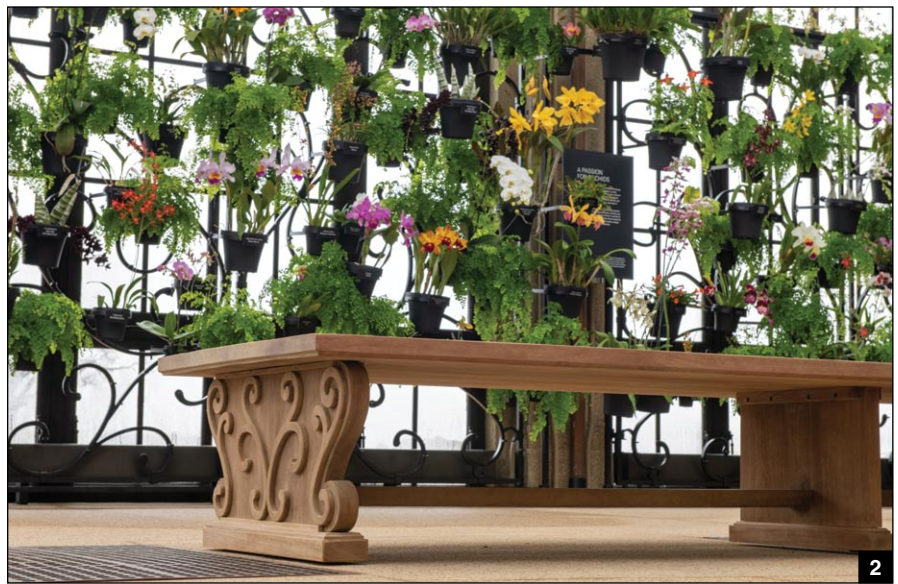


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Leading the internal effort was a collaborative team of Longwood design experts, including Longwood orchid grower and curator Greg Griffis. Over the four-year process, from conception to completion, a cadre of restoration experts, artisans, and craftspeople under the careful guidance of preservation experts John Milner Architects, Inc. of Chadds Ford, PA, transformed the Orchid House into an open, gallerylike space, returning it to its original floor plan with new and restored design components and seemingly limitless possibilities. As a true destination in our Gardens, the new Orchid House not only marries legacy and innovation, but serves as an exemplary space in which to meaningfully display our expansive orchid collection, which also demonstrates our commitment to the history, art, and science of orchid growing.

With its new layout, the space provides an immersive orchid-viewing experience like never before. Upwards of 500 orchids can be displayed at any one time with the goal of showcasing not only our renowned orchid collection spanning 5,000 plants and representing 2,000 different taxa — but the beauty and diversity of orchids as a whole. Orchids are moved in and out of the display every weekday, which means there is always something new to see with the diversity of the orchid world on full display in one place throughout the entire year.

Just as the Orchid House has grown and has been transformed, Longwood's orchid collection is growing and improving, and diversifying as well. Founders Pierre S. du Pont and Alice, his wife, were both charter members of the American Orchid Society. Early in the 1920s, they purchased extensively from American growers, as well as imported from growers in India, Thailand, the Caribbean, England, France,



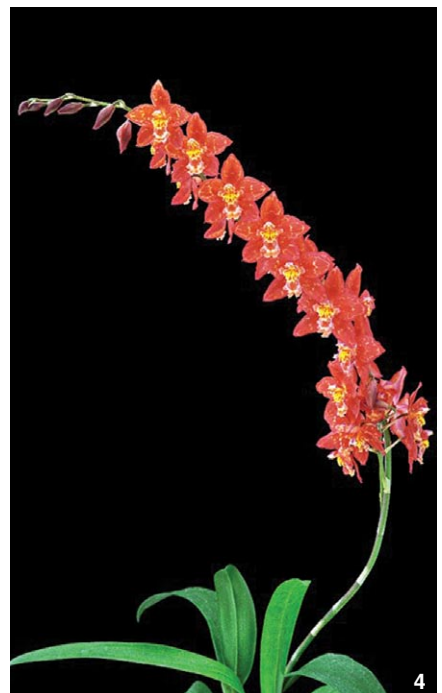
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and Belgium. The original collection primarily consisted of species and the best hybrids of that time in staple genera such as *Cattleya*, *Paphiopedilum*, and cool-growing *Oncidium* (syn. *Odontoglossum*).

This original collection increased tremendously when Ethel du Pont's orchid collection was gifted to Longwood in the 1950s. At the time, her collection was



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considered one of the best in the world, and plants such as *Paphiopedilum* Olivia, *Paphiopedilum* Rosy Dawn, *Paphiopedilum* Rosettii, and many other rare, antique hybrids are still conserved in the collection today.

Although our collection still contains its core groups, such as our pre-1960s cattleya hybrids, it is also growing and evolving in many ways. Well underway is the development of a comprehensive terrestrial orchid collection, including not only more commonly encountered genera such as *Stenorrhynchos*, *Habenaria*, and many jewel orchids, but also species that are rarely in cultivation in the US, and in some cases, not previously in cultivation at all. Among these are the genera *Cynorkis*, *Bonatea*, *Pelexia*, and many European terrestrials, such as *Ophrys*. The Longwood tissue culture lab has expanded to include orchid seed propagation research that has contributed other rarely cultivated species from southern hemisphere terrestrials such as *Caladenia*, *Satyrion*, *Thelymitra*, and many others.

Our orchid programs are further enriched through our Plant Conservation

Program — which focuses on the conservation of US native orchid species through a combination of field work, laboratory-based research, and ex situ collections development. Using native orchids as model species, we have developed the technology to grow large seedling populations of orchids for the collections, and for restoration and conservation projects. We then apply that scientific expertise to orchid conservation on a global scale, work with partners around the world to assess rare orchid populations and help develop conservation plans for them. As this program continues to grow, we work to expand the range of species in the program and use them as a model to educate the public about orchid conservation all while establishing Longwood as a leader in the field of applied orchid conservation. (See “Native Orchid Conservation at Longwood Gardens” in the July 2021 issue of *Orchids*.)

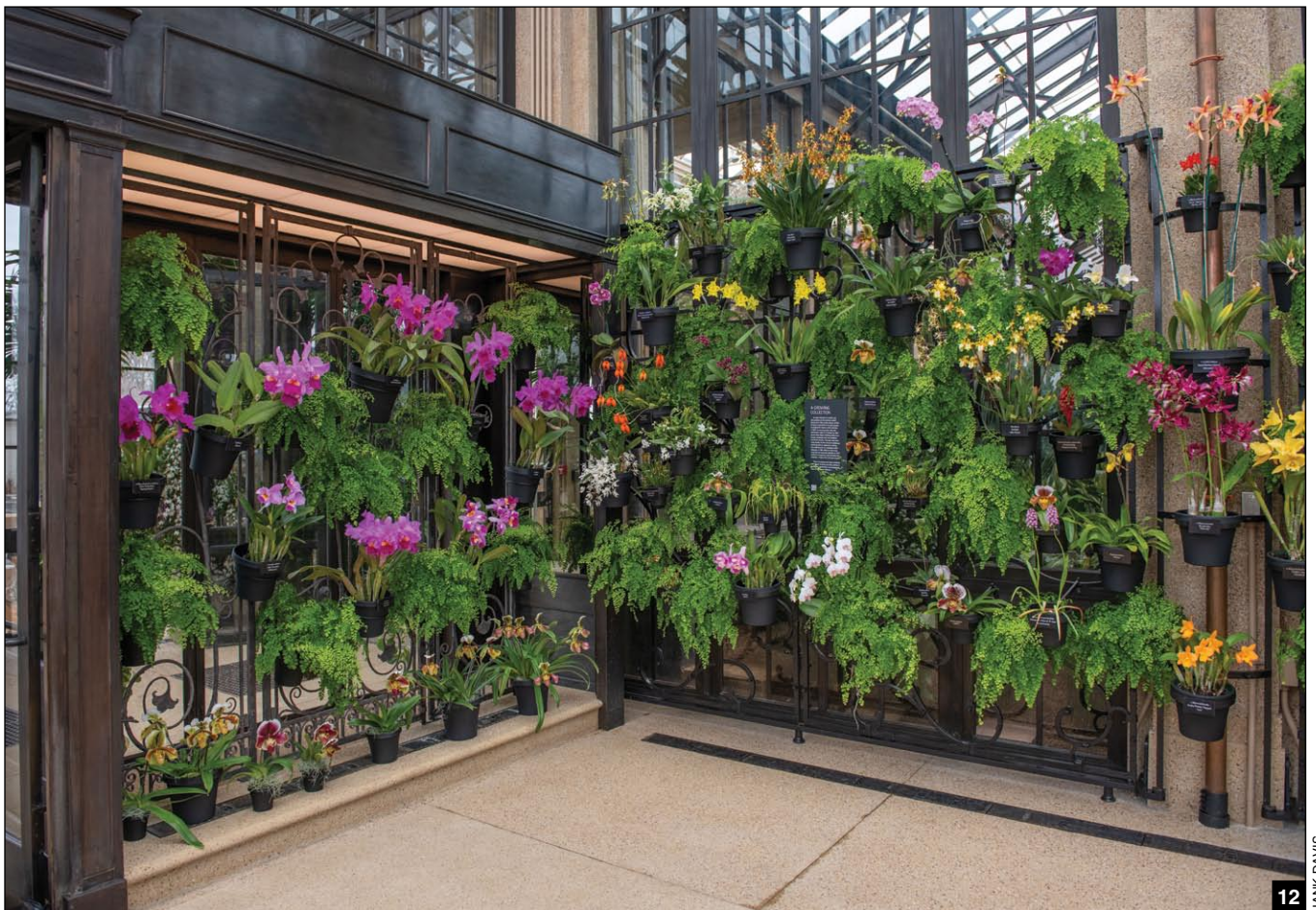
Our orchid breeding programs have further enhanced the orchid collection. In the past few years, we have worked extensively across multiple orchid groups, including the Cattleya alliance, *Dactylorhiza*,

