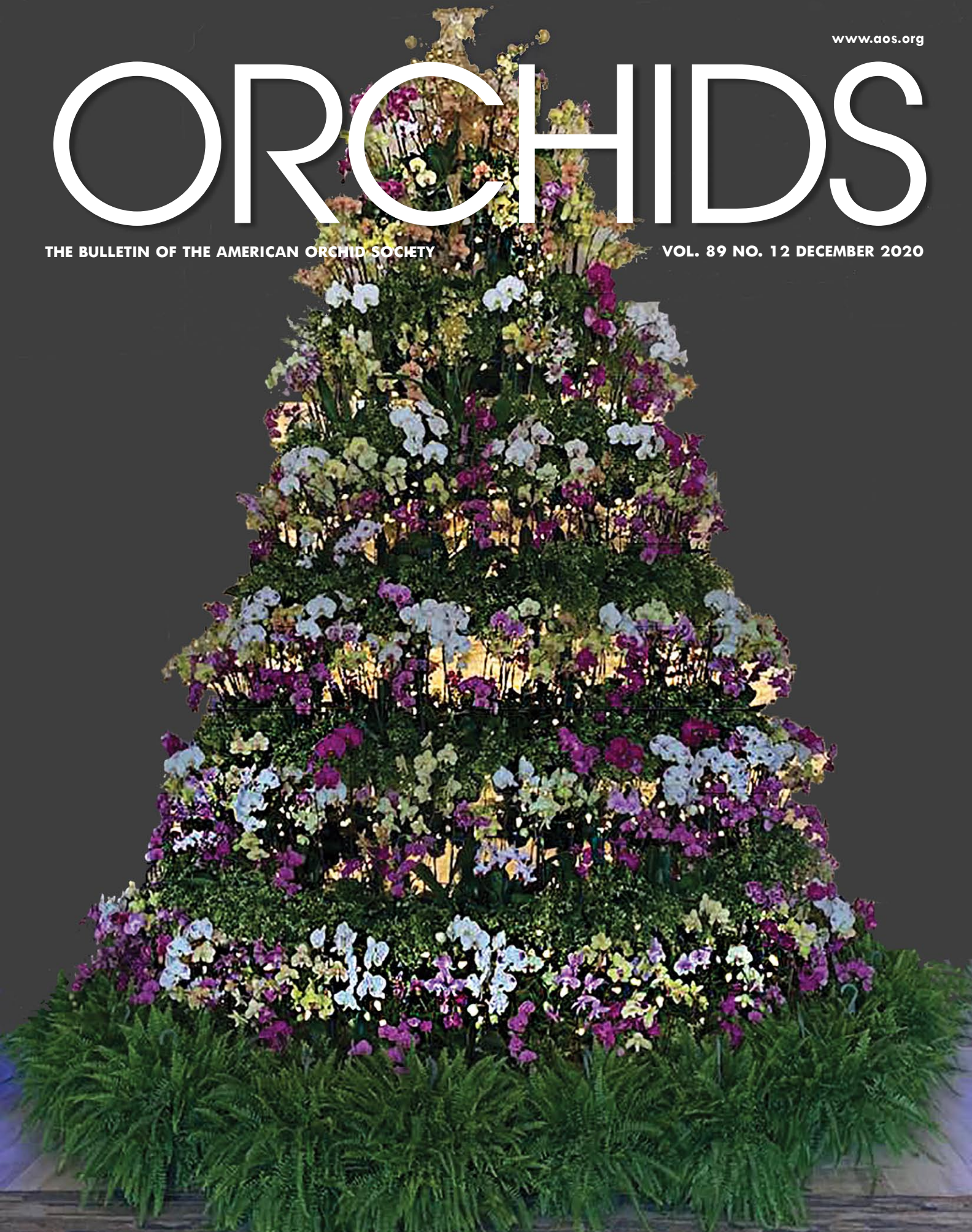


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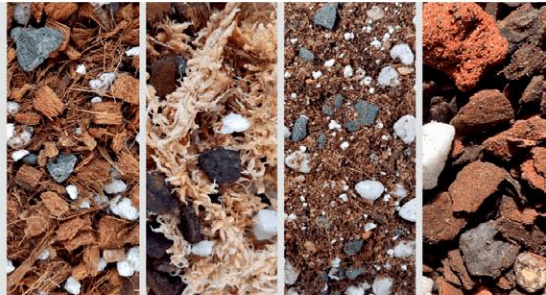
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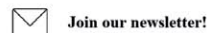
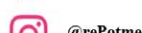
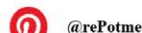
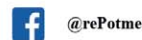
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FRONT COVER

Orchids make wonderful holiday decorations. This 25-foot (7.6-m) holiday tree was made with over 800 orchid plants and displayed in the foyer of the Ocean Reef Club in Key Largo, Florida. The photograph, taken by Michael Coronado, is courtesy of R.F. Orchids, Inc.

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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>.

<i>Acianthera</i> (ay-see-AN-ther-a)	<i>Epipactis</i> (eh-pih-PAK-tis)	<i>Platanthera</i> (plat-AN-ther-a)
<i>Ada</i> (AY-da)	<i>ferruginea</i> (fer-roo-JIN-ee-a)	<i>platyloba</i> (plat-ee-LOH-ba)
<i>Aedes</i> (EYE-deez)	<i>geminatum</i> (gem-in-AY-tum)	<i>Platystele</i> (plat-ee-STEE-lee)
<i>alba</i> (AL-ba)	<i>gigantea</i> (jye-GAN-tee-a)	<i>Pleurothallid</i> (plur-oh-THAL-lid)
<i>Anathallis</i> (an-a-THAL-liss)	<i>gireoudiana</i> (gair-ood-ee-AY-na)	<i>Pleurothallopsis</i> (plur-oh-thal-LOP-sis)
<i>anceps</i> (AN-seps)	<i>Gongora</i> (GONE-gore-a)	<i>Ponerorchis</i> (pon-er-ORE-kiss)
<i>Andinia</i> (an-DIN-ee-a)	<i>Graminifolia</i> (gram-in-ee-FOLE-ee-a)	<i>Porroglossum</i> (pore-oh-GLOSS-sum)
<i>Andreettaea</i> (an-DREE-ta-ee)	<i>Gravendeelia</i> (grav-en-DEEL-ee-a)	<i>praestans</i> (PRAY-stanz)
<i>Angraecoid</i> (an-GRAY-koid)	<i>Guarianthe</i> (gwar-ee-AN-thee)	<i>Prosthechea</i> (pros-THEK-ee-a)
<i>Angraecum</i> (an-GRAY-kum)	<i>Habenaria</i> (hab-en-AIR-ee-a)	<i>Pseudolepanthes</i> (soo-doh-leh-PAN-theez)
<i>antherotes</i> (an-ther-OH-teez)	<i>iltisorum</i> (ill-tih-SORE-um)	<i>pumila</i> (PEW-mil-la)
<i>aristata</i> (air-is-TAY-ta)	<i>kubahense</i> (koo-ba-EN-say)	<i>Pupulinia</i> (poo-poo-LEEN-ee-a)
<i>Aspasia</i> (a-SPAY-zee-a)	<i>Laelia</i> (LAY-lee-a)	<i>Quercus</i> (KWAIR-kus)
<i>atratum</i> (a-TRAY-tum)	<i>Laeliocatanthe</i> (lay-lee-oh-kat-AN-thee)	<i>Restrepiella</i> (reh-strep-ee-EL-la)
<i>besseae</i> (BESS-ee-eye)	<i>Laeliocattleya</i> (lay-lee-oh-KAT-lee-a)	<i>rex</i> (REKS)
<i>bicolor</i> (BYE-kul-ur)	<i>Lanckeriana</i> (lan-kes-ter-ee-AY-na)	<i>Rhyncatlaelia</i> (rin-kat-LAY-lee-a)
<i>bowringiana</i> (bow-ring-ee-AY-na)	<i>Lepanthes</i> (leh-PAN-theez)	<i>Rhyncholaeliocattleya</i> (rink-oh-lay-lee-oh-KAT-lee-a)
<i>brachiata</i> (bra-kee-AY-ta)	<i>lineata</i> (lin-ee-AY-ta)	<i>Rhynchostele</i> (rink-oh-STEE-lee)
<i>Bractia</i> (BRAK-tee-a)	<i>loddigesii</i> (lod-dih-GEEZ-ee-eye)	<i>riverae</i> (rih-VEER-ee)
<i>Brassavola</i> (brah-SAH-vohl-la)	<i>longiloba</i> (lon-jee-LOH-ba)	<i>rodrigo</i> (rod-REE-goh-ee)
<i>Brassia</i> (BRASS-ee-a)	<i>longirepens</i> (lon-jee-REE-penz)	<i>Rossioglossum</i> (ross-ee-oh-GLOSS-sum)
<i>brevicaule</i> (breh-vih-KAW-lee)	<i>longistelidium</i> (lon-jee-stel-LEE-dee-um)	<i>rungsuriyanum</i> (rung-suh-reh-YAY-num)
<i>Bulbophyllum</i> (bulb-oh-FILL-lum)	<i>lueddemanniana</i> (loo-deh-man-ee-AY-na)	<i>sargentianum</i> (sar-gent-ee-AY-num)
<i>cadetii</i> (ka-DET-tee-eye)	<i>Luerella</i> (LURE-el-la)	<i>satyriopsis</i> (sah-teer-ee-OP-sis)
<i>Campsomeris</i> (kamp-SOME-er-iss)	<i>Lycaste</i> (lye-KAS-tee)	<i>schilleriana</i> (shil-ler-ee-AY-na)
<i>canhii</i> (KAHN-ee-eye)	<i>macranthos</i> (mak-RAN-thos)	<i>schizoclinandrium</i> (skitz-oh-klin-AN-dree-um)
<i>Catasetum</i> (kat-a-SEE-tum)	<i>Maxillaria</i> (maks-ill-LAIR-ee-a)	<i>schlechterianum</i> (shlek-ter-ee-AY-num)
<i>Cattleya</i> (KAT-lee-a)	<i>maxima</i> (MAKS-ih-ma)	<i>serratum</i> (ser-RAY-tum)
<i>Cattlianthe</i> (kat-lee-AN-thee)	<i>medusae</i> (meh-DOO-see)	<i>serruliferum</i> (ser-yew-LIFF-er-um)
<i>cernuum</i> (SER-new-um)	<i>Mesospinidium</i> (mee-soh-spih-NEED-ee-um)	<i>sesquipedale</i> (ses-kwih-peh-DAY-lee)
<i>Chamelophyton</i> (kam-eh-loh-FYE-ton)	<i>microcattleya</i> (mye-kro-KAT-lee-a)	<i>Spathium</i> (SPATH-ee-um)
<i>chilapensis</i> (chill-a-PEN-sis)	<i>microcattleyioides</i> (mye-kro-kat-lee-OY-deez)	<i>speciosum</i> (spee-see-OH-sum)
<i>chrysostachya</i> (kry-soh-STAK-ee-a)	<i>microchila</i> (mye-kro-KYE-la)	<i>Specklinia</i> (spek-LINN-ee-a)
<i>cinnabarina</i> (sin-a-bar-EE-na)	<i>mossiae</i> (MOSS-ee-eye)	<i>Stanhopea</i> (stan-HOPE-a although most often heard incorrectly as stan-HOPE-ee-a)
<i>coccinea</i> (kok-SIN-ee-a)	<i>Muscarella</i> (mus-kar-EL-la)	<i>Stelis</i> (STEE-liss)
<i>communis</i> (kom-MEW-niss)	<i>Myoxanthus</i> (mye-oks-AN-thus)	<i>Stenoglossum</i> (sten-oh-GLOSS-sum)
<i>congestum</i> (kon-GESS-tum)	<i>Myrmecophila</i> (myr-meh-KOF-ih-la)	<i>Stenorrhynchos</i> (sten-ore-RINK-os)
<i>coryandra</i> (kore-ee-AN-dra)	<i>Nanodes</i> (nan-OH-deez)	<i>suavissima</i> (swah-VISS-ee-ma)
<i>Coryanthes</i> (kore-ee-AN-theez)	<i>Neocognauxia</i> (nee-oh-kon-YOH-ee-a)	<i>tachirensis</i> (tak-ih-REN-see)
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<i>Cuitlauzina</i> (kweet-law-ZEE-na)	<i>obtusata</i> (ob-too-SAY-ta)	<i>tenebrosa</i> (ten-eh-BROH-sa)
<i>Cycnoches</i> (SIK-no-keez)	<i>odontoglossoides</i> (oh-don-toh-gloss-OY-deez)	<i> trianae</i> (TREE-an-ee)
<i>Cymbidium</i> (sim-BID-ee-um)	<i>Odontoglossum</i> (oh-don-toh-GLOSS-sum)	<i>uleinanodes</i> (yew-lye-nan-OH-deez)
<i>Cypripedium</i> (sip-rih-PEED-ee-um)	<i>Oncidiinae</i> (on-sid-EE-ee-nee)	<i>uniflora</i> (yew-nih-FLORE-a)
<i>dawsonii</i> (daw-SON-ee-eye)	<i>Oncidium</i> (on-SID-ee-um)	<i>varicosa</i> (vair-ih-KOH-sa)
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Webinars-Coming Attractions!



When	December 02, 2020 8:30pm EST Wednesday	December 16, 2020 8:30pm EST Wednesday	January 07, 2021 8:30pm EST Thursday	January 13, 2021 8:30pm EST Wednesday
Topic	Greenhouse Chat (Orchid Q&A) <i>Send in your Questions!</i>	Orchid Conservation Projects in Florida and Cuba	Greenhouse Chat (Orchid Q&A) <i>Send in your Questions!</i>	Mounting Your Orchids Best Practices
Presenter	Ron McHatton Chief Education and Science Officer	Lawrence Zettler Biology Professor, Illinois College	Ron McHatton Chief Education and Science Officer	Michael Coronado Production Manager & VP, RF Orchids

REGISTRATION REQUIRED: <http://www.aos.org/orchids/webinars.aspx>

Cannot make it on the scheduled date or time? No need to worry. Register anyhow!

Webinar announcements are posted to Facebook,

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In addition to vital support through membership dues, the American Orchid Society relies on grants, bequests and other gifts to support its programs. We would like to thank the following donors for gifts received between October 1, 2020 and October 31, 2020.

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THE DEVELOPMENT COMMITTEE extends a huge “thank you” to those who donated items and purchased those items making the AOS’s first virtual auction a resounding success. We could not do it without your support. We want you to know your support is paramount to our auctions, and we hope that you will continue supporting the American Orchid Society auctions, be they in person or virtual.

Members, please support these wonderful vendors, especially in this time of no shows and meetings.

Thank you from Cheryl Erins, Chair, Jennifer Reinoso, Vice-Chair, Marian Sheehan, Jean Hollebhone, Marlene Dawdy, Jay Balchan, Ashley Grable, Valerie Melanson, Bob Fuchs, Joyce Medcalf, Cathy Higgins and Tom Pickford.

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CALL FOR GRANT APPLICATIONS

AOS Conservation Committee Accepting 2021 Grant Applications
 By Charles Wilson

IN ITS CONCERN for the protection of wild orchid species around the world, the AOS Conservation Committee announces that it is taking applications for conservation project grants for 2021. Please note that in recent years, the AOS has decided to separately fund conservation projects from research projects, allowing for some different types of projects to be considered. Although conservation research will still fall under the purview of the Research Committee, conservation grants are intended to encourage a more practical, hands-on grassroots approach. We are seeking applicants engaging in a wide range of projects that protect orchids and their natural habitats including, but not limited to:

- Studies that enhance our knowledge of crucial ecological information,
- Conservation assessments of specific orchids or regions,
- Seed propagation of rare or threatened species,
- Habitat restoration or reintroduction efforts,
- Raising public awareness regarding orchid conservation and encouraging public participation, and
- Providing education or outreach to present and future members of the conservation community.

All conservation-oriented projects, anywhere in the world, will be considered. Although an institutional affiliation is helpful, it is not required. An accurate, estimated budget is, however, required. Funds are limited; past grants have averaged about \$3,000.00. We REQUIRE projects be reported on annually, and that an article featuring your project be submitted for publication in *Orchids* magazine within six months of completion. Due to the nature of conservation projects, ongoing multiyear support is a possibility. The application period begins January 1, 2021. Applications must be received no later than March 14, 2021. Please see the AOS website for application and requirements or contact the AOS Conservation Committee directly at Conservation_committee@aos.org for an application. Good luck! — Charles Wilson, Chair AOS Conservation Committee (email: conservation_committee@aos.org).



Dendrophylax lindenii photographed in-situ by Greg Allikas.

PRESIDENT'S MESSAGE

WELCOME TO DECEMBER, everyone. The frenzy of the holidays is in full swing and it will not be long before they are actually here. There is so much to do such as decorating, shopping, presents, carols, family, friends, lots of food and everything else that goes with the holiday celebration.

And, as quickly as it began, the year will be ending. What a year it has been, too. The pandemic held the whole world hostage for months, rewriting how meetings and events were going to be run. The new normal just became normal and no one thought it unusual to be wearing masks 24/7.

But life had to carry on and so it did. Everyone adjusted to the changes and learned different ways to accomplish the same things. We held virtual meetings, used curbside deliveries, touchless this, no-contact that. Business slowly carried on as usual; just different.

The AOS fall Members' Meeting this past October, held as a virtual meeting, was a huge success. It was very different from Members' Meetings in the past, but everyone who attended enjoyed it thoroughly. It was fun and interesting, but a virtual meeting will never take the place of a face-to-face meeting.

I am looking forward to all of this getting behind us entirely and actually attending meetings in person...to sitting down with a glass of wine and discussing orchids in the company of others. I know it will happen soon.

Fortunately, we have seen some Judging Centers opening up, allowing genuine judging to take place. More often than not, however, this has been the exception and not the rule. But there will definitely be more opportunities for judging increasing as time goes on.

Recently, I had an occasion to visit the Chicago Judging Center's monthly judging and participate in their judging program. What a warm welcome I received from this great group and what a fabulous event it was. I am looking forward to visiting many judging centers over the next year and a half.

One of the best parts of the Members' Meeting was recognizing the judges whose commitment to the judging program advanced them to the next level. I want to personally congratulate all the elevated judges — your hard work has paid off. I know you will go into the next phase of judging with the same care, dedication and professionalism that elevated you there in the first place.

I also want to extend a very warm welcome to all the student judges who were accepted into the program. You are a big part of the future of the American Orchid Society as ambassadors to all the potential new members! The road that lies ahead of you will be very rewarding; we have been seeing the introduction of new hybrids and species over time, expanding the world of orchids in fascinating ways. And, you will be an integral part of it all.

I would also like to give a shout out to the Auction Committee. Cheryl, Jennifer and their team worked tirelessly researching and streamlining the auction process to generate a great deal of interest and ensure it would be a success to provide much needed funds to the AOS. I am very grateful to all those folks who donated so generously.

With the 2021 AOS Centennial Celebration moving from April to October of next year, I am confident many more members will be visiting South Florida for all the festivities. There is so much work going on to ensure the success of the event, you certainly will not want to miss it.

Orchid conservation will be the beneficiary of the event, and deservedly so. There are many speakers prepared to give talks that will bring worldwide orchid conservation into the spotlight.

This is a very important topic to me, and it should be to each and every one of you as well.

We cannot allow these amazing plants to disappear from the face of the Earth. Orchids are found on every continent on the planet except Antarctica. The impact orchids make in the world is boundless. It is both agricultural and economic. Stifling the overdevelopment of orchid habitats in their native lands would be a victory for the world.

Working toward orchid conservation should not begin and end with the AOS Centennial Celebration. It should be on our radar always. Protecting the natural habitats where orchids grow, or working on them ex situ, is crucial. Orchidaceae and future generations will be coheirs of this rewarding work. It is entirely a win-win situation.

With the year 2020 winding down and 2021 beginning, you may be thinking, "What are the plans for the American Orchid Society next year?"

Apart from the Centennial Celebration, one of the biggest things to happen to the AOS in 100 years, we have the spring Members' Meeting in March of 2021. Other items on the agenda include building a stronger AOS organization for generations to come. Our committees work hard toward this. Please consider joining one because new people bring new ideas. Contact the AOS for more information.

It would be wonderful to see orchid societies return to their face-to-face monthly meetings. I would like to see them organizing more sales and shows. This will increase the number of judging opportunities as well. The bottom line is to have a return to business as usual.

For now, this month, let us all enjoy the holidays with our loved ones as we prepare for a new year full of new surprises.

Wishing all of you the happiest of holidays and a wonderful new year!

— Robert Fuchs, AOS President (email: bob@rforchids.com).



MICHAEL CORONADO

American Orchid Society President Robert Fuchs and Quinn, the Harlequin Macaw wishing you the best for the Holiday Season and the coming New Year.



IX International Conference on Orchid Conservation “Soroa 2021”

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- Dr. Ernesto Mujica Benítez, Scientific Secretary of the Organizing Committee (emujica@upr.edu.cu)
- Ms. C. Esther Liliam Santa Cruz Cabrera, Executive Secretary of the Organizing Committee (lilyscruz@ecovida.cu)

For more information on the Conference, contact Dr. Lawrence W. Zettler (lwzettler@ic.edu) or Dr. Ernesto Mujica Benítez Scientific Secretary (emujica@upr.edu.cu).

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December: The Month of Wisdom and Peace

By Thomas Miranda

As the nations of the north are swathed in a pearly blanket of snow, we draw a close to what is certainly the most frosty and contentious year of our lifetimes (so far). While it is a somewhat artificial boundary in an epic continuum, it is worthwhile to look back at 2020 with some 20–20 vision. What did we in the orchid world learn this past year? For all our disputes and grimaces have we progressed at all? Are we better humans? Better growers? Better stewards of the Earth? We learned a lot. Some things we already knew were reinforced. Some things we surely all got wrong.



Thomas Miranda

First and foremost, we realized how much we depend on friends in the orchid world (including YOU dear readers) for their camaraderie, their enthusiasm, as well as their nurturing and loving

attributes. Without direct interactions with our orchid friends, society meetings, orchid shows and conferences, life has lost much of its richness. The virtual world, while certainly better than nothing, is not a viable substitute for the true community that is the orchid world. We need to find a way back somehow. Secondly, we found solace in the life-affirming nature of keeping and nurturing plants. When confronted with lockdowns and restrictions, most of us turned inwards toward our homes and gardens, creating our own heavens in our backyards and greenhouses.

Finally, we found some humility in our powerlessness over what nature has wrought upon us. One of the greatest truths for humankind is that we learn so much more from failure than we do from success. Indeed, while I have sent many fantastic plants to "Orchid Heaven" over the years, each plant's sacrifice has taught me lessons and guided me toward improvement and understanding now incorporated into my cultural practices. If only societal ills could be improved in the same way.

TRANQUILITY While many orchids, particularly phalaenopsis and cymbidiums, are gearing up to bloom lavishly in the coming months, in many ways their care has become easier. Watering and fertilizing are reduced, repotting is ill-

advised, and much of our activity revolves around presentation and enjoyment of our plants. Even though the wintry world may be barren and cold, our greenhouses, light rooms and windowsills are bearing the fruits of our hard work and nurturing over the spring, summer and fall. There are few things more satisfying than the exuberant first flowering of a new orchid in your collection. Rivaling the return of blooms on your older plants, like a reunion or prodigal child, December's anticipation of blooms may stir memories and emotions in your heart. Enjoy the delicacy and beauty as a reminder that our Earth is full of divinity, and you have found it and played your part in its flourishing.

APPEARANCES It may seem to be of superficial importance, but to have plants shown to their best advantage often involves a bit of human intervention. Most of our tropical orchids grow as epiphytes in trees. In that situation, most such inflorescences are actually pendent or horizontal, to be more visible and accessible to pollinators, rather than standing upright as we might like them to on our coffee tables. Gongoras, coryanthes and stanhopeas, for example, do not look so good laid out on a table. Displaying such plants requires accommodation and forethought. Even more traditionally grown genera benefit from this kind of consideration. Although inflorescences may still be elongating on phalaenopsis, cymbidiums and many others, directionally guiding them with stakes is crucial to a beautiful presentation, especially when grown in pots. Basket or mounted culture can be more naturalistic, allowing plants and inflorescences to do what they want to do.

SOCIAL INTERACTIONS Much as we miss our friends and social life, orchids also interact with other plants and animals. Grouping plants together often creates a microclimate where plants are somewhat more humid and get similar light, water and care. Although this can be an advantage, it can also be a vector of disease and infestations. As we social-distance for yet another month, it is worthwhile to test your plants for viruses, remove or quarantine any that test positive, and make sure you have not overcrowded your plants into a situation that could hurt them in any way. Pay



ARTHUR PINKERS

Cycnoches Brown's Choice 'Sunset Valley Orchids' HCC/AOS; exhibitor: Fred Clarke.

