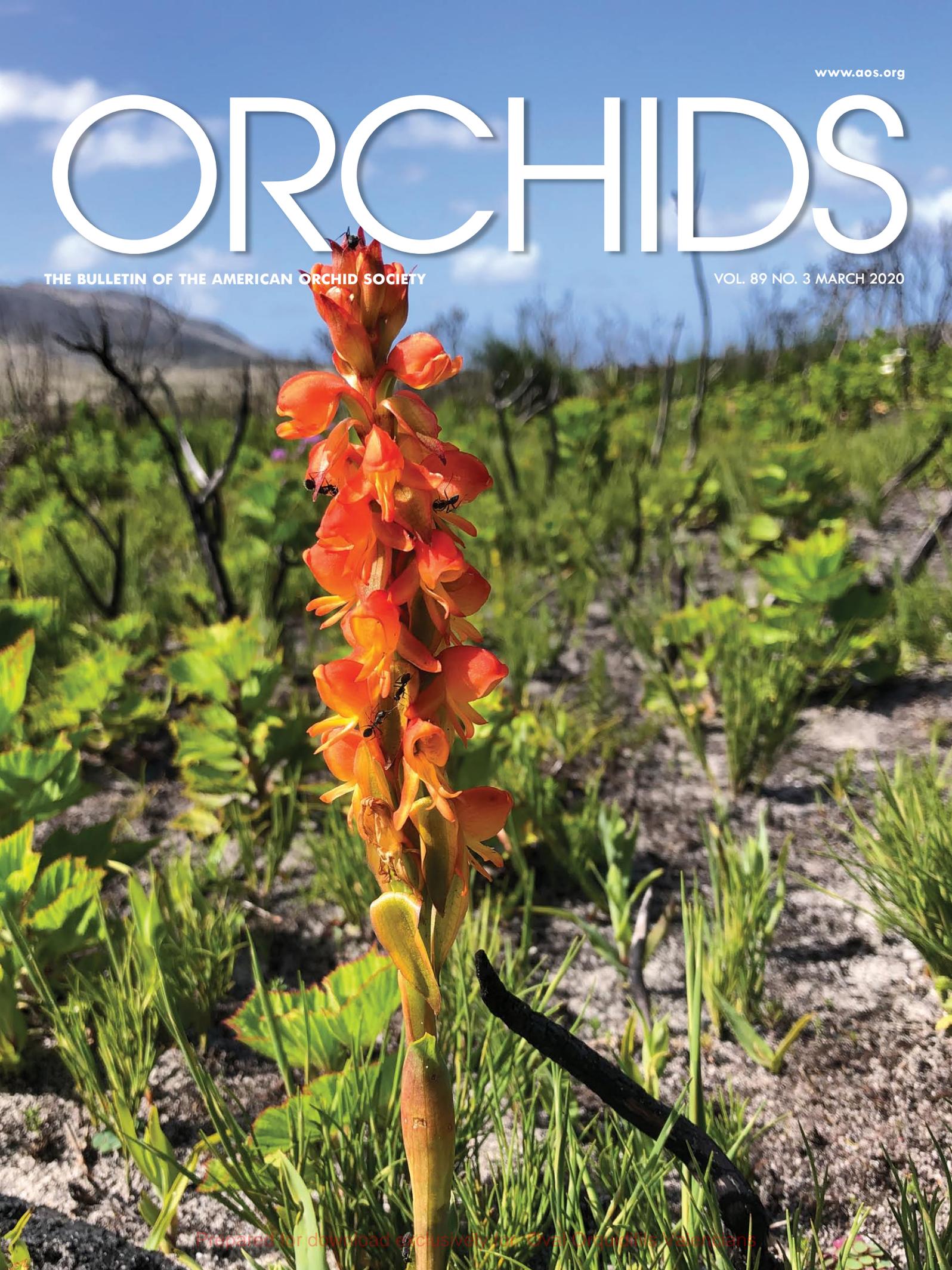


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FRONT COVER

Satyrrium coriifolium photographed by Jenny Parsons in South Africa's fynbos. The Kogelberg Biosphere and surroundings is a biodiversity hotspot, where the natural vegetation is the fynbos. It is part of the Cape Floral Kingdom, which has the most biodiverse plant species in the world (>9,000). In this issue Tom Mirenda and Jenny Parsons introduce us to just a few of the fabulous orchids of the region.