- [1] The newly reopened Orchid House.
- [2] Designed in-house, the Orchid House bench features elements of the Longwood rosette logo and encourages guests to stop and take in the view.
- [3] *Paphiopedilum* Rosy Dawn (Astarte × Gwen Hannen), given to Longwood by Ethel du Pont.
- [4] *Oncidium* (*Odontioda*) Windsor ‘Brilliant’ (Sanderae × Illustrissimum) was part of the original collection of Pierre du Pont.
- [5-7] From left to right: *Ophrys scolopax*, *Ophrys sphegodes* subsp. *helenae*, and *Ophrys tenthredinifera* in flower at Longwood.
- [8-10] Three different outcomes from the first *Disa* Longwood Renaissance Horizon (Sea Lord × Kewdior) seedlings to flower.
- [11] Each gate has more than 75 attachment points for the rings that hold orchids or other plants, offering significant display flexibility.



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Disa, *Cypripedium*, the Habenariinae, intergeneric Oncidiinae, *Masdevallia*, *Paphiopedilum*, and *Platanthera*. Significant goals were realized in 2021 when we registered three new hybrids in the genus *Disa*. One of these, *Disa* Longwood Renaissance Horizon, made considerable progress in the development of sunset-toned flowers and persistent plants that propagate freely through vegetative reproduction. All our hybridizing and breeding efforts are specifically intended to enrich our display and to fill gaps or achieve goals that are desirable not only to Longwood, but also to the entire orchid world.

The culmination of these orchid collection development efforts is highlighted by several innovative Orchid House features. New, interchangeable gravity rings allow the plants to be admired, but with better functionality and structural integrity. The gates that hold the rings were completely redesigned by Longwood's design team to echo Longwood's iconic rosette logo. Fabricated by master ironsmiths, the gates are stronger and larger, enabling more orchids to be placed on the walls than ever before. The Orchid House's tall bronze windows and doors were restored, the tunnels below the space reworked, and many columns and a brand-new floor were poured.

The cornerstone of our preservation project is the Orchid House's historic bronze display cases. First added in 1929 and then first restored in 1966, the cases were restored again, made to be double-sided, and moved to their original location within the space to serve much like storefront windows. They showcase a rotating selection of our orchids, primarily cattleyas (favorites of the du Ponts) and welcome guests to venture farther inside.

Much focus was also put on the Orchid House's exterior and interior concrete. The design and installation of the original aggregate concrete was one of the first major projects of the John J. Earley studio in Washington DC, led by John Joseph Earley (1881-1945), who was considered a pioneer in the field of decorative, exposed-aggregate concrete. John Milner Architects, concrete expert Robert Armbruster, Bancroft Construction Company, and many others performed a petrographic concrete analysis to identify the original makeup of the concrete and stucco, and then identified new mixes to match the old seamlessly and retain the appeal of the original Orchid House.

The Orchid House has also been



HANK DAVIS

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improved to better accommodate the plants and the guests. All of the ventilation was renovated and now runs automatically on thermostats to keep the air buoyant and comfortable throughout the space. Extra heating elements on the perimeter of the house provide protection in the winter. Topping the restored house is a new pyramidal, permanent, shaded-glass roof. Movable shades are planned for the sides of the Orchid House to help protect the plants year-round and keep the space cooler in the summer.

From its beginnings through its meticulous restoration, the Orchid House has honored the legacy of Longwood's founder, as well as the strong legacy — and the bright future — of Longwood's vast, varied, and evolving orchid collection. This exquisite space showcases the art, science, and beauty of orchid cultivation, breeding, research, and conservation and serves as a physical reminder of all that is possible in saving — and sharing — the wonders of orchids for generations to come.

— *Greg Griffis is the Orchid Grower and Curator at Longwood Gardens, where he cultivates a diverse collection of about 5,000 orchids, has initiated multiple breeding lines, and oversees the displaying of hundreds of orchids daily (ggriffis@longwoodgardens.org). Peter Zale, Ph. D. is the Associate Director, Conservation, Plant Breeding, and Collections at Longwood Gardens where he leads programs focusing on plant exploration, conservation, breeding, and collections curation (pzale@longwoodgardens.org). Katie Mobley is the Senior Marketing and Communications Specialist at Longwood Gardens where she creates content that elevates the Gardens' mission of inspiring people*



BRYAN RAMSAY

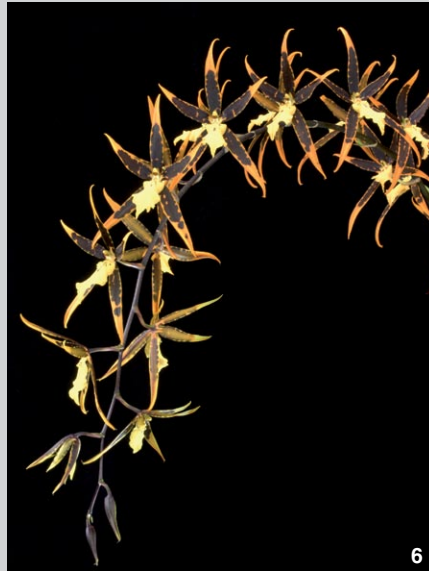
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[12] A portion of the Orchid House's restored historic bronze display case.

[13] The Orchid House's historic concrete is a particularly notable feature of this space.

[14] *Paphiopedilum* Olivia 'Casa Luna' CCM/AOS (*niveum* × *tonsum*); grower: Floradise Orchids, Stephen Shifflet.

through excellence in garden design, horticulture, education, and the performing arts (kmobley@longwoodgardens.org).