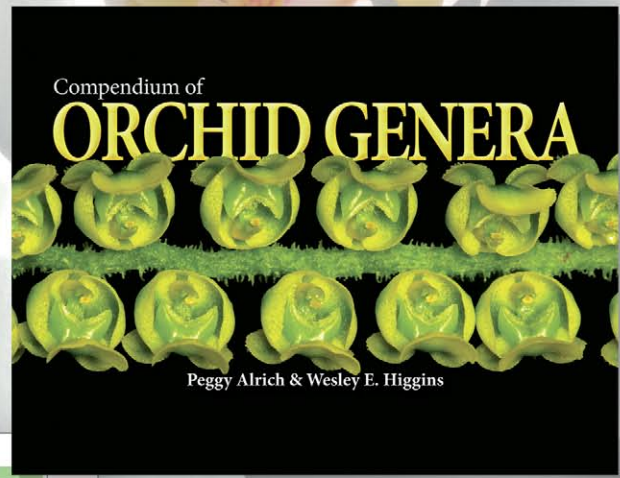
special attention to the undersides of leaves where parasites often congregate, particularly mites that shelter and may make dusty webs this time of year when watering is reduced. If your thinner leaves appear silvery, beware and intervene immediately. Often a sponge doused with some horticultural soap, run underneath damaged leaves, can quell infestations.

WELL-RESTED I am quite sure that many orchids die each winter from overwatering, much more so than underwatering. Excessive fussing over our plants in winter, when most need rest, can spell big trouble for many orchids. Catasetums, habenarias, many dendrobiums, lycastes and myrmecophilas hailing from seasonally dry habitats, require strict dormancies to not only bloom, but to survive the winter without rotting. Cloud forest orchids such as draculas and odontoglossum-type oncidiums will need year round moisture.

Only YOU can do the research necessary for the survival of a diverse collection under your care. So now, while it is less fun to go outside, crack those books and learn about your plants. The wisdom you glean from such study will inform your culture and will bring you that sublime feeling; a combination of both joy and peace when your orchids reward you with the gift of their blooms.

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

Presenting
**The Compendium
of Orchid Genera**
by Peggy Alrich
and Wesley Higgins



Angraecum Reyer
Epiphyllum Vahl: *Angraecum*
Epiphyllum Vahl: *Angraecum*
ETYMOLOGY: From the Latinized form of the Malay word (*Angraek* or *Angrak*) for the epiphytic orchids that resemble *Angraecum* and *Vanda* in habit. The name *Angraecum* originated with Georg Eberhard Rumphius (1628-1702), who coined it from the word *Angrak*, a name also given by the Malabars to "parrot-like" *Lycodiscus* plants, the meaning of which has not been discovered. From *Angraecum* Kuntze (1841-1730) we learn that *Angraek* or *Angrak* is also the name used by the Indians for these plants.
GENETIVE: *Angraecum* *chrysanthemum* Reyer
Angraecum *chrysanthemum* Reyer

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, Calicut to Zanzibar 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 ditch-like 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 encircles the column, and it has a central callus. The flowers have a very short, footless column with deeply divided lobes. Pollinia 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 Kuntze ex Sprengel
Sig. Sprengel, ed. 18, 8:479 & 716 (1826).
ETYMOLOGY: Greek for air and life. Referring to the epiphytic habit of the plants.
Lectotype: *Aerobion asperulum* (Thunberg) Sprengel (*Angraecum* Thomson) *Angraecum* *Chen*, *Bot. Beech.*, 80:10 (1871).
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 (Candolle) Schlachter, Mynik & Grochocka
Boissier, *Exc. Conservation*, 28: 9 (2013).
ETYMOLOGY: *Angraecum*, a genus of orchids, and Greek for likeness or form. Refers to its similarity to *Angraecum*.
Type Species: *Angraecoides pingue* (Frappet) Schlachter, Mynik & Grochocka (*Angraecum pingue* 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 northwestern Madagascar, Mauritius and Réunion.
Arachnangraecum (Schlechter) Schlachter, Mynik & Grochocka
Boissier, *Exc. Conservation*, 28: 11 (2013).
ETYMOLOGY: Greek for spider and *Angraecum*, a genus of orchids. Refers to the long, spider-like segments.
Type Species: *Arachnangraecum ramosum* (Thunberg) Schlachter, Mynik & Grochocka (*Angraecum ramosum* Thunberg)
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 northwestern Madagascar, Mauritius and Réunion.
Bonnieria Condamine
Exc. Gén. Bot., 11: 416, Pl. 10-11 (1899).
ETYMOLOGY: In appreciation of Eugène Marie Gaston Bonnier (1853-1922), a French botanist, client of *Émile Guillaud* de Botanique and publisher of Candolle's notes on the orchids of Réunion.
Type Species: *Note 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) Schlachter, Mynik & Grochocka
Boissier, *Exc. Conservation*, 28: 12 (2013).
ETYMOLOGY: Named for Jean Baptiste Bory de Saint-Vincent (1778-1848) a French naturalist and author of *Voyage dans les îles d'Afrique*. And *Angraecum*, a genus of orchids.
Type Species: *Boryangraecum pumilio* (Schlechter) Schlachter, Mynik & Grochocka (*Angraecum pumilio* 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.



More than 200 orchid genera are presented with the original orchid discoverer and date as well as the etymology and an easy to read description of growth habit. The book is illustrated with antique color plates, many from an original publication, all compete with citations. This book will be a welcome and beautiful addition to any orchid grower's library, a stunning work and artistic treasure.

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COLLECTORS' ITEM

Cattleya walkeriana

A Little Jewel and Easy to Grow

By Judith Rapacz-Hasler



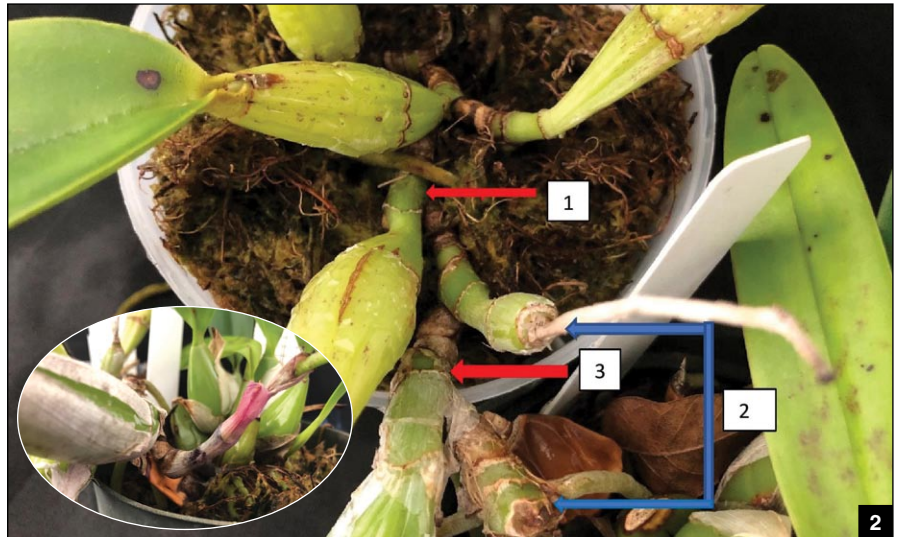
RAPACZ-HASLER

CATTLEYA WALKERIANA IS a species native to Brazil that is distributed over a large region of the interior south of the Amazon Basin, including the states of Minas Gerais, Goiás and Mato Grosso. Brasília, the capital of Brazil, is just west of the center of this area of distribution, Belo Horizonte is near the southeast edge and Goiania is near the western edge. Within this overall area of distribution, plants are usually found at 2,000–3,000 feet (610–910 m), growing in two distinct types of habitat, one known locally as the “pedreiros,” a dry region much of the year and the second known as “chapada,” which is never far from streams or areas with permanent water seepages. In its native habitat, it grows either as an epiphyte or a lithophyte and is found on north- and east-facing cliffs.

I purchased my *C. walkeriana* from a woman who was selling her orchids on Sanibel Island. The plant was set in a basket containing a few clay pebbles and a few pieces of bark. At the time it was an expensive investment, but I was truly enchanted when it bloomed the next spring producing four attractive, fragrant flowers on one inflorescence.

It was interesting to learn that *C. walkeriana*, like *Cattleya nobilior*, is a species that differs from most other Laeliinae species by producing their terminal inflorescences on specialized, leafless growths giving the impression that the inflorescences arise from the rhizome of the most recently matured growth instead of from the apex of the pseudobulb. Plants normally begin growing in early spring and as the lead is still actively developing, buds will appear in the emerging sheath as the growth matures. These buds will open quickly, and the beautiful flowers emerge. After the plant flowers, and just as new roots begin to grow, it may be repotted. Never repot a plant if the new roots are more than ¼ inch (6 mm) long or they will break off. In their native habitat, plants are kept fairly dry during the winter months. In the Northern Hemisphere, like all *Cattleya* species, they require lots of light and benefit from morning (east) or afternoon (west) sun.

The flowers of the semialba form vary from those with pristine white sepals and petals with a touch of green at the apices to those with more or less pronounced purple petal flares. The anther cap has an ivory touch and the midlobe of the lip varies from faintly brushed pale lavender marginally to those with bright purple midlobes and more or less pronounced



RON MCHATTON



JUDITH RAPACZ-HASLER



ERNEST WALTERS

- [1] *C. walkeriana* (Semialba Color Group) ‘Spotwood Firestorm Spirit’ AM/AOS; exhibitor: Christian Carrillo; photographer: Maurice Maurietti.
- [2] Growth and flowering habit of *C. walkeriana*. Red arrows labeled 1 and 3 are successive non-flowering typical pseudobulbs. Blue arrows labeled 2 are successive leafless flowering growths. What appears to be a root at the top of the upper flowering growth is last year’s spent inflorescence. The inset is a close-up showing the shape of the leafless flowering growth. Once flowering ends, this growth will produce roots and the new growth eye will erupt from its base.
- [3] The typical pink form of the species.
- [4] *C. walkeriana* (Coerulea Color Group) ‘Midnight Blue’ HCC/AOS exemplifies the so-called blue forms of the species. Exhibitor: Odom’s Orchids.

blushing of purple on the margins of the lip side lobes. The most common color form is pink, although there are also alba (white) and coerulea (blue) forms (check out *OrchidPro* for wonderful images).

The sepals and petals, as well as the lip, vary greatly — some broad and some are narrow.

Plants may bloom from December to March depending, most likely, on temperature or light levels. There are over 100 AOS awards since 1971 with the first to *C. walkeriana* ‘Elly’ CCM/AOS, which was grown by Edward W. Cavin from the Jacksonville Orchid Society.

CULTURE Living in South Florida, my plant benefits from morning dew, providing necessary humidity. From November to April, I dip the basket once a week in a bucket of rainwater. I then spray it with 10–10–7 (NPK) fertilizer diluted to ½ the recommended dose. It hangs under an orange tree, so the medium dries out quickly. During the summer months, the plant is taken care of by Mother Nature and like in its native habitat, it enjoys the rainy season. Growers of *C. walkeriana* recommend growing plants in a basket or mounted on driftwood rather than confining them to a pot. Provide moderate humidity and good air circulation. Mounted plants should be misted daily during active growth. Do not let them dry out for extended periods.

I have since purchased a couple more plants from Quintal Farms while in Hawaii, but they are still adapting to a warmer Florida climate and probably do not get fed as heavily as they were in the nursery.



GLEN BARFIELD
5

I have found that many orchid species can take about two years to acclimatize to my environment.

— Judith Rapacz-Hasler is a member of the AOS editorial board, spending half the year on Florida’s west coast and the remainder in Europe (email: jorapacz@wisc.edu).

[5] *C. walkeriana* (Alba Color Group) ‘Mauna Kea’ HCC/AOS is a good example of the pure white form of the species. Exhibitor: Ben Oliveros and Orchid Eros.

Cattleya walkeriana? Maybe, maybe not.

MANY OF THE *C. walkeriana* in today’s collections do not fit the type description; exhibiting traits that strongly suggest hybrid origin. Clones that fit the type description exhibit several key characteristics that include:

- Very small, triangular lip side lobes that extend less than a quarter the length of the column, tightly appressed to the column, flaring only near their ends.
- More often than not unifoliate.
- Short, relatively fat pseudobulbs.
- Rarely, if ever, flowering from a growth that also produces a leaf.
- A more or less kidney-shaped lip midlobe that is not deeply cleft.
- Any yellow color on the lip confined to a chevron on the lip midlobe — not extending up around around the margins of the sidelobes.

Hybrid origin is not surprising considering the fact that *C. nobilior* was once described as a varietal form of *C. walkeriana* as was *C. × dolosa* (the natural hybrid of *C. loddigesii* and *C. walkeriana*).

True-to-type *C. walkeriana* tend to exhibit a sharp fall blooming season while those of hybrid origin extend well into the spring months. The lip side lobes of hybrid plants are much larger, fuller and present a much larger forward-facing surface area. Flowering from the apex of normal pseudobulbs as well as pseudobulbs with two leaves are quite common. Lastly, a bright yellow overlay may be present not only on the lip midlobe but all the way up the side lobes covering most of the flat surface and the lip midlobe may be distinctly cleft.

The upper photograph to the right is what has long been known as *C. walkeriana* ‘Kenny’ FCC/AOS; a plant of clear hybrid origin. Although impossible to completely know for sure, the best assessment of this is that it is a semialba form of *C. Snow Blind* (Angelwalker × *walkeriana*) and the award record has been changed to reflect that determination. The flower on the lower right was awarded as *C. walkeriana* (Alba) ‘Cedarwood’s First Snow’ AM/AOS and is clearly dolosa-influenced if not *C. Dolosa* (the manmade hybrid of *walkeriana* and *loddigesii*). — Ron McHatton (rmchatton@aos.org)



MAURICE MARIETTI



MALCOLM MCCORQUODALE

The SITF at Work

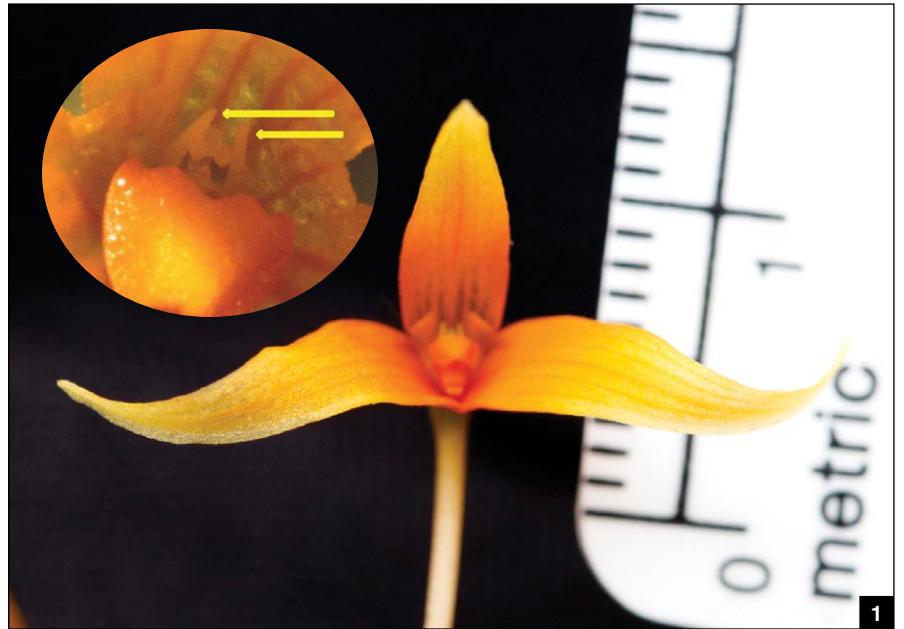
by Joe Bryson and Ron McHatton

Bulbophyllum longistelidium

THE SITF, A small group of dedicated volunteers and staff, supports the AOS judging centers with research and verification of species which have received provisional awards. Sometimes this is a relatively easy task given high resolution photographs and complete, detailed data such as the specimen's source or country of origin, plant measurements including leaf length, width, shape of the leaf apices, pseudobulb sizes and forms, and other useful data (even the color of root tips may be important). At other times, many hours of research and requests for more data may be required to clear an award. A case in point was our search to validate two *Bulbophyllum longistelidium* we received in 2019 and 2020.

Bulbophyllum longistelidium was described by H. N. Ridley in 1924, a well-known English botanist and naturalist who was First Scientific Director of the Botanical Gardens in Singapore. The species belongs to section *Macrocaulia*, a group of more or less 68 species, and is found in peninsular Malaysia, western Sumatera (the Indonesian spelling of Sumatra) and Sabah, Borneo in high forest areas as a miniature-sized, cool growing epiphyte.

The task force received the first plant in May of 2019. The species is named for the long stelidia, hornlike projections from the apical margins of the column. These projections are almost impossible to see without good, detailed photos of the column clearly showing the apex and from an angle that shows the stelidia. The horns are key to separating *Bulb. longistelidium* from a very similar species *Bulbophyllum cernuum* and the photos provided did not show a good, well-focused view of the column. A request was made of the exhibitor to provide more detailed photos of the column; however, the exhibitor explained the plant had been moved across the country and had skipped its normal blooming, so a new photograph would have to wait until the plant could be rebloomed. More than a year went by without further progress in the identification of this submission. Then a very fortuitous thing happened, we received another provisional award to a different *Bulbophyllum longistelidium* in October of 2020. This plant was submitted with excellent, high resolution images of



the flower, including the column with the identifying long stelidia clearly visible and we were able to confirm this as correctly identified very quickly.

Armed with the photographs from the second submission and knowing what to expect, the photographs from the first submission were re-examined and the team could make out two yellow projections, one on either side of the column, that appeared to be the stelidia standing upright looking from below the column toward the back of the flower. The team was then able, with the aid of the perspective provided from the second plant, to identify and confirm the validity of the first *Bulbophyllum longistelidium*, nearly a year-and-a-half after we began our research. This illustrates why detailed, quality photographs are so very important to the task force — one exhibitor's award took 18 months to clear while another's less than a month solely because of the quality and detail of the photographs provided

Further Reading

Internet Orchid Species Photo Encyclopedia (IOSPE); <http://www.orchidspecies.com>. Accessed November 2020.

Vermeulen, J.J., P. O'Byrne, and A. Lamb 2015. *Bulbophyllum of Borneo*. Natural History Publications, Kota Kinabalu, Borneo.

WCSP 2020. *World Checklist of Selected Plant Families*. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://wmsp.science.kew.org/> Accessed November 2020.

— Joe Bryson is the current chair of the



- [1] Flower photograph submitted with the first award. The inset is the clear, detailed photograph showing the two long stelidia (yellow arrows) on the column. Once you know where to look, they can be just made out in the original submission.
- [2] Photograph of the entire blooming plant submitted with the first award submission.

Species Identification Task Force and Ron McHatton, a member of the task force, is the AOS Chief Education and Science Officer and editor of Orchids Magazine (email: rmchatton@aos.org).

PHYLLOSTICTA/GUIGNARDIA



QUESTION

I have had a vanda for three years and noticed a lot of dark streaky spots on multiple leaves. What is this? The plant also has black ants. What should I do for them?

ANSWER

We get lots of questions about this sort of leaf spotting in vandas. It is a fungal disease called *Guignardia/Phyllosticta* (once thought to be separate diseases but are really the male and female forms of the same fungal agent) and occurs more in warm, humid environments or in winter in green houses with high humidity. It is water borne and spreads from plant to plant quickly. Infected plants may look perfectly fine for long periods if the plants are not stressed and then during periods of stress (too dry, too wet, too cold, etc.), these darkish purple spots and streaks quickly appear and may cover quite an extensive portion of the plant.

The first signs of *Guignardia* infection are tiny, dark purple, elongated lesions on either leaf surface. These lesions run parallel to the veins and elongate into purple streaks or diamond-shaped areas. Spots often merge to form large irregular lesions that may affect a large part of the leaf. With age, the center of the lesion turns tan. Raised, black sporing bodies develop in the affected area feeling like sandpaper.

Treatment consists of spraying the plants with suitable fungicides containing copper or quaternary ammonium compounds such as Soluble Copper, Phytan 27, Phyan, Daconil, Cleary's 3336 or thiomyl (the same active ingredient as Cleary's 3336) or one of the newer

fungicides such as Heritage or Pagaent following label instructions. If the fungus is a continuing problem, monthly to quarterly fungicide applications may offer effective control.

Prevention includes minimizing leaf wetness — water standing on the leaves may lead to infection — and increasing air movement, especially during periods of excessive humidity. Also practice good sanitation around your plants. Dead leaves and flowers are a common reservoir for problems. Unfortunately, once the damage to foliage is done, the spots will remain until the leaf falls off even if the disease is arrested.

Ants in and among themselves are not really a problem unless they are leaf-cutter ants or biting fire ants. The real problem created by ants is the livestock they bring with them, such as aphids and scale. Baits or ant poisons in containers (bottle lids work well) are picked up and carried back to the nest where they then poison the colony. It is important to make sure that the baits do not get wet as plants are watered and that they are changed often because humidity may render them ineffective rather quickly. If you would rather not use chemicals and wish to try a somewhat more natural solution, a mix of baking soda and powdered sugar may work. The theory behind this approach is that the ants are attracted to the sugar in the bait and consume the mixture (critically important that the sugar is powdered sugar so the ants cannot simply remove the sugar from the bait). Once eaten, the baking soda reacts with the ants' enzymes to release carbon dioxide and literally blows up the ant.

PHALAEENOPSIS REFURBISHMENT



QUESTION

This phalaenopsis has a long bare section below the leaves and where the main part of the root system starts. I peeled several pieces of dried, hard leaf bases away and found short, stubby roots under them. Should I have done this? When I repot, should I cut off part of this from the

bottom and pot the stem deeper?

ANSWER

As phalaenopsis, actually all monopodial orchids, they will naturally lose lower leaves as the stem elongates and this can be accelerated during periods of stress, leaving behind sections of bare stem as you see here.

The roots you found under those dried leaf bases did not develop fully because of insufficient humidity and water at the roots which allowed them to dry out and stop growing.

You can indeed shorten the stem when repotting in order to move the plant further down into the potting mix and encourage new roots to form and grow into the mix. Once you have removed the plant from the pot and removed the old potting medium, look carefully at the stem and roots. You should be able to identify the point at which the stem thins down noticeably with good active roots above it and inactive or dead roots below it. Either cut the inactive portion off or snap it off using your index finger and thumb. Treating the broken or cut surface isn't really necessary but some growers feel more comfortable doing so because it is a cut surface and potential source of fungal infection. Any powdered fungicide will do and even cinnamon powder will afford some protection. This will help stop the spread of disease up through the base of the plant which can lead to loss of the plant.

The correct depth to pot the plant is with the lowermost leaf just resting at the potting medium surface noted by the red arrow in the picture. This may or may not cover all the old roots, which is fine. Those roots that have grown up and away from the potting mix are better left to grow as aerial roots than to damage them getting them down into the new medium and there is no harm in having part of a root exposed to air.

OVERGROWN CATTLEYA

QUESTION

I just purchased this cattleya from a nursery that is closing. As you can see in the photograph, this grossly overgrown plant has foot-long (30+ cm) roots outside the pot although there are a few new roots growing on both new leads (left and right of photo), one of which has a beautiful new bloom. I have three related questions:

First, is it ok to cut these long (dry at bottom and woody toward the rhizome) roots so I can repot?

If I do cut the old roots, will I sacrifice

QUESTIONS AND ANSWERS



the open flower or the sheath that hasn't flowered yet?

Will cutting the rhizome now, dividing the plant into two pieces, will I sacrifice the bloom or sheath?

ANSWER

You should repot cattleyas just as you see new root growth beginning. For bifoliate, that is usually in the middle of the summer and as the growth is preparing to flower. For the single-leaved cattleyas it is usually as the new growth is starting but in some (and this is one of them), new roots form as the buds develop. You can see them just erupting from the base of the maturing growth. You could repot this now or when new growth begins but this is a prime candidate for the trick I have talked about at a couple of chats — putting half a pot (sometimes referred to as an annex pot) in front of the growing leads, let them root into that and then repot after flowering. To do this, get a plastic pot probably 6" in diameter that is about the same height as the one the plant is in now and cut it in half (making half a pot is not necessary if the plant is in a square pot because you can mate another square pot easily against the side of the original pot). Trim all the roots hanging out into space just long enough to reach the bottom of the pot you just cut in half — probably 4–5 inches (10–12.5 cm) long. Put one of the half-pots up against the growing front on the right and tape it (duct tape works well) to the old pot. Put the other half-pot in front of

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.

the growing leads on the left side and do the same. Once firmly taped, fill each of the annex pots with whatever medium you like to grow in and enjoy the plant until flowering is finished and wait for the new growths. I have marked your plant with two red arrows at places that might make good divisions. You need a minimum of three pseudobulbs and preferably four or five in a division so that you minimize the setback and the potential not to flower the next year. The right side is pretty clear because it looks like there is only a single growing lead. I counted back five growths. The left side is a bit harder to see. It looks like there are at least two growing leads and that they join at a pseudobulb that is three growths back. If that is true, the two leads need to be kept in a single division or one of them is going to only have two bulbs and likely not flower next year. It makes the division a little bigger but you get twice the flowers.