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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>acutifolium</i> (ak-kew-tih-FOL-ee-um)	<i>Cyanorkis</i> (sye-an-ORE-kiss)	<i>Paphiopedilum</i> (paf-ee-oh-PED-ih-lum)
<i>Aetheorhyncha</i> (ay-thee-oh-RIN-kah)	<i>Cycnoches</i> (SIK-noh-keez)	<i>pauciflorus</i> (paw-see-FLORE-us)
<i>alba</i> (AL-ba)	<i>Cymbidieae</i> (sim-BID-ee-ee)	<i>Pescatoria</i> (pes-ka-TORE-ee-a)
<i>albida</i> (AL-bee-dah)	<i>Cymbidium</i> (sim-BID-ee-um)	<i>Pesomeria</i> (pes-oh-MER-ee-a)
<i>alvaroi</i> (al-VAR-oh-ee)	<i>Cypripedium</i> (sip-rih-PEED-ee-um)	<i>Phaius</i> (FYE-us)
<i>amabilis</i> (a-MAH-bee-liss)	<i>Cyrtopodium</i> (sir-toh-PODE-ee-um)	<i>Phajus</i> (FAY-jus)
<i>amazonicum</i> (am-a-ZON-ih-kum)	<i>Dendrobium</i> (den-DROH-bee-um)	<i>Phalaenopsis</i> (fail-en-OP-sis)
<i>amboinensis</i> (am-boy-NEN-sis)	<i>Diacrium</i> (dye-AK-ree-um)	<i>philippinensis</i> (fil-lip-pin-EN-sis)
<i>amethystoglossum</i> (am-eth-iss-toh-GLOSS-sum)	<i>digbyana</i> (dig-bee-AY-na)	<i>Pleurothallis</i> (plur-oh-THAL-liss)
<i>anceps</i> (AN-seps)	<i>Disa</i> (DEE-za or DYE-za)	<i>Polychilos</i> (pol-ee-KYE-los)
<i>andreettae</i> (an-dre-ETT-tee)	<i>dodsonii</i> (dod-SONE-ee-eye)	<i>Proarthron</i> (pro-ARE-thron)
<i>aphrodite</i> (ah-froh-DYE-tee)	<i>dowiana</i> (dow-ee-AY-na)	<i>Prosthechea</i> (pros-THEK-ee-a)
<i>atrata</i> (a-TRAY-ta)	<i>Dracula</i> (DRAK-yew-la)	<i>Pterygodium</i> (ter-ee-GOH-dee-um)
<i>atricapilla</i> (at-rih-kap-IL-la)	<i>Encyclia</i> (en-SIK-lee-a)	<i>punctatum</i> (punk-TAY-tum)
<i>atropurpureum</i> (a-troh-pur-PUR-ee-um)	<i>endresianum</i> (en-dreez-ee-AY-num)	<i>reginae</i> (reh-JYE-nee)
<i>aurea</i> (AW-ree-ah)	<i>Epiarthron</i> (ep-ee-ARE-thron)	<i>Restrepia</i> (reh-STREP-ee-ah)
<i>Barkeria</i> (bar-KARE-ee-a)	<i>Epidendrum</i> (ep-ih-DEN-drum)	<i>Rhyncattleanthe</i> (rin-kat-lee-AN-thee)
<i>Bartholina</i> (barth-oh-LEE-na)	<i>equestris</i> (ee-KWES-triss)	<i>Rhyncholaelia</i> (rink-oh-LAY-lee-a)
<i>Bicolor</i> (BYE-kull-ur)	<i>erectum</i> (ee-REK-tum)	<i>rimestadiana</i> (ryme-shtad-ee-AY-na)
<i>bicornutum</i> (bye-korn-YEW-tum)	<i>etheliae</i> (eh-THEL-ee-eye)	<i>sabulosa</i> (sab-yew-LOH-sa)
<i>bifalce</i> (bye-FAL-kay)	<i>Euglossa</i> (yew-GLOS-sa)	<i>sanderiana</i> (san-der-ee-AY-na)
<i>bigibbum</i> (bye-GIB-bum)	<i>Evotella</i> (ee-voh-TEL-la)	<i>sanguinea</i> (san-GWIN-ee-a)
<i>bilamellatum</i> (bye-lam-el-LAY-tum)	<i>fenestratum</i> (fen-eh-STRAY-tum)	<i>Satyrium</i> (sa-TEER-ee-um)
<i>bivalvata</i> (bye-val-VAY-ta)	<i>flavus</i> (FLAY-vuss)	<i>Saurolglottis</i> (sore-oh-GLOT-tiss)
<i>Bletia</i> (BLEE-tee-ah)	<i>Gastrorkis</i> (gast-RORE-kiss)	<i>schilleriana</i> (schil-ler-ee-AY-na)
<i>Bonatea</i> (bone-AH-tee-a)	<i>grandiflora</i> (grand-ih-FLORE-a)	<i>Schomburgkia</i> (shom-BURG-kee-a)
<i>Brassavola</i> (brass-AH-vol-lah)	<i>hallackii</i> (hall-LAK-ee-eye)	<i>Sophronitis</i> (so-froh-NYE-tiss)
<i>Broughtonia</i> (brow-TOH-nee-ah)	<i>harveyana</i> (har-vee-AY-na)	<i>speciosa</i> (spee-see-OH-a)
<i>burmanniana</i> (bur-man-ee-AY-na)	<i>Hecabe</i> (HEE-kab-ee)	<i>spicata</i> (spy-KAY-ta)
<i>californicum</i> (kal-ih-FOR-nih-kum)	<i>Hexalectris</i> (heks-ah-LEK-triss)	<i>Spiranthes</i> (spy-RAN-theez)
<i>Calopogon</i> (kal-oh-POH-gon)	<i>hirtzii</i> (HIRTZ-ee-eye)	<i>splendida</i> (SPLEN-dee-dah)
<i>canaliculatum</i> (kan-a-lik-yew-LAY-tum)	<i>Holothrix</i> (hoh-LOH-thriks)	<i>stamfordianum</i> (stam-ford-ee-AY-num)
<i>carneum</i> (KAR-nee-um)	<i>hypodiscus</i> (hye-poh-DIS-kus)	<i>Stenia</i> (STEEN-ee-a)
<i>carnosa</i> (kar-NOH-sa)	<i>intermedia</i> (in-ter-MEE-dee-a)	<i>stuartiana</i> (stew-art-ee-AY-na)
<i>Catasetum</i> (kat-a-SEE-tum)	<i>Iwanagaara</i> (eye-wan-ahg-a-ARE-a)	<i>subquadrata</i> (sub-kwad-RAY-ta)
<i>Catcaullia</i> (kat-KAW-lee-a)	<i>Ixyophora</i> (ixk-ee-OFF-or-ah)	<i>surinamensis</i> (sur-ih-nam-EN-sis)
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<i>Caulaelia</i> (kaw-LAY-lee-a)	<i>kraenzlinianum</i> (krenz-lin-ee-AY-num)	<i>tenebrosa</i> (ten-eh-BROH-sa)
<i>Caularthron</i> (kaw-ARE-thron)	<i>Laelia</i> (LAY-lee-a)	<i>Tetramicra</i> (tet-rah-MYE-kra)
<i>Caulocattleya</i> (kaw-loh-KAT-lee-a)	<i>Laeliocatarthron</i> (lay-ee-oh-kat-ARE-thron)	<i>Tetrarthron</i> (tet-ARE-thron)
<i>Caultonia</i> (kaw-TONE-ee-a)	<i>Laeliocattleya</i> (lay-lee-oh-KAT-lee-a)	<i>tibicinis</i> (tib-ih-SIN-iss)
<i>Cautonleya</i> (kaw-TONE-lee-a)	<i>leucophaea</i> (loo-koh-FAY-ah)	<i>tigrina</i> (tye-GRYE-na)
<i>Ceratandra</i> (ser-at-AN-dra)	<i>Limatodis</i> (lim-a-TOH-diss)	<i>trianthophoros</i> (trye-an-tho-FOR-us)
<i>cernua</i> (SIR-new-ah)	<i>Limodorum</i> (lim-oh-DORE-um)	<i>Triphora</i> (try-FOR-a)
<i>chasmatochila</i> (kas-mat-oh-KYE-la)	<i>lueddemanniana</i> (lew-deh-man-ee-AY-na)	<i>tuberosa</i> (too-ber-OH-sus)
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<i>cyanochila</i> (sye-an-oh-KYE-la)		<i>Zygopetalinae</i> (zye-goh-pet-a-LEE-nee)