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- [1] *Paphiopedilum* Shirley Amundson 'OrchidFix' HCC/AOS (*acmodontum* x *hookerae*) 79 pts. Exhibitor: The OrchidFix Nursery, Inc.; Photographer: Glen Barfield. Hawaii Judging
- [2] *Paphiopedilum* Shirley Amundson 'OrchidFix Thanks Kai' AM/AOS (*acmodontum* x *hookerae*) 80 pts. Exhibitor: The OrchidFix Nursery, Inc.; Photographer: Glen Barfield. Hawaii Judging
- [3] *Paphiopedilum* Macabre Illusion 'Slipper Zone Blood Pressure Hazard' AM/AOS (*Hawaiian Illusion* x *Macabre Contrasts*) 80 pts. Exhibitor: Lehua Orchids; Photographer: Glen Barfield. Hawaii Judging
- [4] *Paphiopedilum* Macabre Drama 'Slipper Zone Sepal Sincerity' AM/AOS (*Macabre Pops* x *Magically Wood*) 80 pts. Exhibitor: Lehua Orchids; Photographer: Glen Barfield. Hawaii Judging
- [5] *Cattleya milleri* 'Big Island' CCM-AM/AOS 85-82 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [6] *Brassidium* Orange Lustre 'Trixie' HCC/AOS (*Brassia* Orange Delight x *Oncidium* Illustre) 77 pts. Exhibitor: Aka's Orchids Hawaii; Photographer: Glen Barfield. Hawaii Judging
- [7] *Paphiopedilum* Hawaiian Pops 'Slipper Zone Red Rampant' HCC/AOS (*Macabre Pops* x *Hawaiian Treasure*) 79 pts. Exhibitor: Lehua Orchids; Photographer: Glen Barfield. Hawaii Judging
- [8] *Cattleya purpurata* (Werkhauseri-Striata) 'Catt Nutts' AM/AOS 82 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [9] *Rhyncholaeliocattleya* Princess of Hawaii 'The Art of Shade' AM/AOS (*Leonard Gines* x *Waianae King*) 81 pts. Exhibitor: Shogun Hawaii- Matthias Seelis; Photographer: Glen Barfield. Hawaii Judging
- [10] *Cattleya grandis* (Semi Alba-Venosa) 'Orchid Eros' AM/AOS 83 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [11] *Paphiopedilum hirsutissimum* var. *esquirolii* 'Slipper Zone Bleep' AM/AOS 80 pts. Exhibitor: Lehua Orchids; Photographer: Glen Barfield. Hawaii Judging
- [12] *Paphiopedilum* Petula Aflame 'Slipper Zone That's Gorgeous' HCC/AOS (*Petula's Flame* x *Macabre Love*) 77 pts. Exhibitor: Lehua Orchids; Photographer: Glen Barfield. Hawaii Judging
- [13] *Paphiopedilum* Harold Koopowitz 'OrchidFix Say What?' AM/AOS (*malipoense* x *rothschildianum*) 81 pts. Exhibitor: The OrchidFix Nursery, Inc.; Photographer: Glen Barfield. Hawaii Judging
- [14] *Rhyncholaeliocattleya* Secret Affair 'Thanksgiving' AM/AOS (*Memoria Floyd Irvin Bachrach* x *Pamela Ann Oliveros*) 83 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [15] *Paphiopedilum callosum* var. *warnierianum* 'OrchidFix Tiny Gem' HCC/AOS 79 pts. Exhibitor: The OrchidFix Nursery, Inc.; Photographer: Glen Barfield. Hawaii Judging
- [16] *Cattleya Luminosa* (1901) 'Dark Waters' HCC/AOS (*dowiana* x *tenebrosa*) 77 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging





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- [1] *Cattleya schilleriana* (Coerulea) 'R.L. Burnside' AM/AOS 81 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [2] *Paphiopedilum* Hilo Black Eagle 'Orchid-Fix Black Warrior' AM/AOS (Johanna Burkhardt x *rothschildianum*) 83 pts. Exhibitor: The OrchidFix Nursery, Inc.; Photographer: Glen Barfield. Hawaii Judging
- [3] *Masdevallia* Alyssa Maria 'Okika' AM/AOS (*datura* x *veitchiana*) 85 pts. Exhibitor: Okika Ltd. Glen Barfield; Photographer: Glen Barfield. Hawaii Judging
- [4] *Cattleya* Mareeba Tiger 'Skip James' AM/AOS (*tigrina* x *schilleriana*) 81 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [5] *Cattleya* Mareeba Tiger 'Mississippi Fred McDowell' AM/AOS (*tigrina* x *schilleriana*) 83 pts. Exhibitor: Ben Oliveros and Orchid Eros; Photographer: Glen Barfield. Hawaii Judging
- [6] *Paphiopedilum rothschildianum* 'Orchid-Fix Ideal' AM/AOS 81 pts. Exhibitor: The OrchidFix Nursery, Inc.; Photographer: Glen Barfield. Hawaii Judging
- [7] *Cattlianthe* Rocky Road 'Orchid Konnection Too' HCC/AOS (Granata Sunrise x *Cattleya* Rockette) 76 pts. Exhibitor: Orchid Konnection; Photographer: Malcolm McCorquodale. Houston Judging
- [8] *Paphiopedilum* Concon Bell 'Orchid Konnection Too' HCC/AOS (Conco-bellatulum x *bellatulum*) 76 pts. Exhibitor: Meir Moses; Photographer: Malcolm McCorquodale. Houston Judging
- [9] *Paphiopedilum* Petula's Maven 'Liam's Palace' HCC/AOS (Presidential Moon x Petula's Pink Delight) 77 pts. Exhibitor: Laurie and Sheila Skov; Photographer: Malcolm McCorquodale. Houston Judging
- [10] *Dendrobium stellare* 'Forest's White Stars' CHM/AOS 84 pts. Exhibitor: Randy Bayer; Photographer: Melissa Garner. Mid-America Judging
- [11] *Cattleya* Pat Thrall 'Windy Hill' AM/AOS (Bonanza Queen x Circle of Life) 83 pts. Exhibitor: Marilyn LeDoux; Photographer: Melissa Garner. Mid-America Judging
- [12] *Cattleya aclandiae* 'La Dolce Vita' HCC/AOS 76 pts. Exhibitor: William Caldwell; Photographer: Malcolm McCorquodale. Houston Judging
- [13] *Cattleya* Tokyo Magic 'Moonbeam' AM/AOS (Irene Finney (1964) x *briegeri*) 82 pts. Exhibitor: Nathan Bell; Photographer: Melissa Garner. Mid-America Judging
- [14] *Cypripedium* Kathleen Anne Green 'Katydid' AM-CCM/AOS (*kentuckiense* x *henryi*) 82-83 pts. Exhibitor: Doug and Beth Martin; Photographer: Melissa Garner. Mid-America Judging
- [15] *Schoenorchis scolopendria* 'Magenta Meander' CCM/AOS 88 pts. Exhibitor: Cathy and Steve Marak; Photographer: Melissa Garner. Mid-America Judging
- [16] *Encyclia* Borincana 'CofO Chocolate Bouquet' CCM/AOS (*alata* x *bractescens*) 88 pts. Exhibitor: Nathan Bell; Photographer: Melissa Garner. Mid-America Judging





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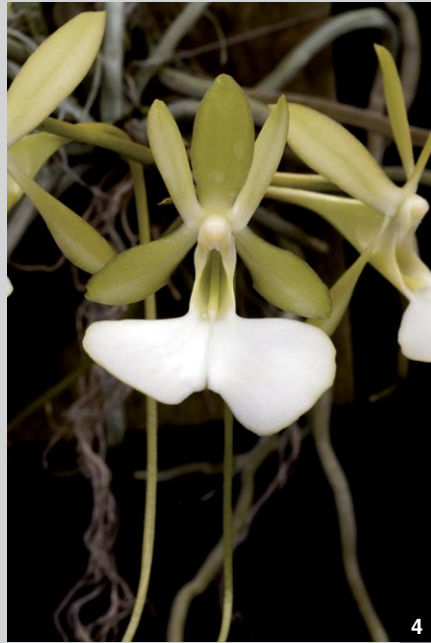