If you chose to go the route of annexing pots to let the plant root into new medium, I would cut the rhizome now to make your two divisions. It will not affect anything other than it might stimulate a dormant eye on the backbulb part of the plant and in a few months, you get three plants rather than two. If no growth starts before you actually repot the plant, look carefully at the backbulb part (that part left after you cut off the parts with growing leads) and see if there is a dormant eye anywhere. If there is, you can start that by cutting off all the old roots and standing the backbulbs in about an inch (2.5 cm) of water. You keep the bulbs in that inch (2.5 cm) of water until you see new growth.

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Sylvia Strigari

Brassia verrucosa

Text by Diego Bogarín and Franco Pupulin/Watercolor by Sylvia Strigari

Tribe EPIDENDREAE
Subtribe ONCIDIINAE
Genus BRASSIA R.Br.

Brassia verrucosa Lindl., *Edwards's Bot. Reg.* 26: misc. 36. 1840 and in Bateman, *Orch. Mex. Guat.* sub pl. 22. TYPE: Mexico. A plant exhibited by Messrs. Rollissons of Tooting, *Barker s.n.* (holotype, K?, not located). *Oncidium verrucosum* (Bateman ex Lindl.) Rchb.f. in W.G. Walpers, *Ann. Bot. Syst.* 6: 768. 1863. Heterotypic synonyms: *Brassia brachiata* Lindl. in G. Benth, *Pl. Hartw.*:94. 1842. TYPE: Guatemala: Hacienda de la Laguna, *T. Hartweg s.n.* (holotype, K). *Oncidium brachiatum* (Lindl.) Rchb.f. in W.G. Walpers, *Ann. Bot. Syst.* 6:768. 1863. *Brassia aristata* Lindl., *Edwards's Bot. Reg.* 30:t. 7. 1844. TYPE: Guatemala. *G.U. Skinner s.n.* (holotype, K).

An epiphytic herb or terrestrial among organic litter, caespitose to shortly repent, with a stout rhizome, forming clumps to 40–65 cm tall including the inflorescences, pseudobulbous stems produced 2–3 cm apart. *Roots* fleshy, flexuous, ca. 3 mm in diameter. *Pseudobulbs* ovoid-conic, rough, dark green to yellowish, furrowed, strongly complanate-ancipitous, with 1–2 papyraceous bracts 5–11 × 3–5.5 cm, bifoliate. *Leaves* oblong-elliptic to elliptic-lanceolate, acute, coriaceous, rough, 14.5–30.0 × 2.4–4.5 cm, the midvein strongly prominent abaxially, constricted at the base into a conduplicate petiole. *Inflorescence* a lateral raceme emerging from the base of the pseudobulb, erect or arcuate to 26–60 cm long, simultaneously flowered (from 5–12 flowers), the flowers distichously arranged; peduncle terete, to 30 cm long, provided with 3–5 triangular, acute bracts, to 8 × 4.5 mm. *Flower bracts* triangular, acute, 5.0 × 2.0 mm. *Ovary* pedicellate, to 3 cm long. *Flowers* showy, large, to 25 cm in diameter, spreading, scented, the sepals cream to yellowish with brown stains near the base, the petals cream to yellowish brown spots in the proximal quarter, the lip cream to yellowish, with the callus basally white with bright yellow on the keels and scattered olive green warts along the blade, the column green with brown warts. *Dorsal sepal* free, narrowly lanceolate, basally canaliculate, attenuate, 6.5–13.5 × 0.5–0.7 cm. *Lateral*

sepals similar to the dorsal sepal, linear-lanceolate, attenuate, 7.5–17.5 × 0.6–0.7 cm. *Petals* basally canaliculate and falcate, linear-lanceolate, attenuate, the apices diverging in natural position, acuminate, 4–9 × 0.6–0.8 cm. *Lip* trullate-subpandurate, obscurely trilobate, acuminate, broadest below the middle, verrucose, 3.5–5.2 × 2.4–3.2 cm; disc with two parallel, erect keels, pubescent on interfaces, and two apical, distinct, rounded, diverging teeth. *Column* short, terete, truncate, 7 × 4 mm, the stigma transverse, ventral, the anther apical. *Anther cap* cucullate, ovate, papillose. *Pollinia* two, obovate, on a small elliptic stipe and viscidium.

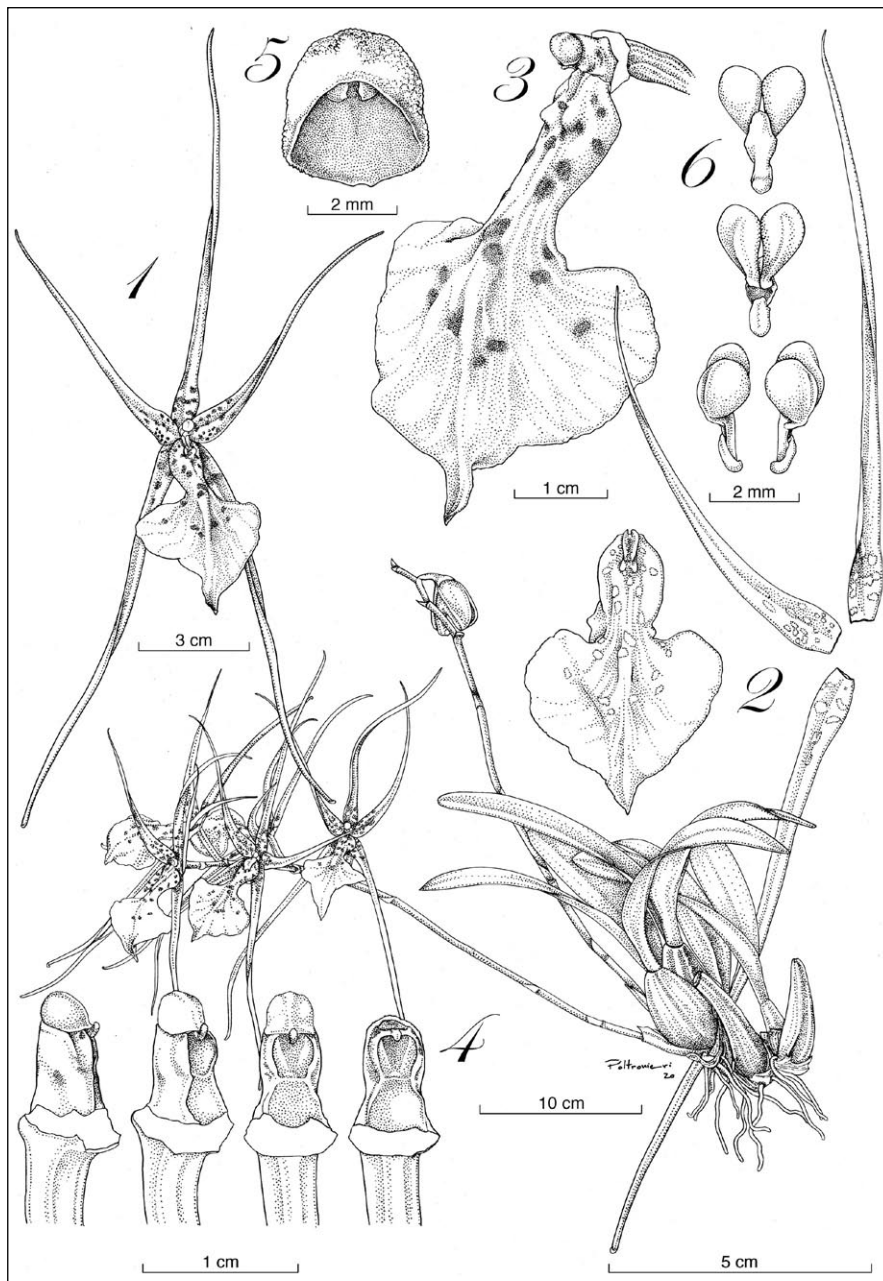
John Lindley described *Brassia verrucosa* in 1840 based on a plant imported from Mexico and exhibited by Messrs. Rollinsons of Tooting at the meeting of the Horticultural Society of London. Lindley noted that the plant showed a graceful habit and greenish yellow flowers with the labellum curiously covered by scattered green warts mainly over its lower parts. Hence, the specific epithet derives from the Latin *verrucosus*, meaning warty, in allusion to those characteristic warts. This species was later featured in a beautiful watercolor in the monumental *The Orchidaceae of Mexico and Guatemala* by James Bateman. Besides the characteristic warty lip, Bateman (1839) noted that the pseudobulbs of *Brassia verrucosa* are more furrowed, rounded and darker green when compared to its congeners. Although these morphological features seem sufficient to distinguish *Brassia verrucosa* among the species of the genus, it is not yet clear whether more warty-lipped brassias can be recognized as distinct species or if a broad concept of *Brs. verrucosa* should be accepted. In fact, Bateman himself first noted a wide morphological variation among the plants later imported from Mexico and Guatemala anticipating that “there are probably many varieties” of *Brs. verrucosa*. Indeed, about six names (heterotypic synonyms) have been attributed to *Brs. verrucosa* including *Brassia aristata* and *Brassia brachiata*, both described from Guatemala by J. Lindley, *Brassia longiloba* A.D.C., and three names added by H.G. Reichenbach: *Brassia cowanii* Lindl., *Brassia coryandra* É.Morren and *Brassia odontoglossoides* Klotzsch and

H.Karst.

This confusion was noted by Mora-Retana (1999) who refused to accept the current synonymy of *Brs. verrucosa* arguing that some of those heterotypic synonyms may apply to different species. She observed that plants from northern Nicaragua have inflorescences with more numerous but smaller flowers with a rather unpleasant scent compared with those from Costa Rica. This observation was taken by Christenson (2003) who treated *Brs. brachiata* and *Brs. verrucosa* as distinct species. He argued that *Brs. brachiata* is characterized by the less numerous, but larger, sweetly scented flowers and ranges from Guatemala to Panama, whereas the true *Brs. verrucosa* ranges from Mexico to Nicaragua and is recognized by the densely flowered racemes bearing 10 to 20 flowers decreasing in size toward the apex of the rachis. However, this interpretation was not based on a large sampling of individuals across their geographical range and it lacks the citation of vouchered specimens supporting his hypothesis.

The morphological variation of *Brs. verrucosa* was also noted by Dressler and Williams (2003) who saw no clear distinction to separate *Brs. verrucosa* and *Brassia gireoudiana* (an endemic to Costa Rica and western Panama). Therefore, they proposed *Brs. gireoudiana* as a subspecies of *Brs. verrucosa*. Nonetheless, both species are morphologically distinct as it was recognized by Dressler (2003) in the *Manual de Plantas de Costa Rica*. Dressler (2003) and Pupulin and Bogarín (2005) distinguished *Brs. gireoudiana* from *Brs. verrucosa* by its inflorescences developed from the young, light green pseudobulbs, the petals with a chocolate brown stain at the base, and the absence of warts on the lip. On the other side, *Brs. verrucosa* produces inflorescences from the mature, dark green-yellowish pseudobulbs, and shows dark brown spotted petals and a warty lip. Evidently, the taxonomy of the warty-lipped brassias remains controversial despite that the plants are widely cultivated as ornamentals and possess large, showy flowers.

Plants of *Brs. verrucosa* inhabit the cloud montane forests from 1,000–2,000 m elevation from Mexico to Costa Rica and



Brassia verrucosa. The plant.

1. Flower.
2. Dissected perianth.
3. Column and lip, three-quarters view.
4. Column, side and ventral views.
5. Anther cap.
6. Pollinarium.

Drawn from *D. Bogarín 12815* by Sara Poltronieri.

possibly extending toward western Panama. They grow as epiphytes in the canopy of forests dominated by *Quercus* and *Magnolia* or as terrestrials among organic litter when they possibly fall from dead branches of the trees. Likely, *Br. verrucosa* belongs to a group of species of northern Mesoamerican distribution whose southern limit is Costa Rica and western Panama. In Costa Rica, it has been found growing with species of other genera well-represented in northern Mesoamerica and Mexico, such as *Cuitlauzina*, *Rhynchostele*, *Rossioglossum* and *Prosthechea varicosa*. The plant depicted here was found in the cloud forest along the Pacific watershed of Cordillera de Talamanca, Costa Rica. In turn, the similar *Br. gireoudiana* inhabit the premontane wet forest usually at lower

elevations. Further investigations should focus on the areas where *Br. gireoudiana* and *Br. verrucosa* possibly overlap to determine potential hybridization events (Dressler and Williams 2003).

The genus *Brassia* R.Br. in the strict sense belongs to the Oncidiinae subtribe and contains about 35 species distributed from Florida to Mexico, Central America through Peru and Bolivia. It is phylogenetically related to *Ada*, *Aspasia*, *Brachtia* and *Mesospinidium* and more distantly to *Oncidium* (Neubig et al. 2012) Because of the similarity of the plants with the later genus, H.G. Reichenbach transferred *Br. verrucosa* to the genus *Oncidium*, but subsequent authors have not followed this proposal, which is also not supported by phylogenetic studies.

The brassias are also known as spider orchids because of their long-tailed sepals that for our imagination resemble spiders. Interestingly, plants of *Brassia* are pollinated by solitary female pompilid wasps of the genus *Pepsis* also known as spider-hunting wasps and scoliid wasps of the genus *Campsomeris* (Pijl and Dodson 1966). However, the hypothesis that, because of the mimicry of the flowers with spiders, the wasps attempt to sting them as they do when they find a spider-prey, has not been tested with solid evidence. Ospina et al. (2007) suggested that wasps are potential pollinators of *Brassia antherotes* in Colombia that might be attracted by the fragrance of the flowers while searching for rewards. Certainly, most brassias are very fragrant, such as the sweet-smelling *Brassia suavissima* Pupulin and Bogarín also featured in the *Refugium Botanicum* (Pupulin et al. 2015) and they show a hairy callus just in front of the short column suggesting that they provide potential rewards for pollinators. In *Br. verrucosa* the characteristic warts on the lip might suggest food-mimicry or possible rewards.

Plants of *Br. verrucosa* grow best in large baskets or pots where they can develop into elegant, large specimens producing several inflorescences. In general, the plants are slow growers but they are of easy cultivation and their growing conditions are similar to other Oncidiinae plants such as oncidiums and the former odontoglossums. Plants need cool conditions, especially during the night combined with good light and ventilation during the day. A slightly dry period is necessary to stimulate flowering, which usually occurs from December to May.

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Selected Botanical Terms

abaxial – lower or reverse surface
 acuminate – tapering to a long point
 acute – pointed
 adaxial – upper or front surface
 ancipitous – with distinct, flattened edges
 arcuate – curved, shaped like a bow
 attenuate – tapering gradually to a narrow point
 bifoliate – having two leaves
 caespitose – clumping
 caniculate – grooved longitudinally
 caudicle – slender stalk of the pollen masses
 complanate – held in a single plane
 conduplicate – folded lengthwise
 coriaceous – leathery
 cucullate – hooded
 distichous – arranged in two rows
 elliptic – oval
 epiphyte - growing on another plant for support and not as a parasite
 falcate – sickle-shapes
 flexuous – full of bends and curves, sinuous
 lanceolate – narrow oval tapering to a point at each end
 oblanceolate - narrow at attachment, rounded apically
 obovate – egg-shaped with the wide end up
 ovate – egg-shaped, narrow end up
 pandurate – fiddle-shaped
 papillose – covered in small, nipplelike projections
 papyraceous – dry, papery
 pedicel – a stem carrying a single flower
 peduncle – main stalk of the inflorescence
 petiole – stalk connecting leaf to stem
 pubescent – covered in fine hairs
 raceme – cluster of pedicellate flowers
 repent – creeping
 stipe – supporting stalk or stemlike structure
 sub – somewhat less than; i.e., subspherical would refer to almost but not quite a sphere
 terete - cylindrical or pencil-shaped
 trilobate – having three lobes
 trullate – inverse kite-shaped
 truncate – terminated abruptly as if cut off
 unifoliate – having one leaf
 viscidium – sticky pad to which orchid pollinia are attached.

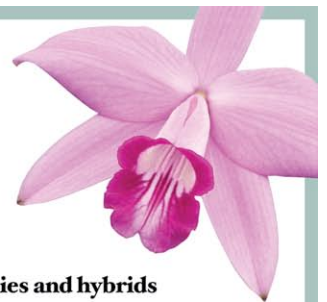
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Orchid Eros and Ben Oliveros

Text and photographs by Thomas Mirenda

TO THE OUTSIDE world, the verdant eastern slopes of Hawaii Island may seem mostly like sleepy, rural countryside, at least while Kilauea is sleeping. But in the short time I have lived here, I have come to the realization that some of the real movers and shakers of the orchid world have settled here. It may come as scant surprise that the year-round, sweet-spot growing conditions on the Big Island support the endeavors of our local orchid growers and breeders to supply the rest of the orchid world with fantastic budded and blooming plants. What is less evident is that a substantial amount of innovation also occurs here with spectacular new orchids being generated by enthusiastic and intrepid breeders. With breeders often producing their inventions in smaller quantities than mainland orchid factories, Big Island breeding may be harder to acquire, but nonetheless extremely desirable to all members of the orchid world.



Thomas Mirenda

Among the exceptional specialized nurseries here, nestled on an agricultural side road in the evocatively named Eden Roc subdivision, is Orchid Eros, owned and operated by Ben Oliveros. Although Ben's plants are well known by Floridians that regularly attend the Tamiami show and the Redland festival, much of the rest of the world may not be aware of his "under-the-radar" innovations. Well networked to fine cattleya breeders around the world, this seemingly modest operation has been investing in, and collecting, some of the finest and rarest clones of Cattleya Alliance species and hybrids that you have likely never seen before, from his network of friends in South America. Ben uses this amazing collection of often one-of-a-kind plants to produce seedlings of varieties and forms of species that you would never be able to obtain any other way. Even if you knew where to look and whom to ask, you might have to pay thousands of dollars to obtain divisions of these rare, unique forms, tucked away in private South American collections. Because he



does not clone his plants, they will remain rare and highly desirable by collectors. The seedlings he offers are all genetically distinct and likely to produce wonderful and unique plants just the same way a wild population would.

Still a young man with a beautiful young family, Ben has been an orchid enthusiast since his youth. While attending school for an agricultural degree, he realized early on that his true goal was to grow orchids and that there really was not much to be gained by continuing that particular educational path. Kind of like

Bill Gates! So, ever the pragmatist, Ben set out to learn from some of the best orchid growers of the world by visiting and apprenticing with them. After a visit here touring Big Island nurseries, he accepted a position with the legendary Quintal Farms in Kurtistown, where he absorbed much practical knowledge with the hands-on training he got in one of the greatest nurseries on the island. While he and his lovely wife Mirtha were expecting their first child, he knew he had to start his own endeavor, Ben purchased some nearby property up the road, built his

incredible circular house and put up his own nursery. Clearly Ben is a guy with a lot of drive and energy.

Although Ben owned a collection of interesting and unusual orchid species he really loved, including many bulbophyllums and angraecoids, he realized he would have to specialize if his nursery was to be successful. He settled on producing fine *Cattleya* Alliance species and hybrids. This may seem an odd choice as most cattleyas can take upwards of seven years to mature, which is why most other nurseries focus on phalaenopsis, oncidiums and dendrobiums that bloom much earlier in their development. But Ben is playing the long game with his interesting and innovative breeding lines. Indeed, in recent years, many of his rare species forms and hybrids have wowed the judges in the Hilo judging center and been granted many flower quality awards and Certificates of Cultural Excellence, most of which are proudly named for his wife and children, probably to make up for occasionally using them as labor on packing days.

Among the breeding lines produced from his awesome collection are hybrids made from the rupicolous- and sophronitis-type cattleyas, line-bred forms of many attractive species such as *Cattleya dowiana*, *Cattleya lueddemanniana*, *Cattleya maxima*, *Cattleya perrinii*, *Cattleya pumila*, *Cattleya schilleriana*, *Cattleya velutina*, *Cattleya violacea*, *Cattleya walkeriana* and more, as well as fine forms of brassavolas and guarianthes. Another area of focus has been his breeding with the tall bifoliate *Cattleya bicolor* to create some stunning awarded hybrids such as his *Cattleya* Harriet Brickell.

In the end, we should all be grateful to guys like Ben who are perpetuating and producing these really rare plants so that many of us can grow and enjoy rare and lovely forms of species that would otherwise be impossible to find without spending a fortune. It fills me with wonder that there are such incredible marvels to be found on sleepy country roads, in modest facilities operated by committed people who love what they do, and it makes me incredibly proud to be a part of the astonishing Big Island Orchid Scene.

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

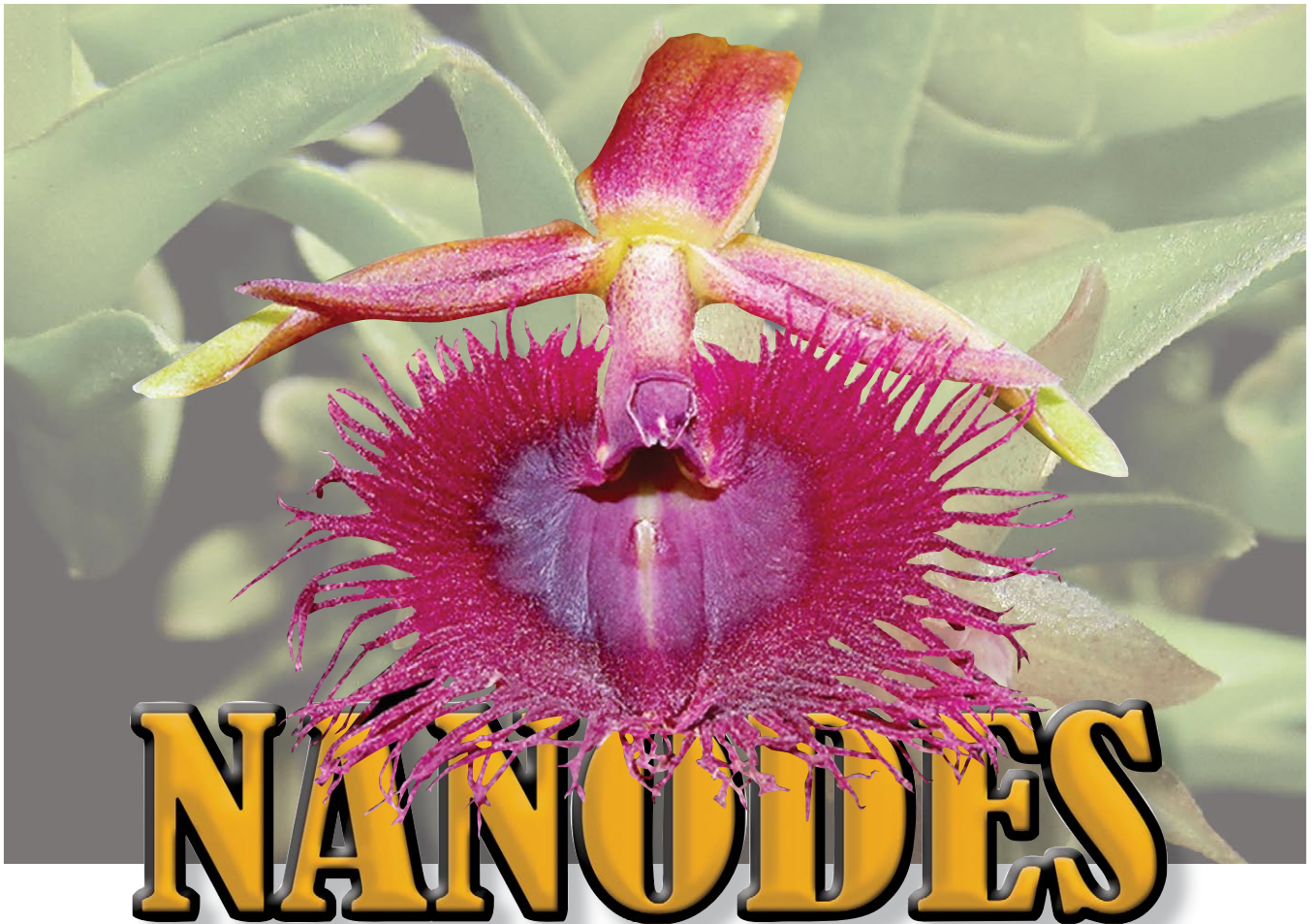


- [1] Ben Oliveros holding one of his line-bred *Cattleya praestans*.
- [2] A small selection of Ben's award-winning strain of *Cattleya Pole Star* (*coccinea* × *briegeri*)
- [3] Ben's *Cattleya bicolor* breeding is producing some simply stunning progeny. Pictured here is a bright red *Rhyncholaeliocattleya* Harriet Brickell (Sydney Southwick × *C. bicolor*). Seedlings run the gamut from orange tones with contrasting red-purple lips through all manner of metallic red-purples, copper tones and even bright red.
- [4] A small selection of line-bred *Cattleya dormaniana* seedlings.
- [5] An orange example of *Rlc.* Harriet Brickell.