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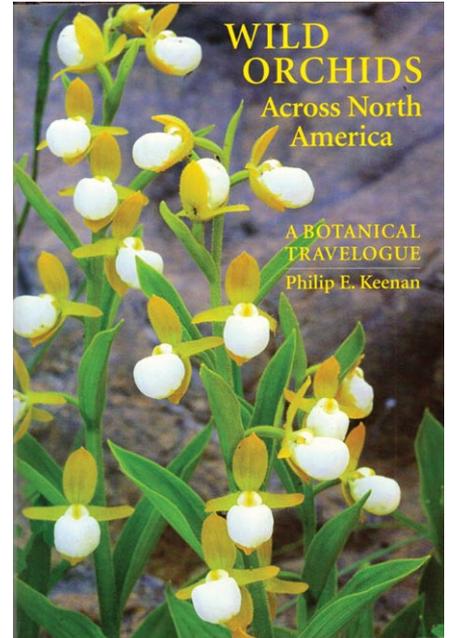
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PHILIP KEENAN SPENT a lifetime driving and flying thousands of miles in pursuit of orchids in their native habitats. He was passionate about sharing his adventures of finding wild orchids with the world and an ardent advocate for preserving their natural habitat. He was a founding member of the North American Native Orchid Society and was actively involved in numerous conservation societies.