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- [1] *Vanda* Ambrosian Discovery 'Fair Orchids' AM/AOS (*insignis* x *tricolor*) 82 pts. Exhibitor: Kim Feddersen; Photographer: Maurice Garvey. Northeast Judging
- [2] *Cattleya walkeriana* (Coerulea) 'Terra Azul' AM/AOS 81 pts. Exhibitor: Fred Allen; Photographer: Maurice Garvey. Northeast Judging
- [3] *Cattleya walkeriana* 'SVO Whopper' AM/AOS 82 pts. Exhibitor: Fred Allen; Photographer: Maurice Garvey. Northeast Judging
- [4] *Dendrobium* Jean Minet 'Andrew' HCC/AOS (*pentapterum* x *vexillarius*) 75 pts. Exhibitor: John Sullivan; Photographer: Maurice Garvey. Northeast Judging
- [5] *Dendrobium laterale* 'Cordelia' CHM/AOS 85 pts. Exhibitor: Cordelia Head; Photographer: Maurice Garvey. Northeast Judging
- [6] *Trichoglottis biglandulosa* 'J & L' AM/AOS 81 pts. Exhibitor: J & L Orchids; Photographer: Maurice Garvey. Northeast Judging
- [7] *Masdevallia* MacInnes' Golden Heart 'Cordelia' AM/AOS (*Falcata* x *Grand Sun*) 81 pts. Exhibitor: J & L Orchids; Photographer: Maurice Garvey. Northeast Judging
- [8] *Masdevallia* Tiger Kiss 'Cimi' AM/AOS (*Golden Tiger* x *Monarch*) 82 pts. Exhibitor: J & L Orchids; Photographer: Maurice Garvey. Northeast Judging
- [9] *Masdevallia* Morning Glory 'Ines' AM/AOS (*chaparensis* x *Marguerite*) 84 pts. Exhibitor: J & L Orchids; Photographer: Maurice Garvey. Northeast Judging
- [10] *Sarcochilus* Kulnura Rage 'Sue Rose' HCC/AOS (*Kulnura Dazzel* x *Kulnura Drive*) 76 pts. Exhibitor: Chaunie Langland; Photographer: Ken Jacobsen. Pacific Central Judging
- [11] *Prosthechea aemula* 'Irene' CBR/AOS 0 pts. Exhibitor: Al and Irene Messina; Photographer: Maurice Garvey. Northeast Judging
- [12] *Paphiopedilum* Magically Fred 'Cherry Cordial' AM/AOS (*President Fred* x *Magically Wood*) 85 pts. Exhibitor: Dave Sorokowsky; Photographer: Ken Jacobsen. Pacific Central Judging
- [13] *Rhyncattleanthe* Sylvia Wagner 'Dawn' AM/AOS (*Cattleya* Circle of Life x *Elaine Taylor*) 83 pts. Exhibitor: Japheth Ko; Photographer: Ken Jacobsen. Pacific Central Judging
- [14] *Paphiopedilum* Magically Fred 'Gamay' HCC/AOS (*President Fred* x *Magically Wood*) 75 pts. Exhibitor: Dave Sorokowsky; Photographer: Ken Jacobsen. Pacific Central Judging
- [15] *Paphiopedilum* Cascading Henry 'Catawba' HCC/AOS (*Cascading Pink* x *henryanum*) 75 pts. Exhibitor: Dave Sorokowsky; Photographer: Ken Jacobsen. Pacific Central Judging
- [16] *Paphiopedilum* Magic Paradise 'Tanya Lam' HCC/AOS (*liemianum* x *Avalon Magic*) 79 pts. Exhibitor: Tanya Lam; Photographer: Ken Jacobsen. Pacific Central Judging





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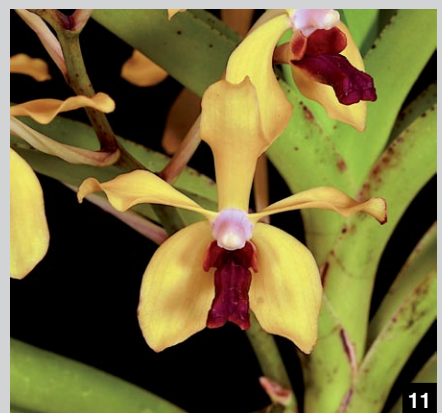


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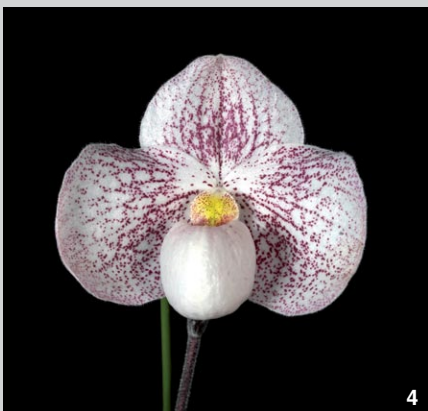
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- [1] *Phalaenopsis japonica* 'Yalan' HCC/AOS 78 pts. Exhibitor: Baozhong Zhu; Photographer: Arthur Pinkers. Pacific South Judging
- [2] *Cymbidium* Don Brown 'Minah Jean' HCC/AOS (Nagalex x *suave*) 78 pts. Exhibitor: Hatfield Orchids; Photographer: Arthur Pinkers. Pacific South Judging
- [3] *Cymbidium* Memoria Ruby Wasson 'Easter Surprise' HCC/AOS (Fifi x Jordan Kaplan) 77 pts. Exhibitor: Hatfield Orchids; Photographer: Arthur Pinkers. Pacific South Judging
- [4] *Dendrophylax fawcettii* 'Diamond Orchids' AM/AOS 81 pts. Exhibitor: Thornton Conservatory; Photographer: Arthur Pinkers. Pacific South Judging
- [5] *Paphiopedilum* Memoria Joan Levy 'Thornton Death Star' HCC/AOS (*stonei* x *gigantifolium*) 78 pts. Exhibitor: Thornton Conservatory; Photographer: Arthur Pinkers. Pacific South Judging
- [6] *Paphiopedilum gigantifolium* 'Thornton Dark Lord' AM/AOS 80 pts. Exhibitor: Thornton Conservatory; Photographer: Arthur Pinkers. Pacific South Judging
- [7] *Oeceoclades splendida* 'Tustin' CBR/AOS. Exhibitor: Gayle Brodie; Photographer: Arthur Pinkers. Pacific South Judging
- [8] *Paphiopedilum* Booth's Supersuk 'Laurie Susan Weltz' CCE/AOS (*philippinense* x Transvaal) 91 pts. Exhibitor: Thornton Conservatory; Photographer: Arthur Pinkers. Pacific South Judging
- [9] *Bulbophyllum* Natalia Simkins 'Whisper From Russia With Love' AM/AOS (*facetum* x *basisetum*) 81 pts. Exhibitor: Laura and Wes Newton; Photographer: Wes Newton. Florida North-Central Judging
- [10] *Encyclia incumbens* 'Gayle' HCC/AOS 76 pts. Exhibitor: Gayle Brodie; Photographer: Arthur Pinkers. Pacific South Judging
- [11] *Cattleya purpurata* 'Julie' CCM/AOS 86 pts. Exhibitor: David Medus; Photographer: Susan Hathorn. Louisiana Judging
- [12] *Dracula* Swamp Fox 'Catahoula' HCC/AOS (*cordobae* x *bella*) 79 pts. Exhibitor: Eron Borne; Photographer: Susan Hathorn. Louisiana Judging
- [13] *Vanda* Pakchong Blue 'Catahoula Bluebird' HCC/AOS (Doctor Anek x *coerulea*) 79 pts. Exhibitor: Eron Borne; Photographer: Susan Hathorn. Louisiana Judging
- [14] *Papilionanthe* Noora Alsagoff 'Strawberry Kiss' AM/AOS (Miss Joaquim x *pedunculata*) 80 pts. Exhibitor: Edwin A. Perez; Photographer: Fong Cing Li. Puerto Rico Judging
- [15] *Myrmecatavola* Lanny Morry 'Edwin's Sunset Spot' HCC/AOS (*Brassocattleya* Richard Mueller x *Myrmecophila thomsoniana*) 79 pts. Exhibitor: Edwin A. Perez; Photographer: Fong Cing Li. Puerto Rico Judging
- [16] *Bulbophyllum* Wilbur Chang 'Whisper Dirty Laundry' AM/AOS (*echinolabium* x *amplebracteatum* subsp. *carunculatum*) 80 pts. Exhibitor: Laura and Wes Newton; Photographer: Wes Newton. Florida North-Central Judging