Epidendrum subgenus *Nanodes* by Wesley Higgins and Peggy Alrich

A Tropical American Group



THE GENUS *NANODES* was described by Lindley based on the small-flowered species *Nanodes discolor* introduced from Rio de Janeiro, Brazil; *Edwards's Bot. Reg.*, 18:t.1541 (1832). Reichenbach added the far more attractive species *Nanodes medusae* Rchb.f. Then Bentham referred these species to *Epidendrum* section *Euepidendrum* subsection *Nanæ* (in obs); *Gen. Pl.* [Bentham and Hooker f.] III. pg. 531 (1883). James H. Veitch subsequently placed the species in *Epidendrum* subgenus *Nanodes* (Bentham) J.H.Veitch (in obs); *A Manual of Orchidaceous Plants Cultivated Under Glass In Great Britain*, Part-VI: p.129, 1890.

Epidendrum is a large Neotropical genus of more than 1,500 species, and there is the question of whether it is advisable to split up *Epidendrum* into sections or genera. In its current circumscription, *Epidendrum* is a monophyletic genus. Hágsater (1984) suggested that *Epidendrum* could be divided into 40 distinctive natural

groups. However, with the advent of DNA phylogenetic studies it became evident that if *Epidendrum* was split, many new generic names would be required to maintain monophyletic genera. The phylogeny presented in *Genera Orchidacearum* (2006) shows *Nanodes* sister to *Stenoglossum/Spathium*. *Nanodes* forms a single group within the genus *Epidendrum*.

Epidendrum* subgenus *Nanodes

Fifteen epiphytic species are found in humid, midelevation, montane cloud forests characterized by caespitose to creeping sympodial plants with the short stems enveloped completely by the base of the nonarticulate, fleshy-succulent, imbricate leaves with flowers borne singly or in pairs, sessile at the apex of the short stems.

TYPE SPECIES *Epidendrum schlechterianum* Ames 1924 (Basionym/Replacement for *Nanodes discolor*.)

ETYMOLOGY *Nanodes*-Greek for pygmy; referring to the very small size, of

both the plant and flowers.

DISTRIBUTION Mexico to Peru, Trinidad, Venezuela, the Guianas and Brazil.

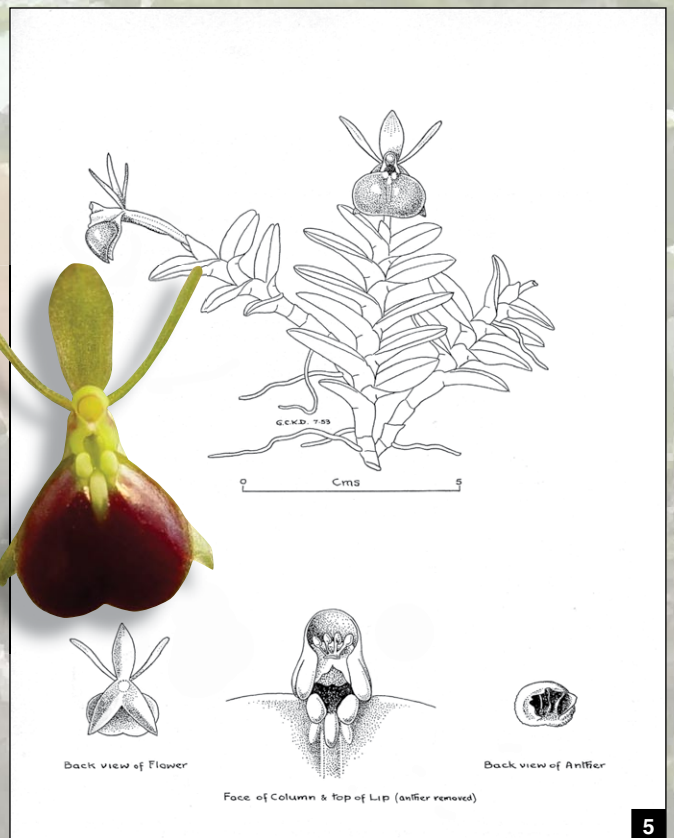
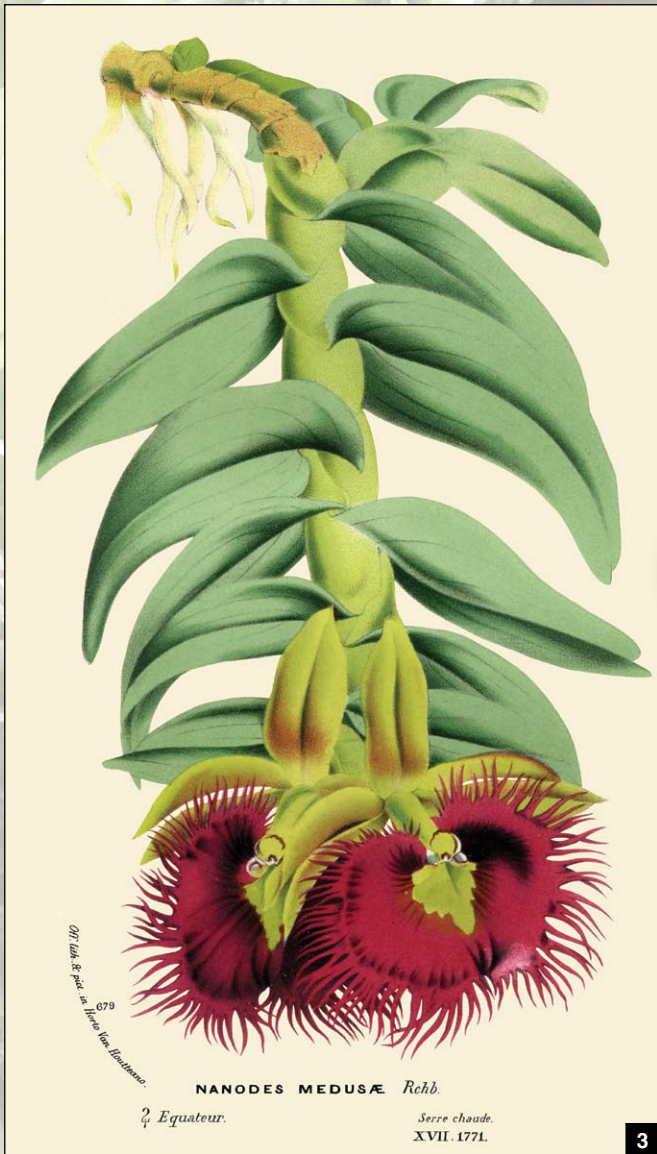
SPECIES

- Epidendrum brevicaule* Schltr.
- Epidendrum congestum* Rolfe
- Epidendrum geminatum* Schltr.
- Epidendrum iltisorum* Dodson
- Epidendrum longirepens* (C. Schweinf.) C. Schweinf.
- Epidendrum medusae* (Rchb. f.) Pfitzer
- Epidendrum microcattleya* (Kraenzl.) Schltr.
- Epidendrum microcattleyioides* D.E.Benn. and Christenson
- Epidendrum oxynanodes* Hágsater
- Epidendrum riverae* Hágsater
- Epidendrum schizoclinandrium* D.E.Benn. and Christenson
- Epidendrum schlechterianum* Ames
- Epidendrum serruliferum* Schltr.
- Epidendrum tachirense* Foldats
- Epidendrum uleinanodes* Hágsater



W. Fitch, del. et lith.

Vincent Brooks, Day & Son, Imp.



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Antique Plates — *Nanodes*

- [1] *Epidendrum medusea* as *Nanodes medusea*, *Lindenia*, 4:t.147 (1888).
- [2] *Epidendrum medusea* as *Nanodes medusae*, *Botanical Magazine*, 94:t.5723 (1868).
- [3] *Epidendrum medusea* as *Nanodes medusae*, *Flore des Serres et des Jardins de l'Europe*, 17:t.1771 (1868).
- [4] *Epidendrum schlechterianum* as *Nanodes schlechterianum*, *Botanical Register*, 18:t.1541 (1832).
- [5] *Epidendrum porpax* as *Nanodes porpax*, *Venezuelan Orchids Illustrated*, 1:t.122 (1959).

Orchids Magazine Archives by Jean Allen-Ikeson



A FEW YEARS ago, with the advent of digitizing *Orchids*, the Archives Project rolled out digital copies of most of the magazine issues back to its inception. Equally important, the AOS started indexing the magazines so that they could be searched by keywords. This was a huge advance and was celebrated in this column.

Unfortunately, technology has its risks (malicious hacks) and the specter of obsolescence of programs. Both of these hit the archives badly. The unexpected pending demise of Adobe's Flash Player, which allows you to turn pages and read the magazine, meant that, suddenly, many people were seeing double when they found themselves viewing many of the issues in html.

This was a blow to members looking for articles on culture or particular species and hybrids, but also to judges writing papers and doing homework — or anyone doing research for talks that enrich orchid societies everywhere. The American Orchid Society Board of Trustees and Officers, supporting its mandate for education, stepped up last winter with the funds to convert *all* the back issues (to 1932!) not already completed to the new format, correct missing issues or errors with issues and fully index the back issues *before the end of 2020*.



- [1] Search box for the magazine archives. The simplest search is to put in a keyword. You may also click search for photographs only to find a photo of a plant or flower not in *OrchidPro*.
- [2] The result for searching for “hybridizer” produced the wonderful article by Frank Fordyce called “The Importance of Research” — it is a classic, well worth reading, and research is, of course, at the core of the American Orchid Society, *OrchidPro* and *Orchids* magazine.

Equally exciting was the go-ahead to digitize and index the once-published, standalone scientific journal of the AOS, *Lindleyana*. At this writing, the project is nearly complete with just a bit of cleanup of missing issues to be added.

HOW DO YOU ACCESS THE ARCHIVES? Go to aos.org and sign in, as the archives are a membership benefit. Go to the page for *Orchids* magazine (click on the magazine icon or look for it under "About Us" tab). You will see a section for searching the Archives close to the top of the page. You can enter the words for which you want search results in these boxes. Note that your search may include photos and articles as well as either separately. The search will order the results in order of how closely they match what you write in the search box. Note that searching for something as broad as "culture" or "cattleya" is probably too broad a search.

While you are on the main website page for the magazine, if you scroll farther down, you will find a series of dates with faint arrows on either end of the series. Clicking either arrow will help you scroll to the year in which you are interested. Below this line of dates, the individual issues for any date that you click on

will appear. Be patient, sometimes the website gets busy or your home internet may be a little slow at the moment, so it may take a few seconds for the screen to refresh with your results. Clicking on any issue will open it.

The left side of the screen has pages in the issue so that you can quickly scroll to the thumbnail of the page for which you are looking. Below the enlarged picture of two full pages, on the right there is a symbol that looks like a magnifying glass with a plus sign in it. Click on that and it will enlarge a single page so that it is easy to read. You may have to scroll down a bit to get the lower portion of the page.

Arrows either side of the page allow you to advance or go back a page. You may go back to the two-page view at any time by clicking on the minus sign that now shows in the magnifying glass.

As we approach the Centennial of the AOS in 2021, what a gift that a completely searchable archive is to the membership and anyone wanting to take advantage of archival research, even for something as simple as finding a photo of a hybrid or species that may not be in *OrchidPro*.

I know it may sound corny, but the AOS is constantly working to enrich the membership experience and the

searchable archive gives all members access to the wonders of orchids as published in the magazine. Thank you to the IT Committee for organizing this project and Ron McHatton for helping replace missing issues! And what a gift this is to judges in training to have nearly 90 years of articles available for research! Judges: these archives are one of the cornerstone resources for a national judging education program. What a bonus!

— *Jean Allen-Ikeson is the Chair of the AOS editorial board, the education coordinator for the Toronto judging center and the AOS National Education Coordinator (email: jean.ikeson@gmail.com).*



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Photograph of the Week

The Best of the Best

Greg Allikas



TEN YEARS AGO we began posting a “photo of the week” to the AOS website. Since then, 13,216 orchid photographs have been submitted, as of November 6, 2020, to a group on the photo sharing website Flickr. Each week, one is chosen for our website. It is the beauty and complexity of orchids that inspires us to grow them and travel to the far reaches of the globe to photograph them. Each year the quality of the images improves and this year is no exception. Some of the contributors have been with us since the beginning, some for a few years and a few have begun sharing images with us just recently. Thanks to all of them for sharing their vision. Through photographers’ regular submissions to The Orchid Photo of the Week pool we are able to publish this feature for AOS members.

If you have photographs that capture the beauty of orchids or know someone who does, follow the link on the AOS homepage for complete instructions for submitting photos. AOS membership is not required and Flickr accounts are free. — *Greg Allikas, past Editorial Board*

Ponerorchis graminifolia
Photograph by Joost Riksen

There are a lot of selections from *Ponerorchis graminifolia*, but I think this is a wild type. It is much smaller than the selections I have, about 4.75 inches (12 cm) tall at most and it produces less flowers and hardly makes any extra tubers. But still, it proves that miniature orchids can be amazing too.



ABOVE:

Cattleya percivaliana varieties

Photograph by Emmi Mattes

Back row right to left:

Cattleya percivaliana 'Summit'

FCC/AOS; *Cattleya percivaliana*

f. *alba*, possibly 'Sonia de

Urbano' but I unfortunately

cannot say for sure; *Cattleya*

percivaliana 'Bodenseeperle' BM

(A)/DOG (Deutsche Orchideen

Gesellschaft). Lower right front:

Cattleya percivaliana (Semialba)

'Carache'.

The plants stand and hang on the east and northeast side of my greenhouse in the temperate area. After flowering, I keep the plants dry during the rest period until the first new growths appear. At that time, water and fertilizer additions are slowly increased.

RIGHT:

Cypripedium macranthos

Photograph by Motohiro Sunouchi

This fascinating species is a local variety of *Cypripedium macranthos* that is endemic to Rebun Island in the Sea of Japan, known as flower island.





Catasetum atratum

Photograph by Luiz Filipe Varella

This picture of *Catasetum atratum* was taken at my orchid nursery. *Catasetum atratum* is a native of my State (Rio Grande do Sul, Brazil) that blooms at the end of spring and beginning of summer. It is usually found in Restinga forest, a moist tropical and subtropical broadleaf forest near sea level along the eastern and southern coasts of Brazil.

Maxillaria platyloba

Photograph by David Haelterman

This uncommon *Maxillaria platyloba* was photographed in the high and cold mountains of the Cordillera Occidental in the Department of Valle del Cauca, Colombia at around 9,170 feet (2,800 m) while exploring the area for a forthcoming book about the orchids of Farallones de Cali National Park. The book will be published in December of 2020 with three other authors including the Director of the National Parks of the Pacific Ocean watershed.





Lepanthes rodrigo
Photograph by Juan Sebastián
Moreno

This picture was taken in
situ, in Urrao in the department
of Antioquia, Colombia, the only
place so far where you can find
this amazing species.



Phragmipedium Memoria Dick
Clements (*sargentianum* × *besseae*)
Photographed by Sabine
Furtwaengler

My best friend bought it as a young plant around 2012. When he got very sick, he gave me the plant. I have had it now for about 4.5 years. The plant grows in my living room between at 64–70 F (18–21 C) with light from a southwest window. I keep about 0.4 inch (1 cm) of water in the lower bowl. It is fertilized with a fertilizer solution of 200–300 ms EC (128–200 ppm TDS). It always produces 2–3 flower stems.

Right now the plant is making 2 flower stems again which it does several times a year.

Stelis microchila
Photograph by Sebastián Vieira

I photographed this *Stelis microchila* growing on a branch of a fallen tree, above the water of a creek on the western slope of the Andes around 4,600 feet (1,400 m) above sea level. It was partially exposed to the sun and kept humid by the moving water below and the frequent rains.





Bulbophyllum kubahense
Photograph by Motohiro Sunouchi
The jewel in the rainforest of Borneo.

Laelia anceps

and Some of its Notable Hybrids

FRED CLARKE

LAELIA ANCEPS IS the most beautiful of the Mexican laelias. The star-shaped flowers on graceful long, arched inflorescences contribute to its intrinsic charm. *Laelia anceps* has many different color forms and several varieties, all adding to its collectability.

This species has a large natural range and occurs widely along the Sierra Madre Oriental (east) mountain range from the state of Tamaulipas down to Oaxaca, with small populations of several varieties found in the states of Guerrero and Jalisco on the Pacific side of the Sierra Madre del Sur (south).

Plants of *L. anceps* are robust and tolerate a wide range of temperatures. They are generally found in humid oak forests at elevations from 4,000 to 6,000 feet (1,220–1830 m) where temperatures range from the low 30s to 100 F (0–37.8 C). This makes them popular with hobbyists in coastal Southern California, as *L. anceps* thrives outdoors in these conditions.

James Rose (1987) cites an 1887 *Gardeners' Chronicle* article (Kienast-Zolly 1887) describing the annual cycle necessary for the successful culture of *Laelia anceps* in this way: "During my long residence in Mexico, I have many a time found plants of *Laelia anceps* growing in my coffee plantation, in the neighborhood of Cordova, in the State of Vera Cruz. I always met with them on the borders of the virgin forests, growing on the trunks of trees and on the very slender branches, exposed to a powerful sun and to strong winds, often also clinging to the rocks covered with the remains of leaves and moss under the same conditions. During the rainy season — from May to October — these plants are daily drenched by the torrents of rain of which they experience the full force, often for five consecutive hours, and are thoroughly wet throughout the night. About 6 o'clock in the morning a sharp and fresh wind coming down from the highest peaks of the Cordilleras — many of which are capped with perpetual snow— begins to dry the plants — a work which the burning sun completes, pitilessly shining on them for several hours, until the daily storm drenches them afresh. Under



WILLIAM ROGERSON

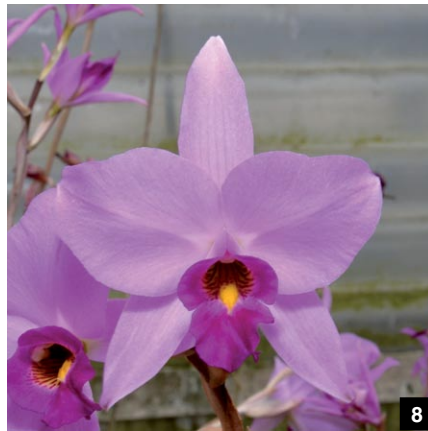


EDUARDO PEREZ

these conditions *Laelia anceps* grows with extraordinary vigour, and flowers about the end of October or November, just at the time when the new bulbs arrive at their perfect development. The rainy season has been over some weeks, and the absence of water, combined with the strong winds, commences to produce an opposite effect; growth stops, the newest bulbs become firm, and ripened so as to prepare the plant for a thorough

[1] The selective breeding of *Laelia anceps* has led to significant improvements. On the left is a typical cultivar that you might find in nature. On the right is the result of polyploid line breeding.

[2] In their natural habitat *Laelia anceps* can get huge. This specimen is over 4 feet (1.25 m) across. Notice the open canopy above the plant, allowing for bright dappled sunlight.



- [3] *Laelia anceps* (Petaloid form) 'Sabine'. This is a rare floral mutation in which the lip resembles the petals, thus "petaloid." Although not a botanical term, it is descriptive.
- [4] *Laelia anceps* var. *veitchiana* 'Neptune Eyes'. *Laelia anceps* var. *veitchiana* describes the coerulea (blue) forms of the species and the clonal name of this plant arose from the cultivars used in its breeding, this is a cross between 'Neptune' x 'Elizabeth's Eyes' AM/AOS.
- [5] *Laelia anceps* f. *alba* 'Malvern'. The alba form has a yellow throat and green veins.
- [6] This form is known as f. *chilapensis* and is from the state of Guerrero. For years it was called by the horticultural name var. Guerrero, and the cultivar 'SVO' HCC/AOS is shown here. Notice the narrow lip and darker color of the petal tips that distinguish this form.
- [7] *Laelia anceps* 'Hot Lips' is a result of recent line breeding focusing on flower shape and beautiful lips. Flower count should always be considered in line breeding, and this cultivar carries six flowers on a single stem.
- [8] *Laelia anceps* 'Ocean Breeze' has outstanding flower shape. It is a cross between a polyploid type and a line-bred diploid.
- [9] *Laelia anceps* subsp. *dawsonii* is found in the states of Guerrero and Jalisco on the Pacific side of the Sierra Madre del Sur, far from the natural habitat of the typical form of the species (subsp. *anceps*). The cultivar shown here is 'Helen' HCC/AOS, a wild-collected plant that has been an excellent breeder at Cal-Orchid in Santa Barbara.
- [10] This clone, 'SanBar Pink Virtue' AM/AOS, is also subsp. *dawsonii*. The Santa Barbara Orchid Estate has been producing fine *L. anceps* cultivars for many years.
- [11] For years this *Laelia anceps* var. *lineata* 'Disciplinata' HCC/AOS has been one of the most collectable of the color forms.
- [12] *Laelia anceps* 'SanBar Super Splash' AM/AOS resulted from a meristem mutation. What a pleasant surprise this must have been for the Santa Barbara Orchid Estate when the flower first opened!



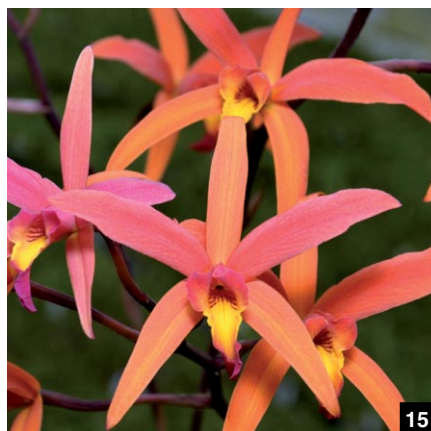
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[13] This is a remake of *Laelia* Finckeniana 'SVO' (*anceps* 'Disciplinata' HCC/AOS × *albida* 'SVO' HCC/AOS). The *L. anceps* used in this cross was a var. *lineata* with dark purple flecks and striations on the petals. We were pleased to see how many of the offspring came out with flowers in darker purple colors. I wonder how these compared to those produced in 1893?



14

[14] *Laelianthe* Wrigleyi 'Orchid Library' (*Gur. bowringiana* [Coerulea] × *L. anceps* var. *veitchiana*). Primary hybrids, crosses between two species, can lead to excellent results. The *bowringiana* parent improved flower shape, broadened the lip and added flower count, while the *anceps* parent brought the floral segments into nice proportion, added to the lip a contrasting yellow throat and dark veins, and improved the flower arrangement along the stem.



15

[15] *Laeliocattleya* Ancibarina 'Herbitra' HCC/AOS (*L. anceps* × *Cattleya cinnabarina*). This hybrid originated in 1914 but undoubtedly was remade in the 1970s. The cultivar 'Herbitra' was exceptional due to its high flower count, ease of growth and most importantly its bright color, a great attribute in a *L. anceps* hybrid. A sister *Lc.* Ancibarina cultivar, 'Rose Dust', was crossed back to *L. anceps*, producing the well-known grex *Lc.* Santa Barbara Sunset.



16

[16] The vigor of *L. anceps* hybrids and the potential for spectacular flowering is evident in David Off's amazing plant of *Lc.* Santa Barbara Sunset 'Showtime' HCC/AOS (*Ancibarina* × *L. anceps*). Photograph courtesy of David Off.



17

[17] *Laeliocattleya* Twilight Song 'SVO' AM/AOS (*L. anceps* × *Cattleya walkeriana*). This primary hybrid exhibits the best qualities of both parents. *Laelia anceps* is dominant for stem quality, flower shape and lip markings and *C. walkeriana* influences the fullness of the lip and petals, along with flower substance. Perhaps unexpectedly, there are 4–5 flowers on a stem!



18



19

[18] *Laeliocattleya* Puppy Love 'True Beauty' HCC/AOS. Of all the *L. anceps* hybrids, perhaps the best-known is *Lc.* Puppy Love (*Cattleya* Dubiosa × *L. anceps*). This grex was popularized by Stewart's Orchids and became so successful that it was patented. Upon viewing Puppy Love in flower for the first time, I recall thinking it was the most beautiful orchid I had ever seen! Even today, when 'True Beauty' blooms it gets my attention.

[19] *Laeliocattleya* Ann Akagi 'Hihimanu' HCC/AOS. Made and registered by H&R

Nurseries, Lc. Ann Akagi (*Lc. Puppy Love* × *Cattleya nobilior*) was one of the early hybrids that came from Puppy Love. Its beautiful soft pink flowers, heavy substance, excellent shape, and long-lived blooms make this a fine example of advanced *L. anceps* breeding.

[20–21] *Rhyncatlaelia* Picotee Passion ‘Amazing’ [20] and *Ryc. Picotee Passion* ‘SVO’ AM/AOS [21]. *Rhyncatlaelia* Picotee Passion (*Rhyncholaeliocattleya* Horizon Flight × *L. anceps*) was bred by the late Frank Fordyce. I purchased several seedlings, and all have been nice, with these two being outstanding. Plants are robust with strong wiry stems carrying 4–6 flowers above the foliage. Every year when ‘Amazing’ blooms I am reminded of how amazing the flower color is.

[22] *Rhyncatlaelia* Dubious George ‘SVO’ HCC/AOS (*C. Dubiosa* × *Rhyncatlaelia* Georgeceps). The contribution made by *C. Dubiosa* (*Iodigeesii* × *trianae*) in the breeding of Puppy Love sometime goes unrecognized. Here Dubiosa was crossed to *Ryc. Georgeceps* (*Rhyncholaeliocattleya* George King × *L. anceps*), producing a combination that resembles a superior Puppy Love. Looks like Dubiosa plays an important part in this cross.