He contributed multiple articles and hundreds of photographs to *Orchids*, as well as publishing two books, one on orchids and the other on his other passion — native birds of North America. To quote from the flyleaf of his book, *The Wild Orchids of America*, “In describing the world of orchids, Keenan does not confine himself to individual plants but also comments on the wildlife, geology and important natural features associated with orchid habitats.” His book is a chatty account of his field trips in Canada and the United States to document many of our native species, but it also provides inspiration to explore the wealth of orchids and their habitats respectfully.

Why should you be concerned about native orchid conservation? Species orchids are the basis for all orchids that are available to the thousands of orchid growers around the world. Conservation of diverse orchid species and their habitat is paramount if we are to maintain a vibrant genetic pool from which to draw on. Just think of the impact the discovery of *Phragmipedium kovachii* has had.

In recognition of Keenan’s lifetime of work in the conservation field, a trust fund was established many years ago with the AOS to recognize and reward individuals, groups and Affiliated Societies for outstanding work in the field of orchid conservation. The Conservation Committee has a goal to award this every year to deserving individuals or projects; the committee can, in fact, grant two first-place awards



The dust jacket of Philip Keenan's book.

(\$500 each) and two runner-up awards (\$250 each) each year.

You can do your part by contacting the Conservation Committee at orchidconservation@gmail.com to let them know of any projects, small or large, near or far, that promote orchid conservation or their habitats. It is hoped that we can feature these projects in regular articles in *Orchids* to spread the word, as well as letting the people involved in those projects know that they are important and recognized. Please do your part and become involved and be an advocate of conservation projects you are aware of.