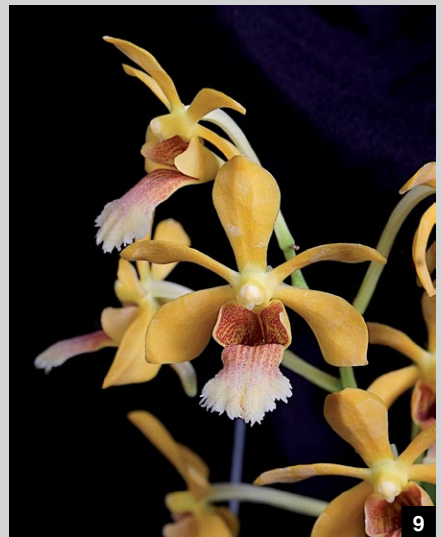


- [1] *Paphiopedilum* QF Mini 'WingDreams' HCC/AOS (*thaianum* x *leucochilum*) 75 pts. Exhibitor: Julio and Eileen Hector; Photographer: Wes Newton. Florida North-Central Judging
- [2] *Cattleya* Canhamiana (Coerulea) 'Azure Skies' AM/AOS (*mossiae* x *purpurata*) 83 pts. Exhibitor: Jerry Steele and Adrian Dumitru; Photographer: Wes Newton. Florida North-Central Judging
- [3] *Brassocattleya* Ancile Gloudon 'Bredren Orchids' HCC/AOS (*Cattleya* Jalapa x *Brassavola subulifolia*) 79 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; Photographer: Wes Newton. Florida North-Central Judging
- [4] *Phalaenopsis* Memoria Anthony Cardozo 'Bredren' AM/AOS (I-Hsin Sesame x LD's Bear King) 85 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; Photographer: Wes Newton. Florida North-Central Judging
- [5] *Phalaenopsis* Krull's Yellow Prince AQ/AOS (Pylo's Eagle Passion x Dragon Tree Eagle). Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [6] *Phalaenopsis* Krull's Yellow Prince 'Jim Krull' AM/AOS (Pylo's Eagle Passion x Dragon Tree Eagle) 82 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [7] *Cattleya warszewiczii* 'Krull's Princess' HCC/AOS 78 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [8] *Rhynchostylis retusa* 'Smiley's Delight' AM/AOS 84 pts. Exhibitor: Smiley Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [9] *Phalaenopsis* Krull's Yellow Prince 'Jordan Winter' AM/AOS (Pylo's Eagle Passion x Dragon Tree Eagle) 82 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [10] *Encyclia tampensis* (Alba) 'Jim Krull' AM/AOS 84 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [11] *Vanda* Motes Imperial Pixie 'Krull-Smith' AM/AOS (Jay Mullen x Motes Ruby Pixie) 81 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [12] *Cattleya purpurata* (Alba) 'Krull's Julien' AM/AOS 84 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [13] *Volkertara* Alexander Bryan 'Odom's Orchids' HCC/AOS (*Rhyncattleanthe* Cherry Suisse x *Guaricattonia* Michael Sampson) 78 pts. Exhibitor: Odom's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [14] *Vanda dearei* 'Krull-Smith' AM/AOS 85 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [15] *Vanda* Noppadol Delight 'Thailand' AM/AOS (Manuvadee x Gardner Violet) 85 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [16] *Paphiopedilum leucochilum* 'Krull's Jake' AM/AOS 81 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [17] *Paphiopedilum* Shin Yi Gigantic 'Springwater' AM/AOS (Lady Rothschild x *gigantifolium*) 84 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; Photographer: Wes Newton. Florida North-Central Judging



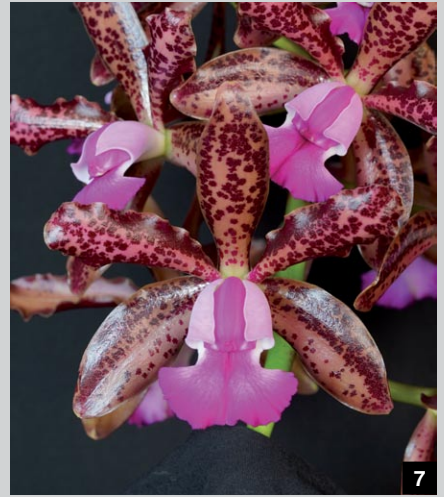


- [1] *Encyclia* Nina Chin 'Odom's Orchids' HCC/AOS (Orchid Jungle x *recurvata*) 78 pts. Exhibitor: Odom's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [2] *Dendrobium* Kirkland Nixon 'Bredren's Purple Rain' AM/AOS (Hamlyn Double Helix x Colleen Hopkinson) 84 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; Photographer: Wes Newton. Florida North-Central Judging
- [3] *Vanda tessellata* 'Emrys Chew' AM/AOS 84 pts. Exhibitor: Naoki Kawamura; Photographer: Wes Newton. Florida North-Central Judging
- [4] *Paphiopedilum* Catherine Briosi 'Whisper Hello Creamy Cranberry' HCC/AOS (*delenatii* x *godetroyae*) 77 pts. Exhibitor: Laura and Wes Newton; Photographer: Wes Newton. Florida North-Central Judging
- [5] *Paphiopedilum* Hilo Black Eagle 'Boon Bryson' AM/AOS (Johanna Burkhardt x *rothschildianum*) 82 pts. Exhibitor: Joe and Boon Bryson; Photographer: Wes Newton. Florida North-Central Judging
- [6] *Papilionanda* Paksorn Fragrance 'Garrett's Sugar Plum' HCC/AOS (Mimi Palmer x *Vanda insignis*) 78 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [7] *Cattleya tenebrosa* (Aurea) 'Pauwela Gold' AM/AOS 81 pts. Exhibitor: Joselito Tolentino; Photographer: Wes Newton. Florida North-Central Judging
- [8] *Brassocattleya* Yellow Bird 'Neblina su Funchi cu Purunchi' AM/AOS (*Brassavola nodosa* x Richard Mueller) 82 pts. Exhibitor: Adeljean Ho (Neblina Orchids); Photographer: Wes Newton. Florida North-Central Judging
- [9] *Cattleya* Pittiae (1886) 'Springwater' AM/AOS (*loddigesii* x *schilleriana*) 84 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; Photographer: Wes Newton. Florida North-Central Judging
- [10] *Paphiopedilum* Magic Lantern 'Springwater Double Bubble' AM/AOS (*micranthum* x *delenatii*) 80 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; Photographer: Wes Newton. Florida North-Central Judging
- [11] *Rhyncholaelia digbyana* 'Frank Smith' AM/AOS 83 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [12] *Vandachostylis* Fancy This 'Garrett's Fancy Enough' AM/AOS (*Vanda Kultana* Baig's Delight x Fancy That) 84 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [13] *Vanda* 'Island Sun 'Lavandula' AM/AOS (Manuvadee x *tessellata*) 85 pts. Exhibitor: Naoki Kawamura; Photographer: Wes Newton. Florida North-Central Judging
- [14] *Aerides houlettiana* (Alba) 'Krull's Alabaster' CHM/AOS 84 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [15] *Vanda* Emrys Chew 'Krull-Smith' HCC/AOS (*insignis* x *tessellata*) 79 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [16] *Vanda* Jim Krull 'It's A Rosy Day' AM/AOS (Kulwadee Fragrance x Somsri Gold) 87 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging





- [1] *Paphiopedilum concolor* var. *longipetalum* 'Fajen's Orchids' AM/AOS 80 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [2] *Aerides houlettiana* 'Jim Krull' AM/AOS 80 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [3] *Papilionanda* Ben Fragrance 'Krull's Butterscotch' AM/AOS (*Vanda Memoria Thianchai* x *Mimi Palmer*) 84 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [4] *Cattleya purpurata* (Carnea) 'Krull's Evelyn' AM/AOS 81 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [5] *Aerides houlettiana* 'Golden Throne' CCM/AOS 85 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [6] *Vanda merrillii* 'MV Sadie Marie' AM/AOS 80 pts. Exhibitor: Stuart Henderson; Photographer: Wes Newton. Florida North-Central Judging
- [7] *Aerides* Bangkok 'Garrett's Deep Pink Beauty' AM/AOS (*multiflora* x *falcata*) 85 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [8] *Paphiopedilum thaianum* 'Fajen's Fourth' AM/AOS 83 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [9] *Vanda* Motes Pixie Dust 'MV Rusty' AM/AOS (*vietnamica* x *Motes Ruby Pixie*) 82 pts. Exhibitor: Stuart Henderson; Photographer: Wes Newton. Florida North-Central Judging
- [10] *Rhynchostylis coelestis* var. *alba* 'MV Snow Caps' AM/AOS 80 pts. Exhibitor: Stuart Henderson; Photographer: Wes Newton. Florida North-Central Judging
- [11] *Cattleya tigrina* 'Krull's Naoki' AM/AOS 82 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [12] *Cattleya tigrina* 'Ponkan' HCC/AOS 78 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [13] *Cattleya tigrina* 'Krull's Hallelujah' AM/AOS 85 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [14] *Papilionanda* Smiley's Happiness 'Florida Grinch' HCC/AOS (*Mimi Palmer* x *Vanda Denison's Dwarf*) 75 pts. Exhibitor: Naoki Kawamura; Photographer: Wes Newton. Florida North-Central Judging
- [15] *Stanhopea tigrina* 'Fajen's Orchids' AM/AOS 85 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [16] *Cattleya tigrina* 'James Krull' CCM/AOS 87 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging





11



14



12



15



13



16

- [1] *Cattleya tigrina* ('Krull #1' x 'Krull #2') AQ/AOS. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [2] *Cattleya purpurata* (Flamea-Striata) 'Jim Krull' AM/AOS 84 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [3] *Paphiopedilum leucochilum* 'Fajen's Fourth' HCC/AOS 79 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [4] *Paphiopedilum* Alluringly Wood 'Whisper SZ Hugs & Shrugs' HCC/AOS (Captivatingly Wood x Excitingly Wood) 78 pts. Exhibitor: Laura and Wes Newton; Photographer: Wes Newton. Florida North-Central Judging
- [5] *Vanda* Teh Su Kuan 'Palmer's Gift' AM/AOS (Thanantess x Thananbarg) 83 pts. Exhibitor: Naoki Kawamura; Photographer: Wes Newton. Florida North-Central Judging
- [6] *Papilionanda* Motes Wise Women 'Sada Kawamura' AM/AOS (Bruce's Evelyn x Vanda Mary Motes) 83 pts. Exhibitor: Naoki Kawamura; Photographer: Wes Newton. Florida North-Central Judging
- [7] *Cattleya* Landate 'Krull's Julien' AM/AOS (*aclandiae* x *guttata*) 80 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [8] *Paphiopedilum* Giorgio Vasari 'Fajen's Orchids' AM/AOS (S. Gratrix x *thai-anum*) 82 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [9] *Myrmecophila humboldtii* 'Neblina Cefir Roos' AM/AOS 83 pts. Exhibitor: Adeljean Ho (Neblina Orchids); Photographer: Wes Newton. Florida North-Central Judging
- [10] *Rhynchostylis coelestis* 'Krull's Evelyn' AM/AOS 83 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [11] *Rhynchostylis coelestis* 'Krull's Stella' AM/AOS 83 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [12] *Bulbophyllum* Tree Frog 'Krull's Julien' AM/AOS (*macrobulbum* x *bicolor*) 81 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [13] *Encyclia tampensis* (Alba) 'Fajen's Orchids' HCC/AOS 79 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [14] *Vanda* Pink Floyd 'Naoki Kawamura' AM/AOS (*tessellata* x *luzonica*) 84 pts. Exhibitor: Naoki Kawamura; Photographer: Wes Newton. Florida North-Central Judging
- [15] *Vanda* Chao Praya Emerald 'Krull's Emerald' AM/AOS (*vietnamica* x *tessellata*) 81 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [16] *Cattleya* Measuresiana 'Krull-Smith' AM/AOS (*aclandiae* x *walkeriana*) 86 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging

CALENDAR

AUGUST

5-6—International Phalaenopsis Alliance Symposium, Hilton Garden Inn, Apopka City Center, 580 E Main Street, Apopka, FL; Contact: Eileen Hector, 813-368-7353; ipa.eileen@gmail.com

6—*Houston Orchid Society Summer Workshop (Outreach Judging), First Christian Church, 1601 Sunset Blvd, Houston, TX; Contact: Randy Johnson, 225-205-8181; randy.johnsonian2000@gmail.com

27-28—“Ohio Valley Orchid Fest,” Emmanuel Lutheran Church, 4865 Wilmington Pike, Dayton, OH; Contact: Eric Sauer, 937-212-0462; eric@rvorchids.com

SEPTEMBER

16-18—Alabama Orchid Society’s 38th Show & Sale, Birmingham Botanical Gardens, 2612 Lane Park Rd, Mountain Brook, AL; Contact: Beverly VonDer Pool, 205-821-0689; bvonderpool@yahoo.com

17-18—Wisconsin Orchid Society’s “Fall in Love with Orchids,” Mitchell Park Horticultural Conservatory, 524 S Layton Blvd, Milwaukee, WI; Contact: Richard Odders and Bil Nelson, 262-632-3008 and 414-467-6642; odders2445@gmail.com and qorchids@att.net

17-18—Ridge Orchid Society’s Diamond Jubilee “60 Years of Orchids,” WH Stuart Center, 1702 US Hwy 17 S, Bartow, FL; Contact: Keith Emig, 863-412-4762; dkemig@gmail.com

17-18—Foothills Orchid Society “Orchids For Everyone,” Deerfoot Inn & Casino, 11500 35 St SE #1000, Calgary, AB, Canada; Contact: Marguerite Salsberry, 403-973-2687; msalsberry@telus.net

19-26—Asociacion Bogotana de Orquideologia’s “XIX Exposicion Nacional de Orquideas,” Calle 134 #55-66, Bogota, Colombia; Contact: Julie Jordan, 54-310-227-9696; julie.jordan@grchia.com

22—Desert Valley Orchid Society Outreach Judging, Prince of Peace Lutheran Church, 3641 N 56 St, Phoenix, AZ; Contact: Bev Tall, 602-463-7352; bevtall@gmail.com

23-24—Great Divide Orchid Society Show and Sale, Wingate of Helena, 2007 N Oakes, Helena, MT; Contact: Nancy Horn & Cheri Bergeron, 406-459-9252; nancyhorn@outlook.com

24-25—Triangle Orchid Society “Fall for Orchids,” JC Raulston Arboretum - NC State University, 4415 Beryl Road,

Raleigh NC; Contact: Ralph Belk III, 704-619-7152; shows@triangleorchidsociety.org

30-1—Tampa Orchid Club Expo, USF Botanical Gardens, 4202 E Fowler Ave, Tampa, FL; Contact: Cheryl Crilly, 813-244-7564; cents4me@aol.com

30-2—Kentucky Orchid Society Show, St Mathews Episcopal Church, 330 N Hubbards Lane, Louisville, KY; Contact: Jan Smith & Stephen Benjamin, 502-893-0500 & 502-348-1787; jansmithroberts@gmail.com & stephenb@oakknob.com

OCTOBER

1-2—Central New York Orchid Society’s Fall Show and Sale, Beaver Lake Nature Center, 8477 East Mud Lake Rd, Baldwinsville, NY; Contact: Susan & Jerry Finger, 315-247-8980; jandsfinger@aol.com

15-16—Denver Orchid Society’s “Orchid Renaissance,” Denver Botanic Gardens, 1005 York St, Denver, CO;

Contact: Marion Allen, 303-987-3005; orkdldr@comcast.net

17-23—Kenya Orchid Society “Orchid Manyatta,” Loita Hall, Sarit Expo Centre, Karuma Road, Westlands, Nairobi, Kenya; Contact: Alexandra Kontos, +254-733-616-135; akontos@walkerkontos.com

22-23—Gainesville Orchid Society’s “Orchids in the Garden,” Kanapaha Botanical Gardens, 4700 SW 58th Dr, Gainesville, FL; Contact: Ghislaine Carr, 305-804-9495; Ghislainecarr@yahoo.com

22-23—Eastern Iowa Orchid Society’s Orchid Show and Sale “Orchids are a Scream,” Elks Lodge Hall, 801 3rd Ave SW, Cedar Rapids, IA; Contact: Andy Coghill-Behrends, 319-512-8076; mistercoghill@hotmail.com