[23] (*Laeliocatanthe* Helen Christie × *L. anceps*) ‘SVO’. Helen Christie (*Cattlianthe* Porcia × *Laelia gouldiana*) is an impressive cross. When bred to *L. anceps* things really got good. Strong upright flower spikes with seven flowers looking a lot like sparkling *anceps* on steroids! It is hard to believe that the background of this cross includes *Cattleya dowiana*, *Cattleya warszewiczii*, *Cattleya loddigesii* and *Gur. bowringiana*.

[24] *Laeliocatanthe* Newberry Fireworks ‘Mendenhall’ HCC/AOS (*Cattlianthe* Island Springs × *L. anceps*). Carter & Holmes developed this great *anceps* cross, and fortunately, they cloned it, so it is now in the hands of many hobbyists. These are easy-growing plants, producing nice arched stems of 4–5 flowers with eye-catching colors.

[25] *Laeliocattleya* Joanna Rose ‘SVO S/A’. This second-generation *anceps* cross (*Cattleya* Melody Fair × *Laeliocattleya* Liptonii) made at H&R Nurseries was tremendous. Flower shape is remarkable, and sturdy arched inflorescences do a good job of holding four flowers above the foliage. The fullness and overall quality of these flowers is an indication of just how successful second-generation *anceps* hybrids can be.

[26] *Laeliocattleya* Melana’s Song ‘SVO’



and necessary rest. About the end of February, from the base of the new bulbs are seen to appear six to ten or more new roots. It is at the time of the short rainy season — the chipichipi of the Indians, the Golden Rain of the Coffee Planters — when very fine rain falls almost like a fog. These young roots eagerly seek the neighbouring debris and moss, but their tips are always in the air. The chipichipi does not saturate the plants, as it is too weak, and hardly able to refresh them: thus the plants rest, getting plenty of repose until the new roots, nourished by the continually increasing dew, have attained their full development. Then — in March — the new growth appears at the bases of these latter bulbs. It is the time of awakening.”

These observations made 133 years ago, are just as accurate as if they were made yesterday. The seasonal environmental changes and the plants' responses provide important insight into how to best grow this species.

Best practices for *L. anceps* culture are as follows:

- 1) Repot in February just before the new roots start to grow.
- 2) Gradually increase watering quantity and frequency from March through April.
- 3) Provide frequent heavy watering and fertilizing from May through October.
- 4) Significantly reduce watering frequency from December through February.
- 5) Provide high light levels year round.

The search for outstanding cultivars of this popular species has led to a significant improvement in flower qualities over the wild populations. Selective line breeding and the development of polyploid cultivars have resulted in a modern-day renaissance for *L. anceps* and its hybrids.

Laelia anceps is not a newcomer to hybridization; the first hybrid was registered in 1893! Amazingly, some of these early hybrids are still well known and popular today: *Laelia* Finckeniana (*anceps* × *albida*) 1893, *Laeliocattleya* Amoena, (*L. anceps* × *Cattleya pumila*) 1894, *Laelianthe* Wrigleyi (*L. anceps* × *Guarianthe bowringiana*) 1899, *Laeliocattleya* Liptonii (*L. anceps* × *Cattleya labiata*) 1901, *Laeliocattleya* Novissima (*L. anceps* × *Cattleya gaskelliana*) 1903 and *Laeliocattleya* Canariensis (*L. anceps* × *Cattleya harpophylla*) 1906. Hybridizing has continued to progress, and today there are nearly 800 registered hybrids

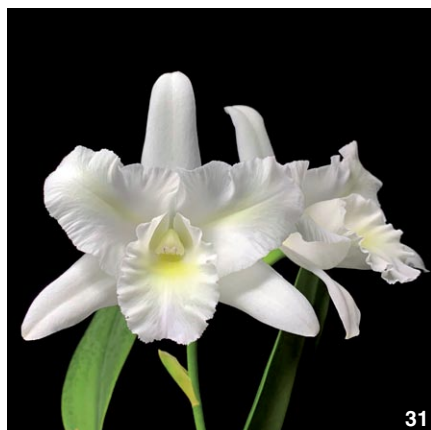
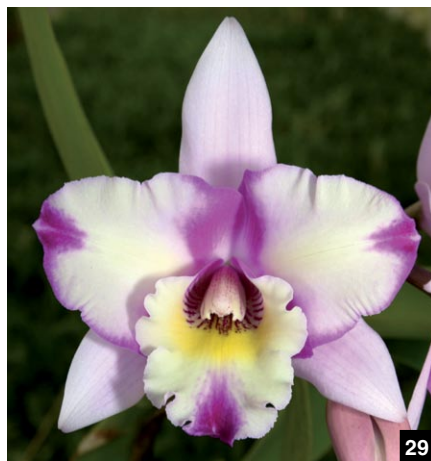


26



27

JOE HERBERT



JOE HERBERT

with *L. anceps* in their background.

The popularity of *L. anceps* is evidenced by its long history of cultivation and hybridization. Recent improvements through selective breeding have raised the quality of *L. anceps* flowers to new heights and the next generation of hybrids is poised to exceed the last. Hybrids with *L. anceps* have been made for nearly 130 years, but we are just starting to understand its potential as a parent and grandparent.

References and Further Reading

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Acknowledgments

I am indebted to Ron Kaufmann and Sue Bottom and honored to have them as my editors. Their combined insight and wisdom truly are beneficial.

— Fred Clarke owns and operates *Sunset Valley Orchids*, which is dedicated to developing hybrids and producing select species for the orchid enthusiast. He has been growing orchids for over 40 years and hybridizing for 38 of those years. He is committed to the education of orchid hobbyists around the world in the culture of their plants. Fred is an accredited American Orchid Society judge in the Pacific South Judging Center. His hybrids have received hundreds of quality awards for orchid enthusiasts from the American Orchid Society and other orchid societies worldwide (website: www.sunsetvalleyorchids.com, email: fredclarke@att.net).

(*Cattleya Tropical Song* × *L. anceps*).

Laeliocattleya Melana's Song sure made us happy, with four flowers supported well above the foliage in a beautiful arrangement. The depth of color, contrasting white splashes on the petals, and the colors of the lip are beautiful.

[27] *Laeliocattleya* Hsin Buu Lady 'YT' AM/AOS. Every once in a while an individual plant comes along that really makes a big impression. *Laeliocattleya* Hsin Buu Lady (*Cattleya* Wendy's Valentine × *L. anceps*) was registered in 2000 by Ching Hua Orchids. Mericlones were made

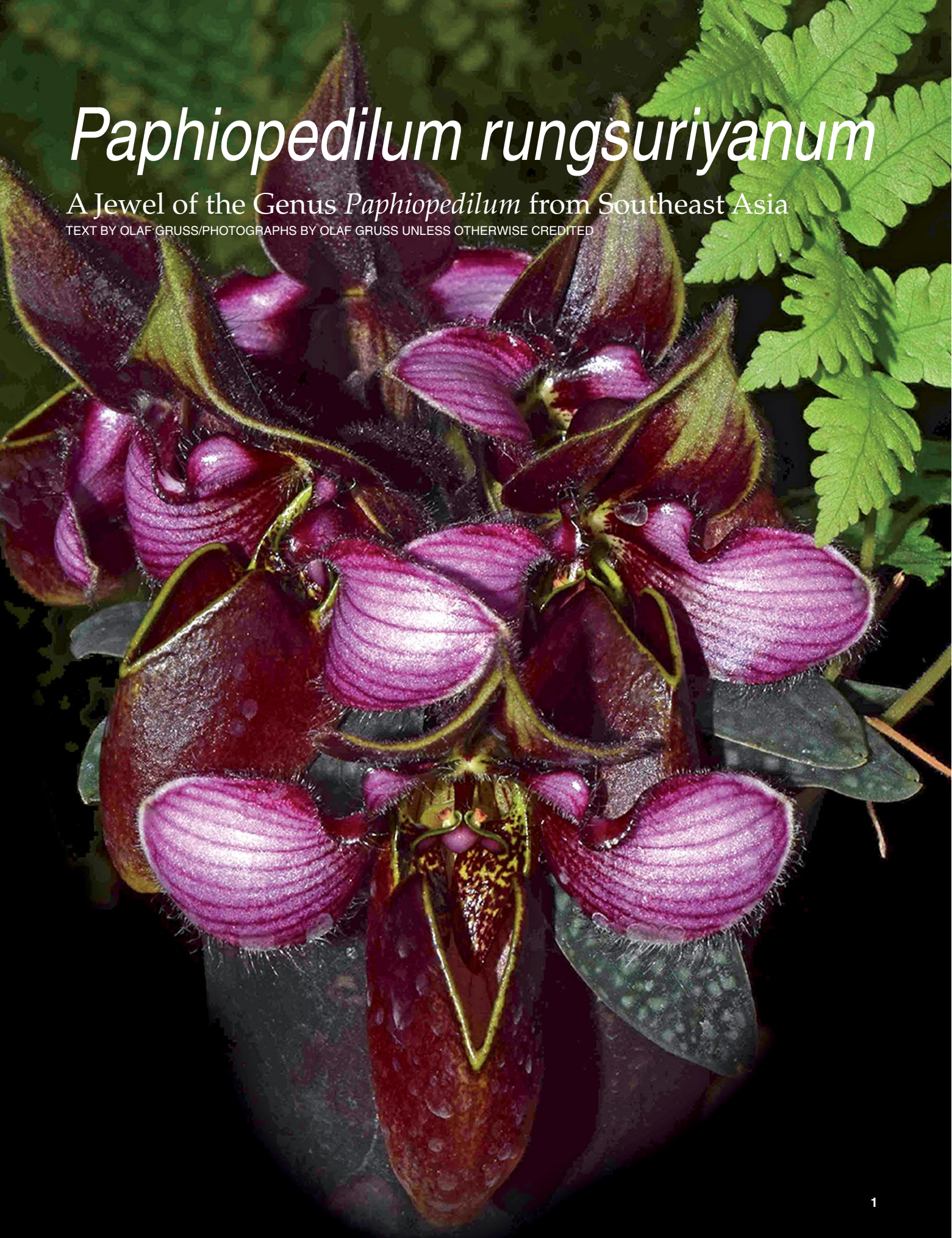
available, and this became a popular plant. The remarkable color, well-supported flowers and plant habit are ideal for the hobby grower.

[28–33] *Laeliocattleya* Miss Wonderful (*Cattleya* Mari's Song 'CTM 217' HCC/AOS × *L. anceps* 'Ultimo'). *Laeliocattleya* Miss Wonderful has become one of those crosses that makes you proud as a breeder. Plants grew uniformly, and they all flowered by the time they were established in 4-inch (10-cm) pots, with many blooming twice a year. The sturdy stems carry 4–5 flowers above the foliage, and the flowers display a spectacular range of colors and flaring. Surprisingly, a very unusual white cultivar with a light-yellow splash appeared as well. We will be making this cross again. Clones pictured: 'SVO' [28], 'Xmas Blush' [29], 'Billy-B' [30], 'White Wedding' [31], 'Ruben's' [32] and 'Nice' [33].

Paphiopedilum rungsuriyanum

A Jewel of the Genus *Paphiopedilum* from Southeast Asia

TEXT BY OLAF GRUSS/PHOTOGRAPHS BY OLAF GRUSS UNLESS OTHERWISE CREDITED



GRUSS

HISTORY In recent years, large numbers of orchids, including *Paphiopedilum* and *Dendrobium* have appeared from Laos in the plant markets in Thailand. In 2014, some relatively compact plants of the genus *Paphiopedilum* came into the trade from northern Laos and also found their way into the orchid market in Thailand. The traders believed, based on their marbled leaves, that the plants were *Paphiopedilum canhii*, but when the first plants were bloomed by Niwat Rungruang in Rangsit City, he was completely surprised and realized that this was not *Paph. canhii*, but likely a new, unknown species.

Niwat Rungruang contacted Thai friends for advice, and also sent detailed picture material of several flowering plants to Olaf Gruss and asked for an assessment. Everyone quickly agreed that this was a new species. Therefore, in an intensive mail exchange and by examining several plants in Thailand, a description was quickly prepared and posted online by Roland Schettler, Editor of the *Orchideen Journal* on May 28, 2014 at 8:00 pm. At the request of the Thai codescriptors (Gruss et al. 2014), the new species was given the official name: *Paphiopedilum rungsuriyanum* O. Gruss et al. 2014, although it was also suggested that the species be named after the country where it was found.

Although the plants with their marbled leaves appear quite similar to *Paph. canhii*, the flower is obviously different; it has much wider petals with intense red-purple coloring and a completely different staminodium. The new species can also be clearly distinguished by the underside of the leaf. While *Paph. canhii* is red-purple spotted, the underside of the new species' leaves appear gray-green with a broad purple vein.

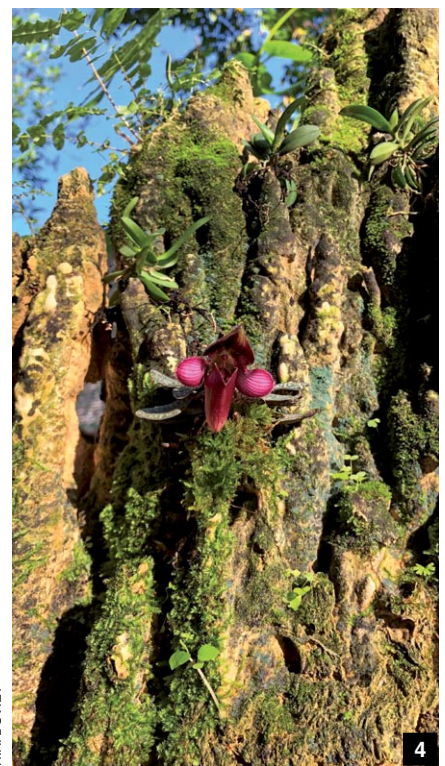
In the diagnosis, the authors wrote: *Paphiopedilum rungsuriyanum* O. Gruss, N. Rungruang, Y. Chaisuriyakul et I. Dionisio spec. nov (2014)

DIAGNOSIS New species closely related to *Paphiopedilum canhii* Averyanov and O. Gruss, *Turczaninowia* 13(2):92, 2010, but differs significantly in the shorter and wider petals, the wider, higher lip and the folded almost oval staminodium, as well as the differently colored flower.

TYPE North-Laos, without exact information regarding location

Rungruang, Rangsit City, Thailand 2014-05-24; leg. NiwatRungruang: BKF sine num.

The habitats were plundered soon



after the new species became known, as the attractive flowers promised a high market price. Unfortunately, however, it turned out that many of the plants died in transport to Bangkok and later in cultivation.

The first flowers were immediately pollinated and used in hybridization. It is hoped that artificial propagation will produce offspring so that the remaining plants in the original location are protected from further looting.

DESCRIPTION Lithophytic or terrestrial herb with three to five opposite leaves, a short stem, hardly any distance between the individual shoots. Leaves narrow elliptic, rounded off at the tip or indistinctly trilobed, 3.94–5.9 inches (10–15-cm) long, 0.59–0.79 inch (1.5–2 cm)

- [1] *Paphiopedilum rungsuriyanum* 'Wössen' flowering at the end of June, 2017.
- [2–3] *Paphiopedilum rungsuriyanum* photographed in situ in 2014. The small plants can be hard to spot; note the red arrow in [3].
- [4] *Paphiopedilum rungsuriyanum* flowering in situ.

wide, underside sharply keeled; upper surface clearly marbled dark and pale green, bottom marbled gray-green, with few hairs at the leaf base. *Inflorescence*, upright to slightly drooping with one or rarely two flowers, 1.97–3.15 inch (5–8 cm) long, 0.31 inch (8 mm) in diameter, dark purple, covered with whitish to translucent hairs. *Bracts* conduplicate,



ovate, obtuse, pubescent, dark purple, 0.06–0.08 inch (1.5–2 mm) long and 0.08–0.12 inch (2–3 mm) wide. *Ovary* 0.39–0.59 inch (1–1.5 cm) long, 0.06–0.08 inch (1.5–2 mm) in diameter, yellow-green with brown stripes and whitish hairs, 1.57–1.97 inch (4–5 cm) in diameter. *Flowers* impressive, sepals and petals fuzzy on the exterior. *Dorsal sepal* broadly oval, almost round, concave, acuminate, usually bent slightly to the front, 0.79 inch (2 cm) high and wide, exterior pubescence white, keeled, inside dark purple with wide yellow stripes, sometimes veined red-purple, and narrow yellow edge; exterior dark-red-purple, partly translucent yellow with darker veins. *Synsepal* significantly smaller than the dorsal sepal, similar in shape and hairiness, yellowish green-colored inside and outside dark purple, 0.71 inch (1.8 cm) long and 0.39 inch (1 cm) wide. *Petals* oblong oval,

rounded at the end, spreading, 0.79–1.18 inch (2–3 cm) long and 0.7–0.79 inch (1.8–2 cm) wide, marginal translucent hairs whitish, both sides intensely red-purple veined with wide red-purple margins, extreme edge whitish. *Lip* helmet-shaped with inward-folded lateral lobes, with a V-shaped neckline at the front, 0.79–1.18 inch (2–3 cm) long and 0.47 in (1.2 cm) wide, brownish, yellowish toward the back, edge at lip opening green, interior light yellow with reddish veins, lateral lobes yellow with red-purple spots. *Column* 0.2–0.28 inch (5–7 mm) long and 0.04–0.08 in (1–2 mm) in diameter, brown, pubescence whitish. *Staminode* crescent-shaped crosswise, bottom edge with two convexities and in the middle, with a clear tip, with forward curved sides, 0.24 inch (6 mm) wide and 1.78 inch (4.5 mm) high, dark red-purple with a clearly heart-shaped raised center

in whitish purple; a round spot of the same color on the lateral lobes. *Pollinia* two, spherical, yellow.

ETYMOLOGY *Rungsuriyanum*; the first part of the name honors Niwat Rungruang but in addition *rung* means heyday, success and prosperity and *suriya* means growing, increasing or sunshine in the morning.

GEOGRAPHICAL DISTRIBUTION Northern Laos at elevations from 3,280–4,921 feet (1,000–1,500 m).

HABITAT Plants of this species grow directly on sandstone rocks in partially shaded places with their roots partly in moss or rotted leaves in rock crevices.

CLIMATE Temperatures and the rainfall increase continuously from January to July, peaking in July. July to September is very wet. From September to January temperatures and precipitation decrease significantly.

In the summer, the temperature rises to almost 86 F (30 C) during the day and drops to 61–64 F (16–18 C) at night. In the winter temperatures reach about 73 F (23 C) during the day and fall to around 57 F (14 C) at night, but can drop to as low as 50 F (10 C).

PHENOLOGY Peak blooming occurs May–August, but flowering can occur sporadically in other seasons.

VARIABILITY The species varies only slightly in the color of the flowers, only the size and posture of the flowers is somewhat variable.

NOTE Shortly after the discovery of this new species, artificial reproduction was initiated. Reports from Thailand and Australia suggest that this has been relatively successful. The first plants of this species produced from seed should bloom in a year or two. The plants will certainly be more robust in cultivation than the ones taken from the habitat. Hopefully, this will reduce collection pressure on the habitats significantly.

Hybridization with this species appears to be successful and to date seven hybrids have been registered. Examples include *Paphiopedilum Goya* (*rungsuriyanum* × *concolor*) and *Paphiopedilum Lai* (*rungsuriyanum* × *thaiantum*), both registered in 2018, and *Paphiopedilum Laotian Beauty* (*rungsuriyanum* × *micranthum*) as well as *Paphiopedilum Pilot* (*rungsuriyanum* × *ciliolare*) registered in 2019.

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Acknowledgments

Thanks are due the many photographers who made their material available to me and the growers and to orchid friends who gave me the opportunity to take photos of their collections. My thanks to Judith Rapacz-Hasler for the German-to-English translation.

— Olaf Gruss is internationally recognized for his work with *paphiopedilums*, *phragmipediums* and *phalaenopsis*. He has written books about the genus *Phalaenopsis* and the *albino forms of the genus Paphiopedilum*, as well as two books about the genus

[5–8] *Paphiopedilum runsuriyanum* from various angles illustrating flower form and conformation.

[9] *Paphiopedilum runsuriyanum* about a month before flowers opened in 2017.

[10] *Paphiopedilum runsuriyanum* flower and plant illustrating perspective of size.

Phragmipedium. He has been a member of the editorial board of the journal of the German Orchid Society, Die Orchidee. Gruss resides in Germany and lectures throughout Europe, Japan, Taiwan, China and the USA. In der Au 48, 83224 Grassau, Germany (email: a-o.gruss@t-online.de).

The Orchid Menagerie

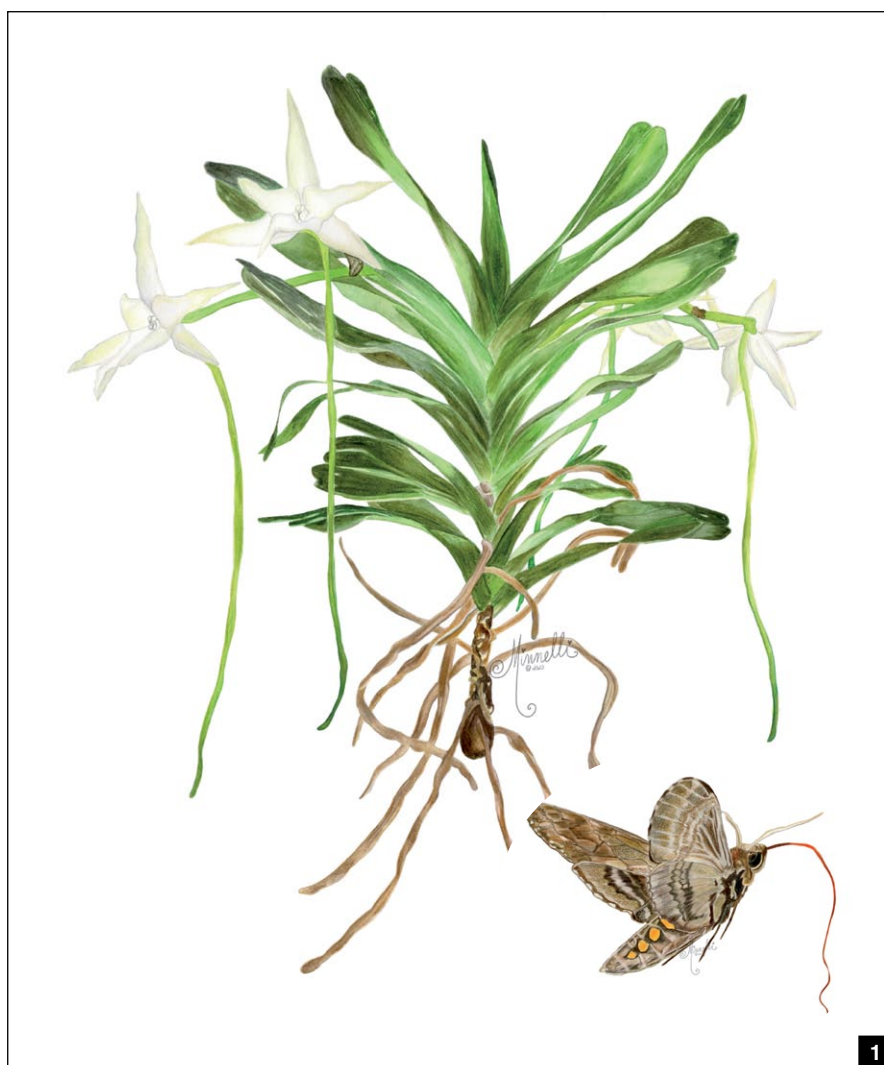
BY MINNELLI LUCY FRANCE

ORCHID POLLINATORS ARE extremely important, and the orchid–pollinator relationship is complex. It plays an important role in the vast diversification of orchid flower morphology, flower and pollinator syndromes, orchid fertilization, reproductive behavior and many aspects of their evolutionary and coevolutionary biology. All these factors occur in conjunction with the level of impact from the stressors they face, and the overwhelming magnitude of threats to their ecosystems such as the usage of certain pesticides, herbicides, and fungicides, poaching, land development, pollution, habitat loss, and climate change, just to name a few of the many. Despite all the research conducted and books written, this area of science remains understudied.

Gaskett (2011) reported that “the extraordinary taxonomic and morphological diversity of orchids is accompanied by a remarkable range of pollinators and pollination systems.” Only a few species of orchids self-pollinate. There is a *mélange* of orchid pollinators. This unique menagerie is composed of the following: several types of *Lepidoptera*, birds, flies, midges, gnats, wasps, ants, bees, beetles, termites, one type of mosquito, a cricket and even a rodent.

Many species of moths are well-known orchid pollinators. Some of them are quite famous such as the *Xanthopan morgani praedicta* from East Africa and Madagascar, which is also known as the sphinx moth and better known as Darwin’s moth. It was the orchid that it pollinates that first received fame as Charles Darwin was so captivated by the length of this flower’s spur that he suspected that its pollinator would have a proboscis equipped to match. This orchid was also nicknamed Darwin’s Orchid; it has several other common names but its scientific name is *Angraecum sesquipedale*.

Darwin (1862) was so deeply enamored with orchids that in one of his two books on them, he wrote the following: “The object of the following work is to



show that the contrivances by which orchids are fertilized, are as varied and almost as perfect as any of the most beautiful adaptations in the animal kingdom; and secondly, to show that these contrivances have for their main object the fertilization of each flower by the pollen of another flower.”

Certain orchid species have more than one pollinator. *Platanthera (Habenaria) obtusata*, also known as the blunt-leaf orchid, is pollinated by female *Aedes communis*, also known as the woodland or snow pool mosquito. Statman-

Weil (2020), for the US Department of Agriculture’s online database, suggested that “the pollinium of this orchid sticks to its eye and remains there even when it flies away thus, when it eats from another flower, the pollinium touches the stigma of that flower, and the flower is pollinated.”

A most peculiar twist relative to the pollination of this orchid is that during a scientific study conducted at Reese’s Bog, a cedar swamp in Michigan where this orchid also grows, three moth species of *Xanthorhoe* (Geometridae) were

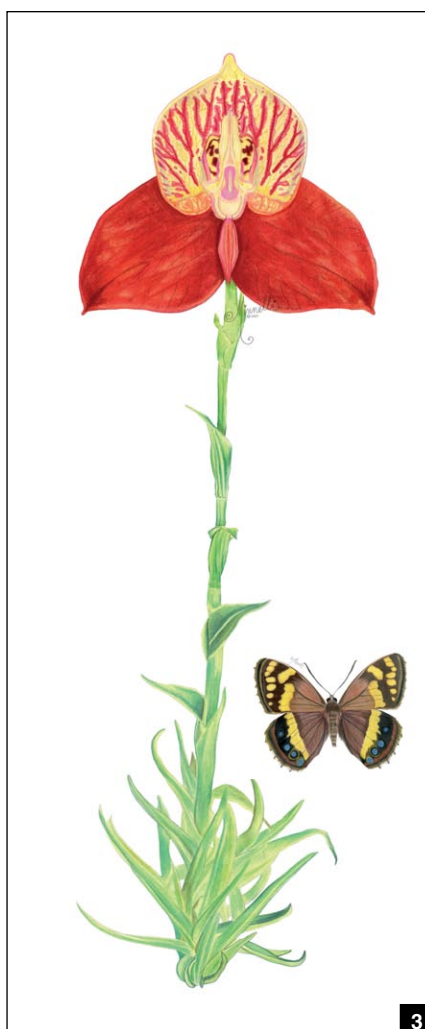
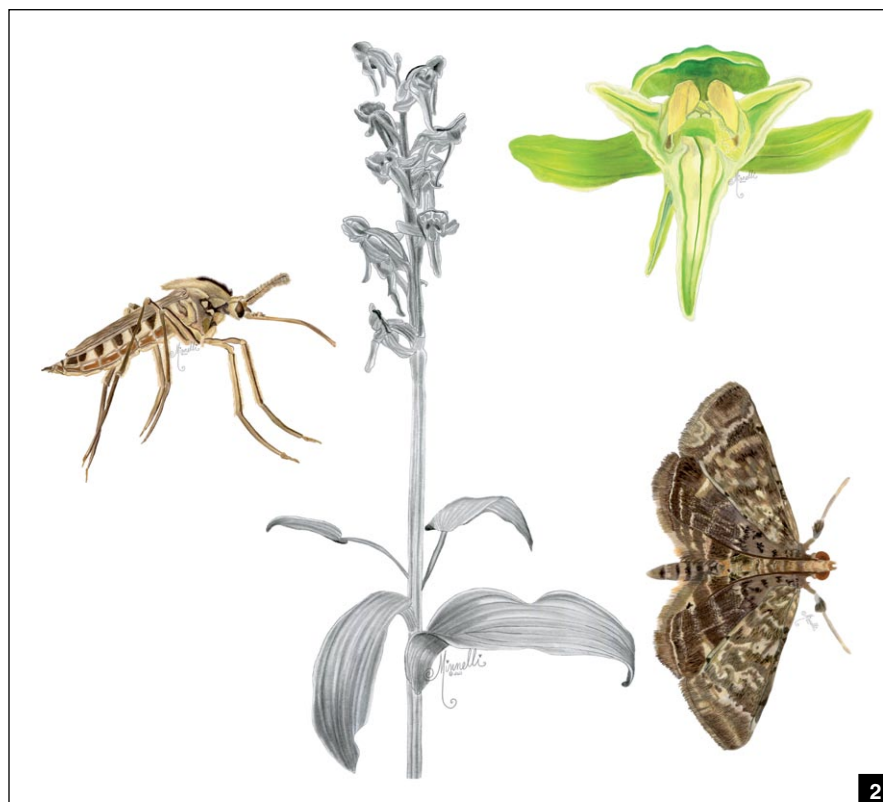
first discovered to be its pollinator. Voss and Riefner (1983) reported that “at a later date a pyralid moth (Lepidoptera), (*Anageshna primordialis*) was noted as it was stuck on one of its flowers, where it removed the pollinium, firmly attached to an eye, and one other specimen captured in free flight bore two pollinia, both attached to the right eye.” It is important to note that the published findings of Voss and Riefner (1983) also made mention of the following: “Further observations are required to confirm that moths do indeed deposit pollen on visits to flowers and to determine any means by which they compete for nectar with mosquitoes. *Anageshna*, like the mosquitoes, ranges well to the south of the orchid into Florida and clearly is not closely dependent upon it. In fact, it appears to be a moth of quite catholic tastes, having been reported to visit pig carrion in a state of advanced decay.”

The large mountain pride butterfly, *Aeropetes tulbaghia* is an important butterfly for “The Beauty of Table Mountain,” *Disa uniflora* endemic to the Western Cape. Woodhall (2005) reported that “they are the only known pollinator of the red disa orchid *Disa uniflora* (*grandiflora*); they are also fond of red or orange flowers.” The red disa orchid is also nicknamed “The Pride of Table Mountain.”

A scientific study was conducted on this same species of butterfly, and another species of *Disa* called *Disa ferruginea*. This butterfly species is also known to be this orchids’ exclusive pollinator. *Disa ferruginea* produces red flowers in the western section of its native region and orange flowers on the eastern side. Scientists placed mock paper flowers of each color in the same location where the natural ones were ensconced in their native habitat to observe the pollinator response.

The experiment was conducted to see the flower color adaptation of these mimetic orchids and the pollinator’s selection. The flowers shifted the pigments in their petals to adapt to the butterfly’s choice. Newman et al. (2012) reported that “although intraspecific scent differences can play a role in pollinator choices, this is unlikely to be the case for *Disa ferruginea* because butterflies choose between paper flowers using color alone.”

Generally speaking, birds are popular pollinators but among orchids they are not as common as insects. Hummingbirds are one of the families of birds that



- [1] Darwin's orchid, *Angraecum sesquipedale*, and its pollinator the sphinx moth, *Xanthopan morgani praedicta*, from East Africa and Madagascar.
- [2] Some orchids have more than one pollinator. One example is *Platanthera* (*Habenaria*) *obtusata*. This species is commonly pollinated by *Aedes communis*, also known as the woodland or snow pool mosquito although it is known to be visited by several moth species. One, *Anageshna primordialis*, has been observed stuck to the flowers after removing pollinia stuck to the moth's eye.
- [3] The pride of Table Mountain, *Disa uniflora*, is pollinated exclusively by the large mountain pride butterfly, *Aeropetes tulbaghia*.

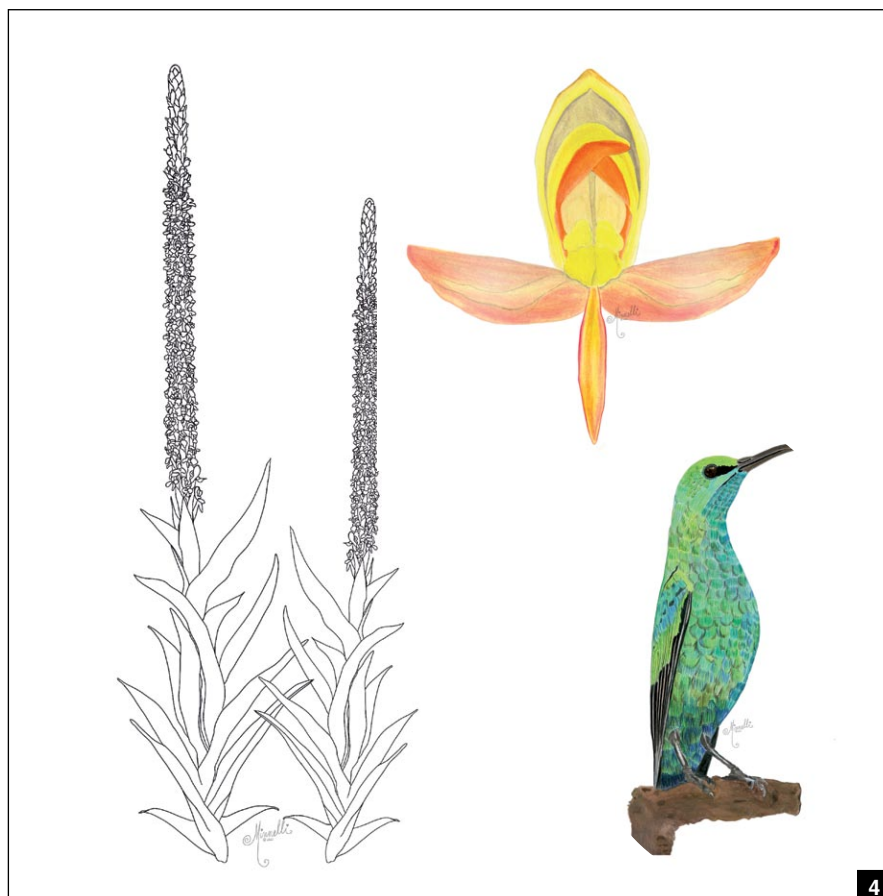
pollinate orchids. Only a few species of hummingbirds pollinate orchids, such as *Calliphlox bryantae*, also known as the magenta-throated woodstar, which pollinates *Stenorrhynchos speciosum*. According to Neotropical Birds Online/ Cornell Ornithology Lab (2020), “They are only found in southern Central America, from northern Costa Rica to western Panama and are largely restricted to the Pacific slope of the isthmus.”

Several other bird families contain species that are orchid pollinators. Among them are sunbirds. The malachite sunbird (*Nectarinia famosa*) from South Africa was discovered to be one of the pollinators of *Disa chrysostachya*. A scientific study made in South Africa and in Malawi that involved them reported a new discovery of ornithophily involving two orchids, *Disa chrysostachya* and *Disa satyriopsis*. Johnson and Brown (2004) reported that “the pollinaria of these orchids become attached firmly to the birds’ toes when they perch on the tall narrow inflorescences which are packed tightly with numerous small orange flowers.”

A five-year study published in 2008 was made in China, where the first mammal in history was discovered to be the pollinator of an orchid. *Rattus fulvescens*, commonly known as the wild mountain mouse, is attracted to the fragrance of a beautiful, mostly green-colored orchid, *Cymbidium serratum*. The little mouse eats the sweet-tasting labellum and the pollinium from the orchid sticks to its fur during this process. The study concluded that this rodent is this orchid’s only pollinator. Wang et al. (2008) reported that “... *Cymbidium serratum* is a terrestrial orchid found in the mountainous area of central and south China.”

The North American stream orchid, *Epipactis gigantea*, is a protected species in Canada, and its pollinator is the syrphid fly *Sphaerophoria philanthus*. A study conducted on it in 1986 mentions a small snout beetle (a known orchid pollinator) visiting this orchid but no pollinia seemed to be removed by it (Brunton 1986). Brunton (1986) reported that “even though the pollinator of this orchid is known, the mechanism for its pollination is not clearly understood.”

A 2008 discovery by a scientist from Royal Botanical Gardens, Kew, took place on Reunion Island where a newly discovered species of raspy cricket (*Glomeremus orchidophilus*) became the first of its order (Orthoptera) to be found to be the pollinator of an orchid known as *Angraecum cadetii*. According to Science



Daily (2008), “When the cricket visited the flower, the pollinia of the orchid stuck to its head as it retreated from it.” Grasshoppers, which are in the same order, have been suspected to also be orchid pollinators, but no evidence has been found so far.

Many species of wasps, bees and flies, which include hoverflies, midges, gnats and others, along with only a few species of ants, termites, beetles, plus snout-beetles or weevils are also extremely important orchid pollinators. There is much discussion within the scientific community and among orchidists about suspected orchid pollinators, such as snails, frogs, lizards, day-geckos, roaches, spiders, bats, dragonflies, and more. Some of these of course are more possible than others.

The importance of native wild orchids and their pollinators, in reference to biodiversity, is second to none. They are a true testament of ecological health and play a vital role in our planet’s evolution. The protective efforts toward these flora and fauna must be a global priority because they are so deeply interwoven with the wellbeing of our planet’s biosphere.

In addition to orchids and their



pollinators, a plethora of other related subtopics, such as deepening our understanding of terrestrial orchid bonds to mycorrhizal networks, and orchid evolutionary biology, should be studied in greater depth to understand and help plant biodiversity thrive and orchid conservation reach colossal heights.

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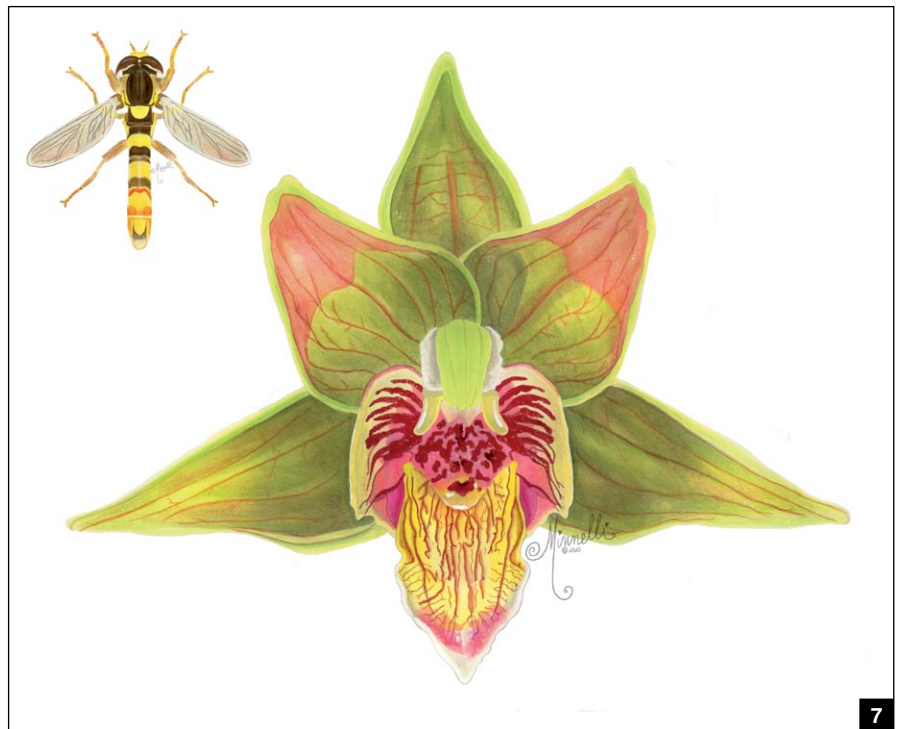
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— Minnelli Lucy France. *All rights to artwork appearing in this article are reserved. (website: www.TheOrchidArtist.com).*



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- [4] In the Old World, various species of sunbirds are often pollinators of local orchids. The malachite sunbird, *Nectarinia famosa*, from South Africa was discovered to be one of the pollinators of *Disa chrysostachya*.
- [5] In the Western Hemisphere, hummingbirds fill the role played by sunbirds in the Eastern Hemisphere. *Calliphlox bryantae*, also known as the magenta-throated

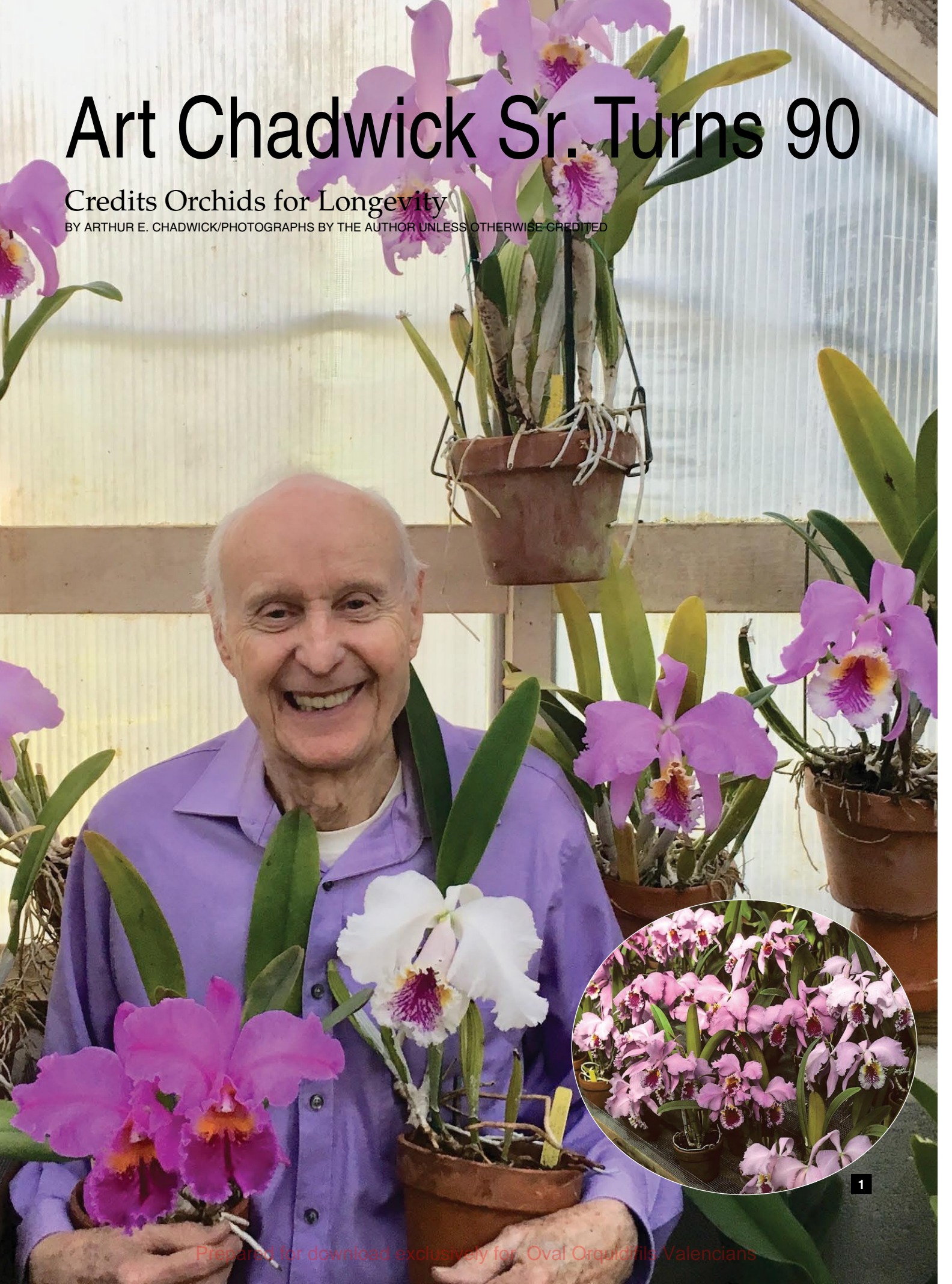
woodstar, pollinates *Stenorhynchos speciosum* in South America.

- [6] You might not think of mice as potential pollinators but the wild mountain mouse, *Rattus fulvescens*, appears to fill that role for *Cymbidium serratum*.
- [7] The North American stream orchid, *Epipactis gigantea*, is a protected species in Canada, and its pollinator is the syrphid fly *Sphaerophoria philanthus*.

Art Chadwick Sr. Turns 90

Credits Orchids for Longevity

BY ARTHUR E. CHADWICK/PHOTOGRAPHS BY THE AUTHOR UNLESS OTHERWISE CREDITED



1

MY FATHER, ART Chadwick Sr. turned 90 in July and he credits his longevity to orchids. Since the age of 13, he has been collecting cattleyas and, to this day, he cannot wait to wake up in the morning and see what's in bloom. His lifelong interest began rather innocently, as a teenager walking home from school.

Growing up during the corsage era of the 1940s, young Arthur was exposed to orchid greenhouses at every turn. Commercial firms, estate growers, and hobbyists were all raising cattleyas because the demand for cut flowers far exceeded the supply. A single corsage was selling for as much as \$20 and women everywhere were wearing them.

Arthur's neighborhood of Elkins Park, Pennsylvania was particularly active in orchids and the 2nd and 3rd Presidents of the American Orchid Society lived there. Each day, Arthur would walk past the fancy estates and admire their greenhouses. Eventually, he befriended the growers who took him under their wing.

Over time, Arthur was given their extra orchids to experiment with. Initially, it was just a plant or two — perhaps the back pieces that occur when a specimen is divided. But it was not long before Arthur was carrying boxes full to his parents.

Arthur's father, a builder, soon realized that he had to construct a greenhouse for the expanding collection. The two Chadwicks bonded one summer and erected a redwood structure with top and side louvers and manual openers. This design would serve as a prototype for all of Arthur's greenhouses over the next 75 years.

The following summer, Arthur took a job at a commercial orchid nursery, Fetzer Greenhouses, in nearby Warminster, Pennsylvania. Their fertilizing technique was legendary and involved collecting sheep manure from the owner's front yard and soaking it for a week in burlap bags. The "tea" was then poured onto their cymbidiums which produced enormous heads of flowers. Arthur was glad that he was not responsible for collecting the manure.

When Arthur went away to college, his parents took care of his orchids but eventually the plants were sold. A single cattleya was spared — a wild collected species from Venezuela — and it survived on windowsills for several more years. Ultimately, Arthur named the variety after his father and *Cattleya lueddemanniana* 'Arthur Chadwick' AM/AOS remains one of the best lavenders.

Arthur graduated from Penn State



in agricultural economics but, before accepting a major job offer and much to the dismay of his parents, he went into the cut-flower cattleya business with a friend. Like any new venture, there was considerable risk and Arthur was more interested in the nuances of each plant than the actual day-to-day production of flowers. Not surprisingly, Arthur sold out to his partner but not before selecting the very best *Cattleya* Bow Bells for himself.

In 1960, he entered the white hybrid in a big orchid show where it won top honors. He was recently married so he named the variety after his new wife, Anne, and both the orchid and his bride were pictured on the front page of their local paper, The Orlando Sentinel. "She, of course, was hooked on orchids from that day on."

After work and on weekends, Arthur began breeding cattleyas and took detailed notes of the process. He was fascinated in the genetics and photographed each flower, amassing an enormous library of Kodachrome slides. He was not deterred by the length of time it would take to raise the plants to maturity — typically seven years.

The tricky technique of planting seed or "flasking" was mastered on his kitchen table using a pressure cooker and glass beakers. Few hobbyists attempt this step given the absolutely sterile conditions

[1] Art Chadwick Sr. turned 90 in July. He still enjoys orchids in his hand-built redwood greenhouses. He cannot wait to get up in the morning and see what is in bloom. He is surrounded by some of his favorite varieties of *C. mossiae*. The inset photograph, taken by Art Chadwick Sr. shows the results of a sibling cross he made using *C. mossiae* f. *reineckea* 'Young's'.

[2] *C. Bow Bells* 'Anne Chadwick' (Edithiae × Suzanne Hye) won Best in Show at a major orchid event in 1960 and thrust Arthur's new wife, Anne, into the spotlight.

required for germination, but Arthur's mother was a nurse and had taught him the fundamentals of strict cleanliness. The newly planted flasks were promptly moved to a special incubation chamber in the basement.

Arthur made new hybrids, remade old hybrids, and did sibling crosses of his favorite species. His earliest recorded hybrid was in 1951, but he is known for his 1990 *Cattleya* Powhatan (Princess Margaret × *dowiana*) which produced some stunning white-with-purple-lip varieties.

An avid reader, Arthur explored all the old orchid journals and was intrigued by the earliest primary hybrids dating back

to the turn of the century. Unable to find examples in circulation, he simply remade the long forgotten yellows — *Cattleya Ophir* (*xanthina* x *dowiana*) of 1901, *Cattleya Gaston Doin* (*rex* x *tenebrosa*) of 1902, and *Cattleya Triumphans* (*rex* x *dowiana*) of 1904, among many others.

He was particularly fond of the spring blooming species, *Cattleya mossiae*, which is the National Flower of Venezuela and can produce up to five flowers on a spray. He made sibling crosses of the best varieties and bloomed them all, creating quite a show in the greenhouse each March. The entire bench was every imaginable shade of lavender.