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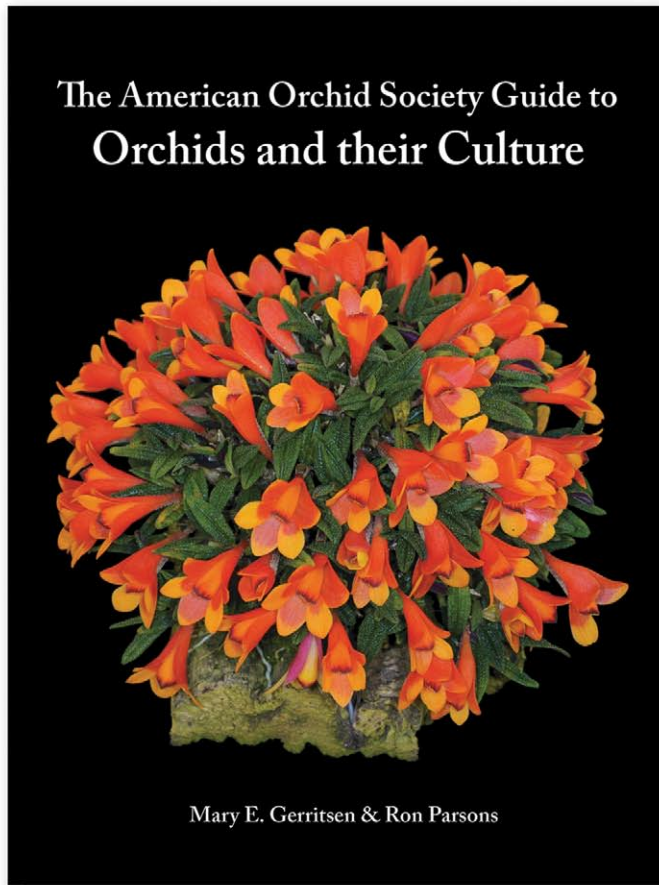
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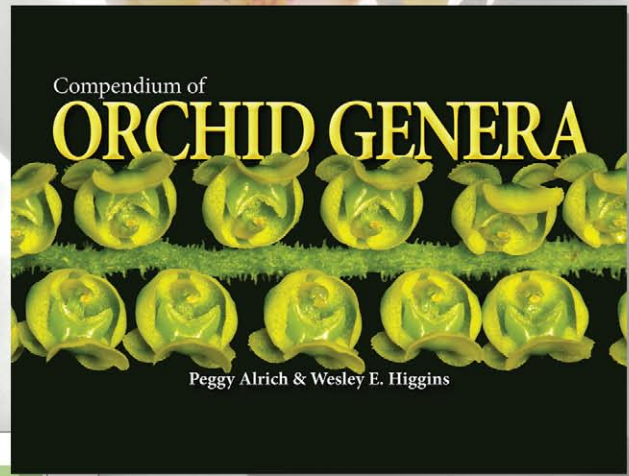
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by Peggy Alrich
and Wesley Higgins



Angraecum Bory
Voy. Ins. Afrique, 1: 336, t. 19 (1848).

Epitheloides: Vandere. *Angraecum*

ETYMOLOGY: From the Latinized form of the Malayan word (*Angrak* or *Angrok*) for the epiphytic orchids that resemble *Azorella* and *Tanaka* in habit. The name *Angraecum* originated with Georg Eberhard Rumphius (1628-1702), who coined it from the word *Angrek*, a name or title given by the Malaysians to parasitical *Epitheloides* plants, the meaning of which has not been discovered. From Fagholft Kampher (1651-1716) we learn that *Angrak* or *Angrok* is also the name used by the Javanese for these plants.

GENITIVITY: *Angraecum eboracum* Bory
Illustration: Angraecum boryi

More than two hundred twenty-one, very small to very large monopodial epiphytes, a few lithophytes or rare terrestrials have a wide range of distribution in humid, low to mid elevation, coastal to hill scrub, savannas to montane evergreen forests of mainly tropical Africa (Guinea to Somalia, Gabon to Zimbabwe and South Africa), Madagascar, Mauritius to Réunion, although one species is found as far away as the Seychelles and Sri Lanka. These miniature to large, rambling to clump forming, warm to cool growing plants are vegetatively and florally quite diverse. The short to long, sometimes branched stems are leafy throughout with fleshy to leathery, channelled, unequally bilobed, usually dichotomous leaves. The one to several, short to long, solitary to few-flowered inflorescences have long-lasting, small to large flowers in shades of white, ivory or green with sepals and petals free, usually spreading. The flowers are noted for their spots of widely varying lengths from quite long to short. The flowers have a thick, almost leathery texture, an exceptionally long flowering period, and an extraordinarily heavy nocturnal fragrance (usually within the long spurred species) and the lip is larger than the other segments. The shell or boat-shaped, simple or obscurely lobed lip is usually quite concave, its base more or less encloses the column, and it has a central callus. The flowers have a very short, foetal-like column with deeply divided lobes.

POLLINA 2, waxy, each attached to its own narrow or elliptic viscidium. **Culture**: Growing conditions and habitat options vary widely from species to species. Generally they do best mounted on a fern slab with good drainage and most of the species benefit from a resting period of reduced watering. Provide intermediate conditions, bright to diffused light, high humidity and good air movement.

Valid Angraecum Synonyms

Aerobion Kampher ex Sprengel
Syn. Voy. Sprengel, ed. 36, 3: 679 & 716 (1826).
Erroreolus: Greek for air and life, referring to the epiphytic habit of the plants.
Laccorvus: *Aerobion asperum* (Thouars) Sprengel (*Angraecum asperum* Thouars) (*Angraecum laccorvus* Kuhn, 1829, 10: 107).

Now recognized as belonging to the genus *Angraecum*, *Aerobion* was previously considered to include twenty-four epiphytes found in warm, mid elevation, montane forests of Madagascar and the Mascarene Islands.

Angraecoides (Cadenot) Schachter, Mynik & Grochocka
Biodivers. Res. Conservation, 20: 9 (2013).

Erroreolus: *Angraecum*, a genus of orchids, and Greek for likeness or form. Refers to a similarity to *Angraecum*.

Two Seces: *Angraecoides piperis* (Frappet) Schachter, Mynik & Grochocka (*Angraecum piperis* Frappet)

Now recognized as belonging to the genus *Angraecum*, *Angraecoides* was previously considered to include twenty-five epiphytes found in cool, mid elevation, hill scrub and montane forests in northeastern Madagascar, Mauritius and Réunion.

Arachnangraecum (Schlechter) Schachter, Mynik & Grochocka
Biodivers. Res. Conservation, 20: 11 (2013).

Erroreolus: Greek for spider and *Angraecum*, a genus of orchids. Refers to the long, spider-like segments.

Two Seces: *Arachnangraecum ramanantsoa* (Thouars) Schachter, Mynik & Grochocka (*Angraecum ramanantsoa* Thouars)

Now recognized as belonging to the genus *Angraecum*, *Arachnangraecum* was previously considered to include thirteen epiphytes found in cool, mid elevation, hill scrub and montane forests in found in northeastern Madagascar, Mauritius and Réunion.

Bonnieria Cadenot
Rev. Gén. Bot., 11: 416, pl. 10-11 (1899).

Erroreolus: In appreciation of Eugène Marie Gaston Bonnier (1853-1922), a French botanist, editor of *Revue Générale de Botanique* and publisher of Cadenot's notes on the orchids of Réunion.

Two Seces: None designated

Now recognized as belonging to the genus *Angraecum*, *Bonnieria* was previously considered to include two epiphytes found in mid to upper elevation, bushy montane rain forests of Réunion.

Boryangraecum (Schlechter) Schachter, Mynik & Grochocka
Biodivers. Res. Conservation, 29: 12 (2013).

Erroreolus: Named for Jean Baptiste Bory de Saint-Vincent (1778-1846) a French naturalist and author of *Voyage dans les îles d'Afrique*. And *Angraecum*, a genus of orchids.

Two Seces: *Boryangraecum panellei* (Schlechter) Schachter, Mynik & Grochocka (*Angraecum panellei* Schlechter)

Now recognized as belonging to the genus *Angraecum*, *Boryangraecum* was previously considered to include thirteen epiphytes found in cool, mid elevation, hill scrub and montane forests in found in Madagascar, Mauritius and Réunion.

A



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ORCHIDS CLASSIFIEDS

SALES

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SELLING MY PRIVATE collection after 28 years; 2,500 sq ft of overgrown cattleyas and 500 sq ft of overgrown dendrobiums are available in Titusville, Fl. Contact: Kenny Yui @ 321-720-7337.