Arthur's love of orchids was apparent in the dozens of articles he wrote for the American Orchid Society. He was a natural storyteller and the editor suggested that he write a book. *The Classic Cattleyas* was introduced in 2006, landing him on the Martha Stewart Show. The book sold out and is now in its second printing.

In 1989, he lent his name and hard labor to a startup family business, Chadwick & Son Orchids, Inc. The Virginia-based company began modestly with the construction of three of those old-fashioned, hand-built, redwood greenhouses with upper and lower louvers and hand cranks that his father had shown him 50 years earlier. The company just celebrated its 31st year and Arthur continues to consult on the nuances of cattleyas.

Through it all, Arthur has held on to his prized cattleya orchids — the corsage type, now numbering over 800. His wife of 60 years, Anne, has had a seemingly endless supply of colorful flowers with which to decorate their home and they both credit orchids for their youthful spirit and longevity. Future generations of Chadwick's have their work cut out for them in their quest for the continuation of this encompassing orchid legacy.

— *Arthur E. Chadwick is a coauthor of The Classic Cattleyas that describes the large-flowered species that make up today's hybrids. He is president of Chadwick & Son Orchids, which operates 11 greenhouses in Powhatan County, two retail stores in Richmond, Virginia and boards over 13,000 orchids for local clients. Arthur E. Chadwick along with his father A.A. Chadwick are regular contributors to Orchids magazine; most recently coauthoring the sixteen-article series First Ladies and Their Cattleyas: 1929 to Present and The Classic Cattleyas to be released this month as a second edition (email art@chadwickorchids.com; Website www.chadwickorchids.com).*



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- [3] *Cattleya lueddemanniana* 'Arthur Chadwick' AM/AOS is a jungle collected plant from the 1930s that has a storied history in the family.
- [4] *C. Triumphans* (*dowiana* x *rex*) was a breakthrough hybrid for its day because the flowers did not fade. It became a building block for many of today's yellows.
- [5] *C. Ophir* (*xanthina* x *dowiana*) is a rarely seen primary hybrid from 1901 that Arthur remade in order to learn more about it.
- [6] *C. Gaston Doin* (*tenebrosa* x *rex*) has not been in circulation in over a century so Arthur remade it.
- [7] Arthur's remake of *C. Prince John* (*Hardyana* x *dowiana*), first registered as a lavender hybrid in 1913 by Armstrong & Brown "Orchidhurst" of Tunbridge Wells, England yielded all yellows when he used a rare yellow *C. Hardyana* as a parent.





- [1] *Cattleya warscewiczii* (Alba) 'Gabe's 10th' FCC/AOS 90 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [2] *Encyclia silverarum* 'Vera Cruz' CHM/AOS 82 pts. Exhibitor: David G. Hunt; photographer: Marilyn Holloway. Houston Judging
- [3] *Cattleya Llorry Ann* 'Catspaw' AM/AOS (Memoria Robert Strait x Jungle Flare) 83 pts. Exhibitor: Craig and Diana Plahn; photographer: Melissa Garner. Mid-America Judging
- [4] *Paphiopedilum* Wössner Kolorand 'Green Ghost' HCC/AOS (*kolopakinggii* x *randsii*) 78 pts. Exhibitor: Richard E. Hepler; photographer: Marilyn Holloway. Houston Judging
- [5] *Phragmipedium* Umbriel 'Rogan's Gold' AM/AOS (Grande x *sargentianum*) 81 pts. Exhibitor: John Rogan; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [6] *Dendrobium thyrsiflorum* 'Waialele' CCE/AOS 92 pts. Exhibitor: Andrew Okada; photographer: Michael Blietz. Hawaii Judging
- [7] *Podochilus intricatus* 'Orchid Fix Tiny Gem' CBR/AOS. Exhibitor: The OrchidFix Nursery Jurahme Leyva; photographer: Glen Barfield. Hawaii Judging
- [8] *Cattleya purpurata* (Delicata) 'Shogun's Grace' CCM/AOS 86 pts. Exhibitor: Shogun Hawaii- Matthias Seelis; photographer: Glen Barfield. Hawaii Judging
- [9] *Cattleya milleri* 'Red Hot' CCM/AOS 81 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [10] *Paphiopedilum* Worthy Fred 'Zinfandel' AM/AOS (President Fred x *charlesworthii*) 80 pts. Exhibitor: Dave Sorokowsky; photographer: Chaunie Langland. Pacific Central Judging
- [11] *Paphiopedilum* Transdoll 'Rogan's Lady Kathleen' AM/AOS (*liemianum* x *rothschildianum*) 85 pts. Exhibitor: John Rogan; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [12] *Rhyncholaeliocattleya* Cosmic Sparks 'Catspaw' HCC/AOS (Golden Circle x *Cattleya* Cosmic Delite) 78 pts. Exhibitor: Craig and Diana Plahn; photographer: Melissa Garner. Mid-America Judging
- [13] *Catasetum pileatum* 'Soli Deo Gloria' AM/AOS 83 pts. Exhibitor: Adam Dreisewerd; photographer: Melissa Garner. Mid-America Judging
- [14] *Dendrochilum microchilum* 'Two CS Grads' CCM/AOS 86 pts. Exhibitor: David Rosenfeld; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [15] *Cypripedium* Philipp 'Little Egypt' CCM/AOS (*macranthos* x *kentuckiense*) 85 pts. Exhibitor: George Snider; photographer: Melissa Garner. Mid-America Judging





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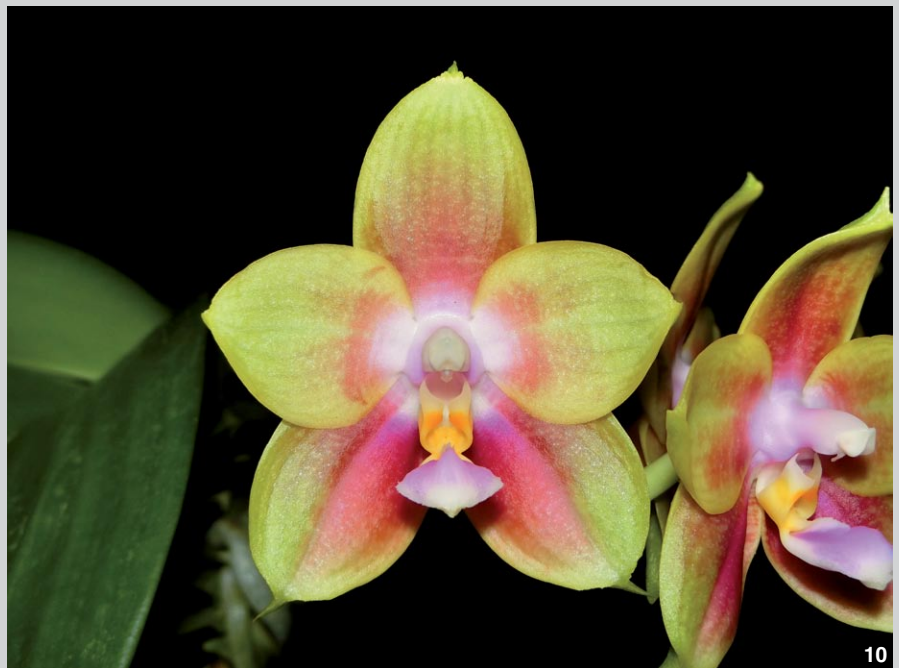
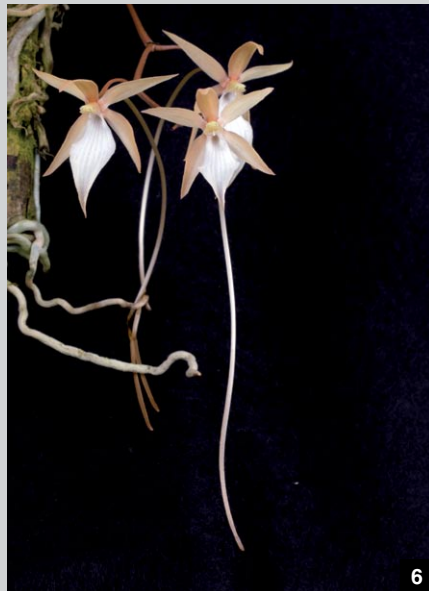


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- [1] *Dendrobium* Roy Tokunaga 'Majestic' AM/AOS (*atroviolaceum* x *johnsoniae*) 84 pts. Exhibitor: Sergey Skoropad; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [2] *Cattleya aclandiae* 'Salvador' AM/AOS 80 pts. Exhibitor: Shawn Wood; photographer: Bryan Ramsay. National Capital Judging
- [3] *Vanda* Cherry Blossom 'Carmela' CCM-AM/AOS (*falcata* x *ampullacea*) 84-82 pts. Exhibitor: Arne Schon; photographer: Bryan Ramsay. National Capital Judging
- [4] *Sarcochilus* Kulnura Firemist 'Bentley' HCC/AOS (Zoe x Bunyip) 79 pts. Exhibitor: Ken and Amy Jacobsen; photographer: Ken Jacobsen. Pacific Central Judging
- [5] *Gomesa* Jiaho Queen 'Jiaho' AM/AOS (Mulattas' Dancing x *varicosa*) 89 pts. Exhibitor: Marc Hachadourian; photographer: Maurice Garvey. Northeast Judging
- [6] *Paphiopedilum* Anita Baby 'Austin Creek' HCC/AOS (Hsinying Anita x *rothschildianum*) 76 pts. Exhibitor: Dale Martin; photographer: Ken Jacobsen. Pacific Central Judging
- [7] *Promenaea silvana* 'Serendipity' CCM/AOS 81 pts. Exhibitor: David Smith; photographer: Bryan Ramsay. National Capital Judging
- [8] *Coelogyne verrucosa* 'Irene' CHM/AOS 85 pts. Exhibitor: Al and Irene Messina; photographer: Maurice Garvey. Northeast Judging
- [9] *Dendrobium fargesii* 'Andy Philips' CBR/AOS. Exhibitor: Chen-Hao Hsu; photographer: Ken Jacobsen. Pacific Central Judging
- [10] *Vandachostylis* Lou Sneary 'Sukanya' JC/AOS (*Vanda falcata* x *Rhynchostylis coelestis*). Exhibitor: Lori Rheinberger; photographer: Ross Leach. Pacific Northwest Judging
- [11] *Rhyncattleanthe* Martha Clarke 'Bentley' HCC/AOS (*Cattleya* Circle of Life x Love Sound) 78 pts. Exhibitor: Ken and Amy Jacobsen; photographer: Ken Jacobsen. Pacific Central Judging
- [12] *Sarcochilus* Coolendel 'Poached Egg' HCC/AOS (Cliona x Roberta) 77 pts. Exhibitor: Ken and Amy Jacobsen; photographer: Ken Jacobsen. Pacific Central Judging
- [13] *Disa tripetaloides* 'Wally Orchid' HCC/AOS 75 pts. Exhibitor: Chen Hao Hsu; photographer: Ken Jacobsen. Pacific Central Judging
- [14] *Masdevallia* Ziegler's Love 'Inés' HCC/AOS (Pixie Lavender x Falcon Sunrise) 77 pts. Exhibitor: J&L Orchids; photographer: Robert Hesse. Northeast Judging
- [15] *Sarcochilus* Kulnura Pixie 'Gracie' CCM/AOS (Kirra-Lea x Elegance) 82 pts. Exhibitor: Amy and Ken Jacobsen; photographer: Ken Jacobsen. Pacific Central Judging
- [16] *Sarcochilus* Kulnura Berry 'Purple Hue' AM/AOS (Kurumba x Kulnura Musk) 81 pts. Exhibitor: Ken and Amy Jacobsen; photographer: Chaunie Langland. Pacific Central Judging
- [17] *Sarcochilus* Kulnura Dragonfly 'St. Ives' CCM-AM/AOS (Sweetheart x Elegance) 84-83 pts. Exhibitor: Ken and Amy Jacobsen; photographer: Chaunie Langland. Pacific Central Judging





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- [1] *Paphiopedilum* Ho Chi Minh 'More Than Respectable' AM/AOS (*delenatii* x *vietnamense*) 81 pts. Exhibitor: Marcia and Jerry Romick; photographer: Ross Leach. Pacific Northwest Judging
- [2] *Paphiopedilum* Ho Chi Minh 'Respectable' HCC/AOS (*delenatii* x *vietnamense*) 79 pts. Exhibitor: Marcia and Jerry Romick; photographer: Ross Leach. Pacific Northwest Judging
- [3] *Paphiopedilum* Memoria Joan Levy 'Darth Thornton' AM/AOS (*stonei* x *gigantifolium*) 87 pts. Exhibitor: Thornton Conservatory; photographer: Arthur Pinkers. Pacific South Judging
- [4] *Phalaenopsis* Long Trieu 'Phoenix' AM/AOS (Dragon Tree Eagle x Sweet Trinity) 85 pts. Exhibitor: Eric Goo and Phoenix Orchids; photographer: Eric Goo. Pacific South Judging
- [5] *Masdevallia* Susy de Bermeo 'Windflower' AM/AOS (Angel Frost x Gold Dust) 82 pts. Exhibitor: Betty Kelepecz; photographer: Arthur Pinkers. Pacific South Judging
- [6] *Aerangis fuscata* 'Windflower' CHM/AOS 82 pts. Exhibitor: Betty Kelepecz; photographer: Arthur Pinkers. Pacific South Judging
- [7] *Paphiopedilum* Magical Peacock 'Red Flame' AM/AOS (Presidential Magic x Petula's Peacock) 85 pts. Exhibitor: Fred Capriccio; photographer: Arthur Pinkers. Pacific South Judging
- [8] *Sarcochilus* Madge 'Bell' Orchidea' HCC/AOS (*hartmannii* x *Snowhart*) 77 pts. Exhibitor: Phyllis Prestia; photographer: Arthur Pinkers. Pacific South Judging
- [9] *Phalaenopsis* Shadow Goo 'Phoenix Joy' AM/AOS (Okay Petit Hot x LD's Bear Queen) 80 pts. Exhibitor: Eric Goo and Phoenix Orchids; photographer: Eric Goo. Pacific South Judging
- [10] *Phalaenopsis* Phoenix Canary 'Yellow Sun' HCC/AOS (Yungho Gelb Canary x Penang Girl) 75 pts. Exhibitor: Eric Goo/Phoenix Orchids; photographer: Eric Goo. Pacific South Judging
- [11] *Phalaenopsis* Zheng Min Jacaranda 'Bonnie' AM/AOS (Oh! Flame x Hannover Passion) 85 pts. Exhibitor: Vincent Ha; photographer: Arthur Pinkers. Pacific South Judging
- [12] *Cymbidium* Erin Maxick 'Effervescence' HCC/AOS (Keukenhof x Vogelsang) 77 pts. Exhibitor: Hatfield Orchids; photographer: Arthur Pinkers. Pacific South Judging
- [13] *Phalaenopsis* Jennifer Palermo 'Water Color Artist' AM/AOS (*tetraspis* x *violacea*) 80 pts. Exhibitor: Norman's Orchids; photographer: Arthur Pinkers. Pacific South Judging
- [14] *Paphiopedilum* Petula's Sensation 'Black Wings' AM/AOS (Macabre Contrasts x Petula's Flame) 85 pts. Exhibitor: Fred Capriccio; photographer: Arthur Pinkers. Pacific South Judging
- [15] *Paphiopedilum* Martian Man 'Norito' AM/AOS (Emerald Sea x *malipoense*) 85 pts. Exhibitor: Donald Brown; photographer: Jim Sloniker. Pacific South Judging
- [16] *Paphiopedilum* Jeweled Venus 'Spring Time' HCC/AOS (Jewel Green x Parisienne Venus) 78 pts. Exhibitor: Fred Capriccio; photographer: Arthur Pinkers. Pacific South Judging





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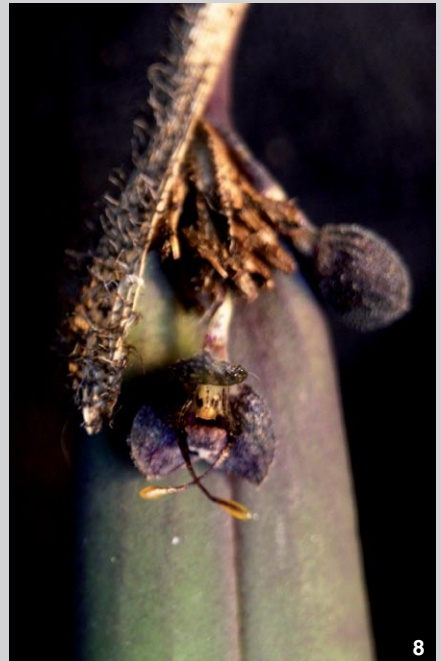
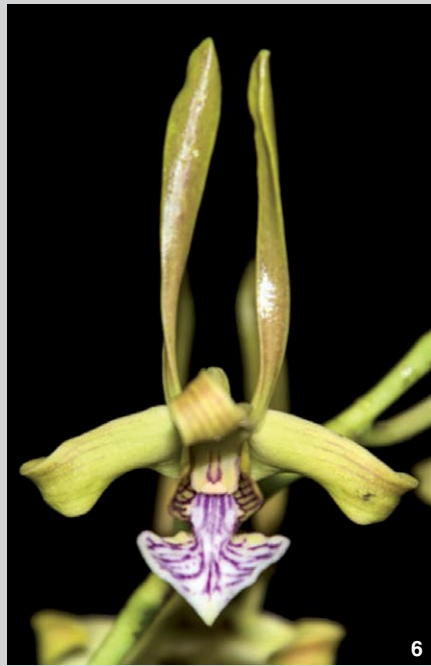


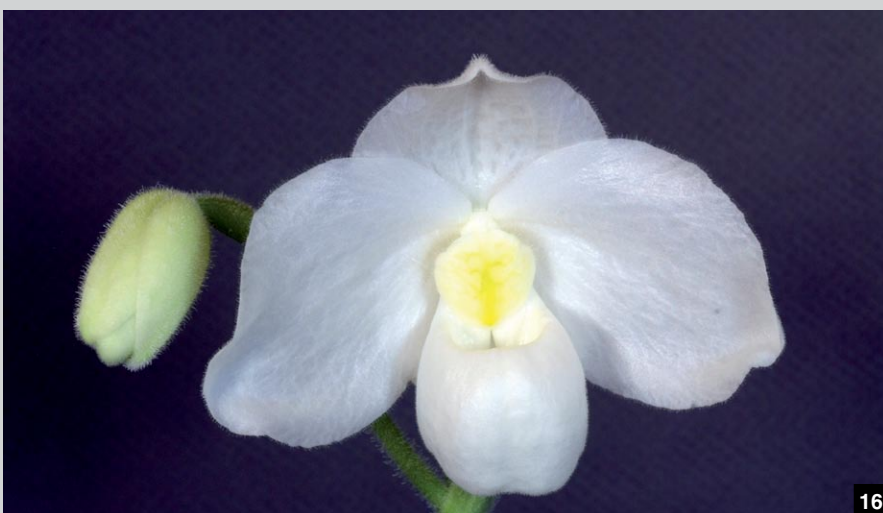
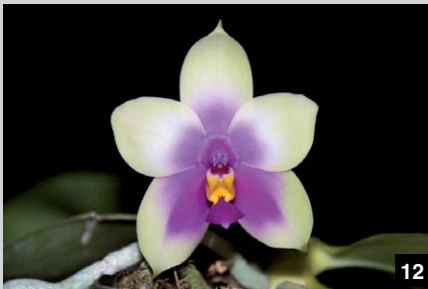
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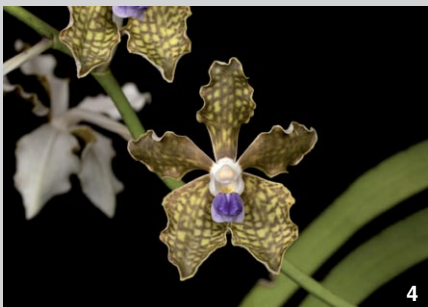
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- [1] *Renanthisopsis* Alice 'Diamond Orchids' HCC/AOS (*Renanthera monachica* x *Phalaenopsis schilleriana*) 77 pts. Exhibitor: Diamond Orchids; photographer: Arthur Pinkers. Pacific South Judging
- [2] *Catyclia* Darling Hybrida 'EpiJim' HCC/AOS (*Cattleya* x *hybrida* x *Encyclia* Darling Jungle) 77 pts. Exhibitor: James Jeansonne; photographer: Brandie Ferguson. Shreveport Judging
- [3] *Phragmipedium* America 'Elizabeth Julia' HCC/AOS (Les Dirouilles x *kovachii*) 78 pts. Exhibitor: Eron Borne; photographer: Brandie Ferguson. Shreveport Judging
- [4] *Papilionanda* Doctor Benjamin Chew 'Lydia' HCC/AOS (Josephine van Brero x *Vanda* Kulwadee Fragrance) 78 pts. Exhibitor: Wayne T. Green; photographer: Tom Kuligowski. West Palm Beach Judging
- [5] *Rhynchoaeliocattleya* Groganiae 'Geneva's Pink Lace' HCC/AOS (*Rhynchoaelia digbyana* x *Cattleya loddigesii*) 77 pts. Exhibitor: Thornton Conservatory; photographer: Arthur Pinkers. Pacific South Judging
- [6] *Vandachostylis* Mishima Lime 'Snookie' HCC/AOS (*Vanda denisoniana* x Five Friendships) 76 pts. Exhibitor: Mary Mancini; photographer: Brandie Ferguson. Shreveport Judging
- [7] *Oncidium* Space Race 'Coco' AM/AOS (Sphacetante x Pupukea Sunset) 83 pts. Exhibitor: Jean Allen-Ikeson; photographer: Ed Cott. Toronto Judging
- [8] *Dendrobium polyanthum* 'E. Orchids' HCC/AOS 77 pts. Exhibitor: Edwin A. Perez; photographer: Irma Saldaña. Puerto Rico Judging
- [9] *Myrmecophila exaltata* 'Hija del Faisán' HCC/AOS 78 pts. Exhibitor: Fong Cing Li; photographer: Irma Saldaña. Puerto Rico Judging
- [10] *Phragmipedium* Chuck Acker 'Julia Elizabeth' HCC/AOS (Eric Young x *warszewiczianum*) 78 pts. Exhibitor: Eron Borne; photographer: Brandie Ferguson. Shreveport Judging
- [11] *Bulbophyllum pectinatum* (Alboviride) 'TG's Little Bean' HCC/AOS 76 pts. Exhibitor: Tropical Gardens Orchids; photographer: Judith Higham. Western Canada Judging
- [12] *Waironara* Tango Fire 'Ruby's Fire' AM/AOS (*Perreiraara* Bangkok Sunset x *Renanthera storie*) 83 pts. Exhibitor: Wayne T. Green; photographer: Tom Kuligowski. West Palm Beach Judging
- [13] *Rhynchoaelia digbyana* 'Chrysalis Scout Rodriguez' AM/AOS 81 pts. Exhibitor: Christine Morales and Alex Rodriguez; photographer: Tom Kuligowski. West Palm Beach Judging
- [14] *Clowesetum* Mark Margolis 'Mellow Yellow' HCC/AOS (*Catasetum* Durval Ferreira x *Clowesia dodsoniana*) 77 pts. Exhibitor: Mark Margolis; photographer: Tom Kuligowski. West Palm Beach Judging
- [15] *Oberonia leytensis* 'Monica's Eden' CCM/AOS 89 pts. Exhibitor: Monica Gaylord; photographer: Charlotte Randolph. Alamo Judging
- [16] *Catasetum pileatum* 'Suki's Limoge Platter' AM/AOS 83 pts. Exhibitor: Thornton Conservatory; photographer: Arthur Pinkers. Pacific South Judging



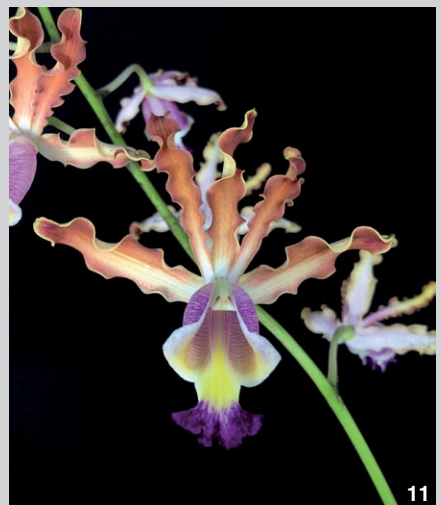
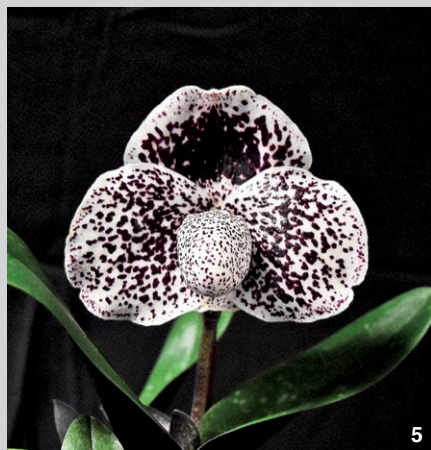


- [1] *Phalaenopsis violacea* 'Blue Ridge Blackberry' AM/AOS 82 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [2] *Paphiopedilum niveum* 'Ann Blackshaw' AM/AOS 80 pts. Exhibitor: Mark Blackshaw; photographer: Charlotte Randolph. Alamo Judging
- [3] *Phalaenopsis bellina* 'Marley' AM/AOS 80 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [4] *Phalaenopsis bellina* 'Blue Ridge' AM/AOS 80 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [5] *Phalaenopsis violacea* 'Grey Mims' HCC/AOS 79 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [6] *Dendrobium bicaudatum* 'Maji' HCC/AOS 77 pts. Exhibitor: Sara Gallis; photographer: James Curtis. Carolinas Judging
- [7] *Paphiopedilum* Toni Semple 'Lucy' AM/AOS (*haynaldianum* x *lowii*) 80 pts. Exhibitor: Carolyn Fuentes; photographer: Charlotte Randolph. Alamo Judging
- [8] *Myoxanthus melittanthus* 'Creepy' CBR/AOS. Exhibitor: Larry Sexton; photographer: Cheryl Erins. Chicago Judging
- [9] *Bratonia* Leopard Glo 'Ray' AM/AOS (Olmec x *Brassia caudata*) 81 pts. Exhibitor: Carolyn Fuentes; photographer: Charlotte Randolph. Alamo Judging
- [10] *Cymbidium* Shan Nasser 'Jaybee' HCC/AOS (Sarah Jean x Phar Lap) 77 pts. Exhibitor: Ed and Jaybee Dumaguin; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [11] *Phalaenopsis* Mituo Ambo 'Marley' AM/AOS (LD's Bear King x *amboinensis*) 82 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [12] *Phalaenopsis bellina* 'Asheville' HCC/AOS 77 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [13] *Oberonia rufilabris* 'Joey' CCE/AOS 94 pts. Exhibitor: Carol Zoltowski; photographer: Ramon De Los Santos. California Sierra Nevada Judging
- [14] *Paphiopedilum* Spring Charm 'Lionstar' AM/AOS (Spring Jewel x Egret's Jewel) 81 pts. Exhibitor: Rory Jones; photographer: James Curtis. Carolinas Judging
- [15] *Dendrobium* Island Sunset 'Thorne's Twister' AM/AOS (*tangerinum* x Blue Twinkle) 84 pts. Exhibitor: Sara Gallis; photographer: James Curtis. Carolinas Judging
- [16] *Paphiopedilum* Catherine Briois 'Westway Farms' HCC/AOS (*dele-natii* x *godefroyae*) 78 pts. Exhibitor: Don Ghiz; photographer: Charlotte Randolph. Alamo Judging





- [1] *Phalaenopsis japonica* 'Mighty Mouse' JC/AOS. Exhibitor: Duane McDowell; photographer: Lois Cinert. Chicago Judging
- [2] *Cattleya Canhamiana* 'Elektra' HCC/AOS (*mossiae* x *purpurata*) 77 pts. Exhibitor: Larry Cox; photographer: Carmen Johnston. Florida-Caribbean Judging
- [3] *Tolumnia* x *pulchella* 'Hamlyn' AM/AOS (*guttata* x *hamiltonii*) 83 pts. Exhibitor: Claude W. Hamilton; photographer: Claude W. Hamilton. Florida-Caribbean Judging
- [4] *Vanda tessellata* 'YourEye' HCC/AOS 77 pts. Exhibitor: Juraj Kojs; photographer: Carmen Johnston. Florida-Caribbean Judging
- [5] *Encyclia bocourtii* 'Jamaica Beckford' AM/AOS 81 pts. Exhibitor: Claude W. Hamilton; photographer: Claude W. Hamilton. Florida-Caribbean Judging
- [6] *Encyclia gonzalezii* 'Tucuruvi's Aibonito' CBR/AOS. Exhibitor: Patricia Kono and Steve Gonzalez; Photographer: Cheryl Erins. Chicago Judging
- [7] *Vanda* Motes Blue Yonder 'Emilu Motes' AM/AOS (*Violeta* x *curvifolia*) 80 pts. Exhibitor: Motes Orchids; Photographer: Carmen Johnston. Florida-Caribbean Judging
- [8] *Phalaenopsis* Smiley Bluebird 'Timmy's Cuddlebug' HCC/AOS (*Vicky's Sensational Heartbeat* x *Yaphon Blue Sea*) 77 pts. Exhibitor: Vee T Du; Photographer: David Gould. Dallas Judging
- [9] *Aerides houlletiana* 'YourEye' AM/AOS 85 pts. Exhibitor: Juraj Kojs; Photographer: Carmen Johnston. Florida-Caribbean Judging
- [10] *Cypripedium guttatum* 'Dreamer' CCM-HCC/AOS 83-78 pts. Exhibitor: Jayme Hennek; Photographer: Cheryl Erins. Chicago Judging
- [11] *Phragmipedium* Ouaisne 'Dolly's Pick' AM/AOS (*dalessandroi* x *Eric Young*) 80 pts. Exhibitor: George A. Bogard; Photographer: David Gould. Dallas Judging
- [12] *Phragmipedium* Acker's Beauty 'Charles Wesley' HCC/AOS (*lindleyanum* x *kovachii*) 78 pts. Exhibitor: George A. Bogard; Photographer: David Gould. Dallas Judging
- [13] *Phragmipedium* Bel Croute 'Red Dragon' AM/AOS (*Sorcerer's Apprentice* x *caudatum*) 82 pts. Exhibitor: George A. Bogard; Photographer: David Gould. Dallas Judging
- [14] *Encyclia* Isle of Skye 'Dainty Nancy' HCC/AOS (*mooreana* x *Standard Setter*) 79 pts. Exhibitor: Linda Horton; Photographer: David Gould. Dallas Judging
- [15] *Rhynchofadanda* Brenda Lee 'Kirk' AM/AOS (*Seidentadenia mitrata* x *Vandachostylis Pine Rivers*) 82 pts. Exhibitor: Kirk Hoo; photographer: Claude W. Hamilton. Florida-Caribbean Judging
- [16] *Paphiopedilum* QF Voodoo 'Be Still My Heart' FCC/AOS (*Voodoo Kitty* x *Lorraine's Pride*) 91 pts. Exhibitor: Vee T Du; photographer: David Gould. Dallas Judging





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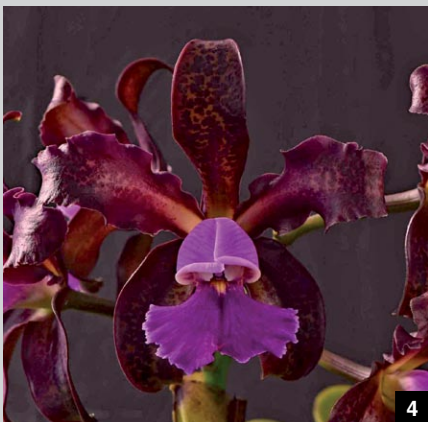


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- [1] *Broughtonia sanguinea* 'Joanna Banks' JC/AOS. Exhibitor: Claude W Hamilton; photographer: Claude W. Hamilton. Florida-Caribbean Judging
- [2] *Paphiopedilum* William Trelease 'Springwater' AM/AOS (*parishii* x *rothschildianum*) 85 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Rachel Kelmer. Florida North-Central Judging
- [3] *Paphiopedilum* Memoria Jim Solly 'Springwater' AM/AOS (Hsinying Franz x *anatum*) 81 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Rachel Kelmer. Florida North-Central Judging
- [4] *Sobennikoffia robusta* 'Interlaken' CCM-AM/AOS 86-80 pts. Exhibitor: Ron McHatton, Randy Young and Steve Balderson; photographer: Wes Newton. Florida North-Central Judging
- [5] *Paphiopedilum* Jennifer Reinoso 'Sadie Bug' AM/AOS (Memoria Hirohisa Kawai x *godfreyae*) 82 pts. Exhibitor: Krull-Smith; photographer: Rachel Kelmer. Florida North-Central Judging
- [6] *Paphiopedilum thaianum* 'WingDreams Wee One' AM/AOS 83 pts. Exhibitor: Julio and Eileen Hector; photographer: Rachel Kelmer. Florida North-Central Judging
- [7] *Paphiopedilum* Hilo Black Eagle 'Crystelle' AM/AOS (Johanna Burkhardt x *rothschildianum*) 82 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Rachel Kelmer. Florida North-Central Judging
- [8] *Papilionanda* Ben Fragrance 'Garrett's Gold Bars' HCC/AOS (*Vanda* Memoria Thianchai x Mimi Palmer) 76 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [9] *Vanda* Somthawil 'Garrett's Mr. Ed' HCC/AOS (*merrillii* x *denisoniana*) 78 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [10] *Myrmecophila* Rafael Romero 'Florida SunCoast' AM/AOS (*albopurpurea* x *christinae*) 84 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging
- [11] *Myrmecophila* Rafael Romero 'Florida Myakka' AM/AOS (*albopurpurea* x *christinae*) 80 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging
- [12] *Bulbophyllum* Fullerton 'Gold' AM/AOS (Frank Smith x *claptonense*) 81 pts. Exhibitor: Bill Garris; photographer: Wes Newton. Florida North-Central Judging
- [13] *Myrmecophila* Rafael Romero (*Myrmecophila albopurpurea* 'Florida SunCoast' x *Myrmecophila christinae* 'Tina') AQ/AOS. Exhibitor and Hybridizer: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging
- [14] *Vanda* Ben Jasmine 'Garrett's Totally Weird' JC/AOS (Savannah Kate Hector x Memoria Louis Hatos). Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [15] *Aerides* Bang Pa-In 'Garrett's Tough 'n Pink' AM/AOS (*crassifolia* x *multiflora*) 81 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [16] *Dendrobium amabile* 'Rodney' CCE (96 pts)-AM (85 pts)/AOS. Exhibitor: Cheryl Finke; photographer: Wes Newton. Florida North-Central Judging





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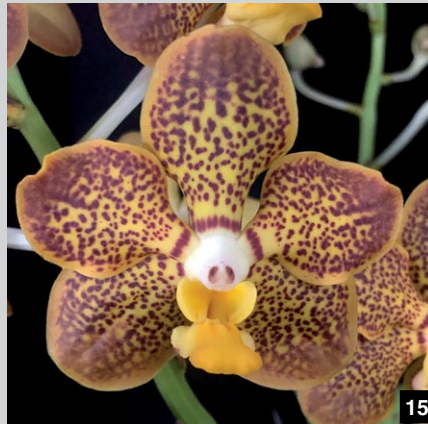
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- [1] *Paphiopedilum* Shin-Yi Formosa 'Springwater' AM/AOS (Lady Isobel x *gigantifolium*) 81 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Kay Clark. Florida North-Central Judging
- [2] *Papilionanthe* Amy 'Glen Gary - Cottage Orchids' AM/AOS (*hookeriana* x *tricuspidata*) 83 pts. Exhibitor: Glen Gary; photographer: Kay Clark. Florida North-Central Judging
- [3] *Vandachostylis* Blue Gem (2012) 'Garrett's Ivory Blush' HCC/AOS (*Vanda* Baby Blue x *Rhynchostylis coelestis*) 78 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [4] *Cattleya* Mareeba Tiger 'Springwater Fragrance' HCC/AOS (*tigrina* x *schilleriana*) 76 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Rachel Kelmer. Florida North-Central Judging
- [5] *Phalaenopsis* San Shia Appendo 'Fajen's Orchids' AM/AOS (*appendiculata* x *pulcherrima*) 85 pts. Exhibitor: Fajen's Orchids; photographer: Kay Clark. Florida North-Central Judging
- [6] *Cattleya* Loddiglossa 'Syzygy' AM/AOS (*amethystoglossa* x *loddigesii*) 80 pts. Exhibitor: Peter Ostlund; photographer: Ed Cott. Great Lakes Judging
- [7] *Phalaenopsis* San Shia Appendo 'Bryon' AM/AOS (*appendiculata* x *pulcherrima*) 80 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging
- [8] *Cypripedium* Philipp 'Hannah Fern' CCE-AM/AOS (*macranthos* x *kentuckiense*) 90-82 pts. Exhibitor: William Bergman; photographer: Ed Cott. Great Lakes Judging
- [9] *Paphiopedilum* Tommy Guild 'Springwater Sparkle' AM/AOS (Memoria Jim Coyle x Otogozen) 83 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Kay Clark. Florida North-Central Judging
- [10] *Paphiopedilum* Memoria Rex Vandelden 'Springwater' AM/AOS (Lady Isobel x *armeniicum*) 86 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Kay Clark. Florida North-Central Judging
- [11] *Vandachostylis* Jim Solly 'Alexis' Love' HCC/AOS (*Vanda tessellata* x Hot Lip) 78 pts. Exhibitor: Naoki Kawamura; photographer: Kay Clark. Florida North-Central Judging
- [12] *Rodrumnia* The Hollow's Legacy 'Wild Dancer' AM/AOS (*Tolumnia* Pine Hollow x Whiskey Hollow) 82 pts. Exhibitor: Jeanne Kaeding; photographer: Ed Cott. Great Lakes Judging
- [13] *Phragmipedium* Alejandro Teson 'Wacousta' HCC/AOS (*pearcei* x *andreetae*) 77 pts. Exhibitor: Dorothy Potter-Barnett; photographer: Ed Cott. Great Lakes Judging
- [14] *Vanda* Jungle Lord 'Chad's Yellow Spots' AM/AOS (Meg Laughlin x Motes Goldpiece) 83 pts. Exhibitor: Chad Whetstone; photographer: Kay Clark. Florida North-Central Judging
- [15] *Vanda* Spotted Denis 'Garrett's Freckles' AM/AOS (*denisoniana* x Suksamran Spots) 84 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [16] *Vanda* C Miyamoto Sunset 'Janis Orange Delight' HCC/AOS (Waianae Brilliance x Yip Sum Wah) 77 pts. Exhibitor: Chad Whetstone; photographer: Kay Clark. Florida North-Central Judging

ORCHIDS

Author Index Volume 89 2020

THE AUTHOR AND SUBJECT INDEXES FOR VOLUME 89 were prepared by Ron McHatton.

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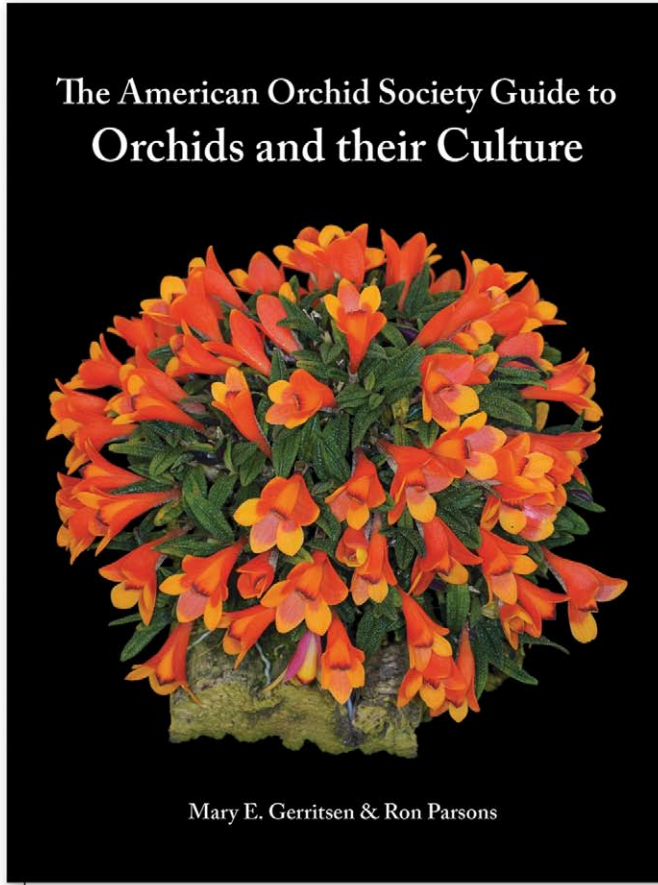
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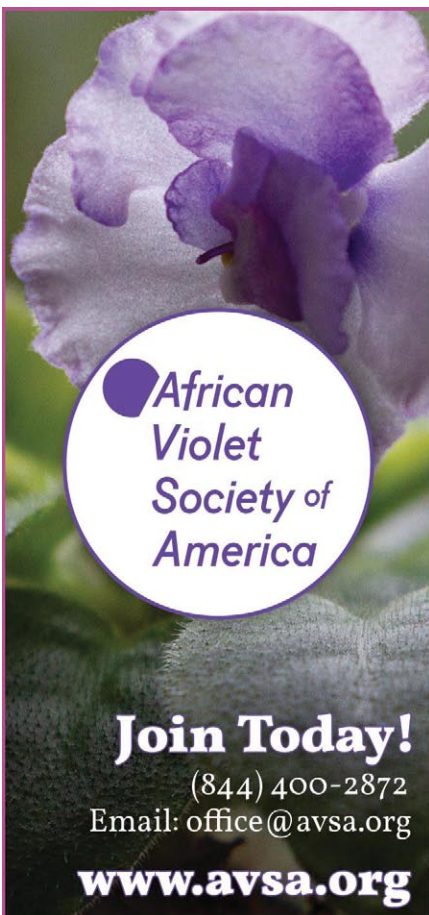
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Fertilizer Baskets



These little baskets were first introduced to me by Desert Valley Orchid Society (Phoenix) member Karla Velasco who was using them with a timed-release fertilizer. Because I was using a liquid fertilizer at the time, I put it aside for future use. Then I read about a fertilizer called Purely Organic manufactured in South Carolina (purelyorganicfertilizer.com/about/how-to-order). Sue Bottom's article (2017) showed excellent results on struggling orchids. The instructions were to put it into a tea bag and place the tea bag on top of the medium. The fertilizer will slowly release its nutrients as you water. I used the tea bag approach, which

worked but looked really ugly sitting in the orchid pot. So, I ordered these little fertilizer baskets (the small size is 0.8 inches [2 cm]) from Amazon, 100 for around \$16.50. They were designed for pelletized fertilizers for plants such as bonsai and orchids. So far, they work beautifully. They blend in well with the plant and even fit into my small 2-inch (5.1-cm) pots. For my larger pots, I use two. You would think that the powdered fertilizer would fall through the small holes but if you press it down firmly, it does not leak out. — *Cindy Jepsen (email: cindyjepsen@cox.net)*.

References

Bottom, S. 2017. Purely Organic. *Orchids* 87(5):344–349.

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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

Orchids 89(11): Front Cover

It has been brought to our attention that the plant featured on the front cover of the November issue identified as *Crytochilum halteranum* is, indeed, a superficially similar species, *Cyrtochilum mendax* Rchb.f.

Cyrtochilum mendax is very similar to *Cyr. halteranum* but can be distinguished by significant differences in the callus of the lip.

Historical publications have missed the difference. The painting of *Cyr. halteranum* in Veitch’s *Manual of Orchidaceous Plants* identified as *Cyr. halteranum* is, in fact, *Cyr. mendax*.

We appreciate Stig Dalström having kindly brought this error to our attention and look forward to the publication of a revision of the genus in progress.

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Pleurothallids: Neotropical Jewels. Volume 1

Karremans, A.P. and Vieira-Urbe, S. 2020. Self-published. Printed and bound by Imprenta Mariscal, Quito, Ecuador. ISBN 978-9942-38-400-3. Hardbound with dust jacket, 312 + vii pages, about 1,000 color photographs, 14 halftones, 1 line drawing. Price (including shipping): US\$128 North America and European Union; \$121 Central and South America; \$138 elsewhere. Ordering: <https://orchilibra.com/posts/shop>.

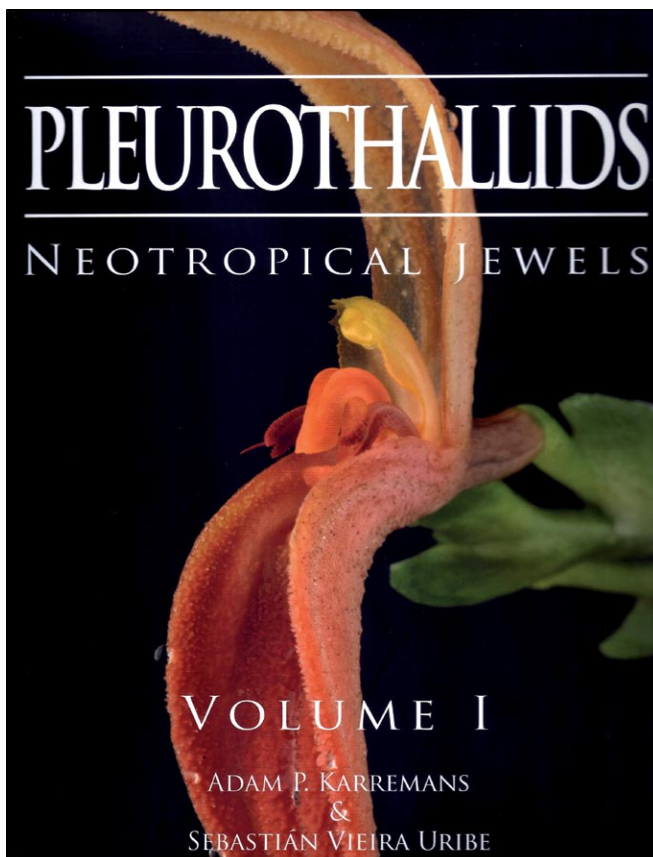
YEARS OF RESEARCH, writing, editing, publications and painstaking macrophotography underpin this spectacular debut volume of *Pleurothallids: Neotropical Jewels* by Adam Karremans and Sebastián Vieira Uribe. Adam is currently Professor at the University of Costa Rica and also Director of Jardín Botánico Lankester. Sebastián is Executive Director of Corporación SalvaMontes Colombia, editor of the long-running journal *Orquideología*, co-editor (with Adam) of the serial monograph *Species Orchidacearum*, and researcher at Jardín Botánico Joaquín Antonio Uribe in Medellín, Colombia. Their combined expertise and skills have produced an outstanding synopsis of 17 genera of subtribe Pleurothallidinae and the two genera in Dilomilinae (*Dilomilis*, *Neocognauxia*) in this first of four projected volumes.

The pleurothallid genera treated here are *Acianthera*, *Anathallis*, *Andinia*, *Andreettaea*, *Chamelophyton*, *Echinosepala*, *Gravendeelia*, *Lankesteriana*, *Luerella*, *Muscarella*, *Myoxanthus*, *Ophidion*, *Phloeophila*, *Porroglossum*, *Pseudolepanthes*, *Pupulinia*, and *Specklinia*. For each of these genera, some monospecific (e.g., *Andreettaea*) and others with as many as a few hundred species (e.g., *Acianthera*), the authors provide its nomenclatural history and discuss etymology, circumscription, distribution and ecology. Notes on identification, pollination and/or taxonomy are included for some genera as well. Fourteen plates of scanning electron micrographs of floral surfaces illustrate features such as hairs and glands, some of which may have a role in attracting pollinators.

Lumpers may feel that some genera are too finely split, while splitters may rail against the lumping in other genera. In most if not all cases there are sound molecular data and/or morphological characters that can be adduced to support either viewpoint. Differences these days are in the interpretation of those data, and those interpretations may well change as additional evidence springs from new technology, new discoveries in the field and fresh human viewpoints. We need to remember that systematics of all organisms — from bacteria, algae and fungi, up to birds, mammals and orchids — is never static. If it were, that would mark the end of science as we know it.

Prior to the generic treatments is a treatment for the subtribe as a whole with nomenclature, etymology and a summary of systematics work beginning with Carlyle Luer's monumental contributions and ending with recent DNA studies. Immediately following that section is a welcome chapter on vegetative morphology, thoroughly illustrating wide variations in habit, rhizomes, stems ("ramicauls") and leaves in full color. Just to assemble the mosaic of images in each educational plate must have required hours and hours.

The photography throughout is stunning, and as anyone who attempts macrophotography knows all too well, it is one thing to produce focused images of tiny flowers (some only a few millimeters across) and quite another to illuminate them evenly with acceptable depth of field and not end up with



what resembles either a supernova or else a black hole. The 100+ photographers who contributed their work to this volume generally succeeded in navigating through this Scylla-Charybdis peril; however, a few photos are clearly underexposed and disappointing. Let no one refer to this as a "coffee-table book," which has disparaging connotations. The extreme close-ups are beautiful, yes, but they succeed in demonstrating the wide range of variation within and among genera. They also have diagnostic value, which will be helpful beyond measure for non-scientists trying to identify their plants but cannot decipher and visualize technical written descriptions in scientific journals (if such can be ferreted out).

I understand that volume 2 is scheduled for 2022 and will comprise treatments of *Draconanthes*, *Dresslerella*, *Lepanthes*, *Pabstiella*, *Platystele*, *Pleurothallopsis*, *Restrepia*, *Teagueia* and some monospecific genera. But for now, this should be at the top of your holiday gift list for that pleurothallid aficionado in your midst. — Alec M. Pridgeon, Ph.D. (email: apridg1@gmail.com).

[Full disclosure: I was privileged to serve on Adam's doctoral committee many years ago at Leiden University, the Netherlands, and also invited to write the foreword for the volume.]

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