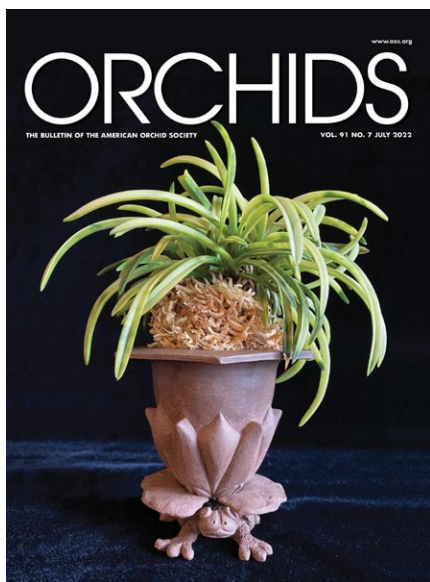
Classified ads are \$55 for five lines (45 characters/spaces per line) and \$15 for each additional line. \$25 for first three words in red. \$25 to include logo. The first three words can be in all caps, if requested.

AD INDEX

African Violet Society.....	571	2022 Supplement Announcement.....	566
American Begonia Society.....	567	Gothic Arch.....	636
American Horticultural Society.....	583	Hartley Botanical.....	561
American Orchid Society		IX International Conference on Orchid	
Aerangis 2nd Edition.....	Inside front cover	Conservation "Soroa 2022".....	587
Affiliated Societies Advertising.....	568	International Palm Society.....	575
American Orchid Society Guide		JR Peters.....	567
to Orchids and Their Culture.....	637	Kelley's Korner Orchid Supplies.....	636
AOS Commemorative Glasses.....	567	Krull-Smith.....	Back cover
Better Gro.....	568	Kultana Orchids.....	636
Classified Ads.....	639	Newport Harbor Orchid Society Show.....	571
Compendium of Orchid Genera.....	638	Orchid Digest.....	567
New Books Coming Soon!.....	583	Orchid Review.....	571
Webinars.....	573	Repotme.com.....	636
Marketplace		R.F. Orchids, Inc.....	573
Announcement.....	579		

Submission of articles for *ORCHIDS* magazine

The AOS welcomes the submission of manuscripts for publication in *Orchids* magazine from members and non-members alike. Articles should be about orchids or related topics and cultural articles are always especially welcome. These can run the gamut from major feature-length articles on such topics as growing under lights, windowsills and thorough discussions of a species, genus or habitat to shorter, focused articles on a single species or hybrid to run under the Collector's Item banner. The AOS follows the World Checklist of Selected Plant Families with respect to species nomenclature and the Royal Horticultural Society Orchid Hybrid Register for questions of hybrid nomenclature. The AOS style guide and usage guides can be downloaded from <http://www.aos.org/about-us/article-submissions/style-guide-for-aos-publications.aspx>. Articles as well as inquiries regarding suitability of proposed articles should be sent to jean.ikeson@gmail.com or the editor at rmchatton@aos.org.



CORRIGENDA

The caption for last month's cover failed to give proper credit to the grower and photographer of the "neo" featured. This beautiful specimen of *Vanda falcata* 'Kishuu Sekko' was grown and photographed by Jennifer Leitzke, an avid "neo" enthusiast and AOS member in Wisconsin. We sincerely regret this serious omission. In addition, the last sentence of caption 33, page 531 was cut off in the final editing process. Both of these errors have been corrected in the online issue.

— Ron McHatton (rmchatton@aos.org).

**For Advertising Information,
Contact: Tom Giovannello,
tgiovannello@allenpress.com**

The American Orchid Society, in congruence with its stated conservation aims and with the full approval of the AOS Trustees, prohibits advertisements for wild-collected orchids and orchid-collecting tours in the pages of *Orchids*. By submitting advertisements for orchid species, vendors are thereby asserting that plants advertised are either artificially propagated (from seed or meristem) or are nursery-grown divisions of legally acquired stock. While *Orchids* endeavors to assure the reliability of its advertising, neither *Orchids* nor the American Orchid Society, Inc., can assume responsibility for any transactions between our advertisers and our readers.

Marvellous Malta: Where Wild Orchids Grow

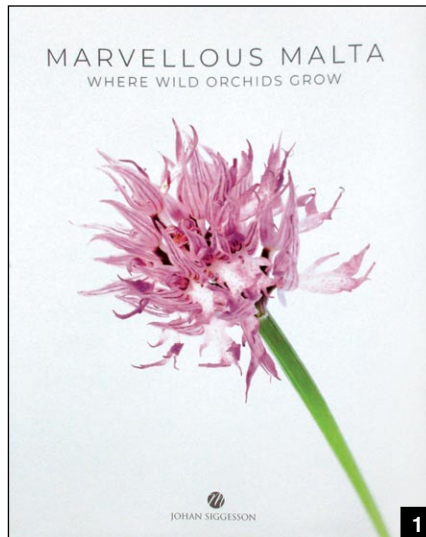
Siggesson, J. 2022. Marvellous Malta, 3, Triq Bubaqra, ZRQ2806 Zurrieq, Malta. ISBN 978-9918-0-0094-4. Hardbound with dust jacket, portrait format, 10.6 inches × 13.4 inches (27 cm × 34 cm), 176 pages, 100 photographs. Order online at <https://www.marvellousmalta.com>. €59.00 (approximately \$60 on July 18, 2022)

MARVELLOUS MALTA: WHERE Wild Orchids Grow is not your typical coffee-table orchid book. It shows native orchids from the perspective of an award-winning nature and wildlife photographer. I was delighted to find a wildlife photographer who considered orchids to be wildlife. In this book, Johan Siggesson brings the stunning world of Malta's wild orchids right to you in a unique perspective that captures images and turns them into art. This photographer uses light, shadows, highlights, details, shapes and their interactions to capture the essence of the wild orchid. The orchid images are from a unique point of view and investigate the subject from creative angles. I enjoyed the close-up photos revealing minute details and surface texture.

In the preface, the author states, "I decided to leave the thinking and decision making to the botanists, and instead focus on capturing the sheer beauty of these plants with my camera. The purpose of this book is to showcase that beauty that can be found around us if we take the time to stop and look."

After a forward by Kevin Casha, a professional photographer, curator and tutor, the book is divided into the following sections: "Orchids in Malta," "Getting Close," "The Wider Context," "From Dawn to Dusk (Kaleidoscope of Life)," "Visitors (Home of A Spider)," "Flower Power (A Naked Man)," "Creative Visions," "Human Interference (Mirror Mirror)" and an index of species. All the artistic photography created in Siggesson's book was captured during one orchid season (2020-2021).

The Republic of Malta is an archipelago in the central Mediterranean between Sicily and the North African coast. The climate is typical of the Mediterranean, with mild, rainy winters and hot, sunny summers. The steppe in Malta is dominated by various grasses, thistles, and leguminous and bulbous plants including 37 terrestrial orchid species. Following the long, scorching hot summer, the orchid season starts a few weeks after the first heavy rains in September or



October. During the following months, the life-giving rain nourishes different species in various locations around the islands all the way up until May.

The author-photographer is a Swedish-born wildlife art photographer who typically conducts his work in Africa, Asia, Scandinavia and other parts of the world. Despite living in Malta for 20 years, Siggesson had never worked locally. With this book, he starts a series of books revolving around Maltese nature. His accolades include the Malta International Photo Award 2019-2020 (category winner), European Wildlife Photographer of the Year 2018 (category winner), Travel Photographer of the Year 2017 (category winner) and Scottish Nature Photographer of the Year 2014. His greatest honor, came in 2019 when Siggesson was one of the fortunate photographers to be accepted into Sweden's most prestigious nature photography association, Naturfotograferna/N.

Siggesson chose custom large-format (10.6 inches × 13.4 inches [27 cm × 34 cm]) pages to showcase his photography in the best possible way. The excellent sewn-binding production uses 200GSM Italian fine art paper with a silk finish plus a water-based coating. The cover and jacket are soft-touch laminated. The book

[1] Cover image: *Orchis italica*, the naked man orchid.

[2] Author Johan Siggesson with his first Maltese book.

[3] A *nacampis pyramidalis* var. *pyramidalis*, the pyramidal orchid, photographed from the top.

is a limited edition of only 1,000 copies; all are numbered and signed by hand. No more copies will ever be printed. The result is a beautiful 176-page durable display book.

— Wesley Higgins (email Wesley.higgins@comcast.net). Photographs courtesy of Marvellous Malta.

Paphiopedilum Booth's Sand Lady
'WingDreams' FCC/AOS (Lady Isobel
× *sanderianum*) awarded May 7, 2022;
grower: Julio and Eileen Hector;
photographer: Rachel Christensen.



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