— David Nixon is the AOS Conservation Committee's secretary (conservation_committee@aos.org)

PRESIDENT'S MESSAGE

LAST MONTH YOU were introduced to Laura Newton our Awards Registrar. This month you are going to be introduced to Ron McHatton our Chief Education and Science Officer and Naya Marcano, Director of Administration and Member Services.

Ron is currently the organization's Chief Education and Science Officer. He started growing orchids in Northern California about 55 years ago at the age of eight with a cattleya purchased from a local grower. This single plant quickly became a collection occupying every window facing east or south and his fascination with orchids has never waned. Over the years his private collection has numbered in excess of 2,500 plants, a direct result of no willpower or common sense.

Ron's growing experience spans growing under lights while a graduate student in Iowa, out-of-doors in Southern California as a postdoc at CalTech, a greenhouse in cold winters upstate New York, a temperate greenhouse in Atlanta and a shade house in Central Florida. He even has experience on the mass-market side of the orchid work (he calls it the dark side of the Force).

A PhD chemist by training, Ron is responsible for the editorial content and layout of the Society's monthly magazine, *Orchids*, and holds a monthly orchid Q&A webinar (Greenhouse Chat). Do not let that name scare you off. If you have not registered for one of his very educational webinars, you should give it a try. In addition to the magazine, Ron represents the Society on the Orchid Hybrid Registration Advisory Group, an international group that advises the Royal Horticultural Society on matters of hybrid registration and nomenclature. In addition to his professional position, Ron is an accredited American Orchid Society judge with 27 years under his belt. Prior to joining the AOS staff in 2007, he volunteered for over 25 years, chairing several national committees, twice holding a seat on the Society's Board of Trustees and briefly serving as a vice president. If this were not enough, Ron has also been a long-time supporter of the *Orchid Digest* where for many years he has served (and currently serves again) on its Board of Directors and its Executive Committee. He was the President for three consecutive terms.

Based at our Headquarters in Coral Gables, Florida, Nayanneth (Naya) Marcano is in charge of the American Orchid Society's day-to-day operations



1
NAYA MARCANO

including the management and support of staff and organization volunteers. She manages activities that encompass a multitude of disciplines: administration and finance, internal and external communications, customer service, human resources, Members Meetings and special events, the AOS library and grant support, among other duties.

Naya provides oversight of all aspects of Membership and Member Services to ensure a positive experience and the development of new members along with the retention of existing members. Membership operations involve the creation, update and maintenance of accurate membership records, member communication and conflict resolution. She also ensures the distribution of current information to promote membership benefits and services in support of special events and campaigns. This includes creating content and the production of our monthly electronic bulletin, the *Orchidgram*, as well as frequent social media posts.

Naya has developed collaborative relationships with organizations, current and prospective members and support of both domestic and international Affiliated Societies and Judging Centers nationwide. She is our local liaison with our strategic partner, Fairchild Tropical Botanic Garden and maintains a community presence by speaking about South Florida native orchids and other South Florida-specific orchid culture topics at local events, and organizing staff participation in orchid shows to promote the AOS and its



2
WES NEWTON

[1] The AOS Headquarters' staff at the office Christmas luncheon, left to right: Naya Marcano, Daniella Estrada, Victor Parera and Sandra Kurzban.

[2] Ron McHatton at the AOS Members' Meeting in Apopka, Florida.

mission, recruit new members and assist current members and the public at large with their enquiries.

Some of her additional responsibilities include the management of corporate giving programs and administering legacy bequests.

Naya is currently involved in the Data Consolidation project, the planning and

support of the Wild Orchid stamps series First Day of Issue event in collaboration with the US Postal Service, the AOS Archives relocation and the 2020 Spring and Fall Members meetings.

A "military brat," originally from Venezuela, Naya lived with her family in the Panama Canal Zone for several years and traveled extensively throughout Europe as her dad was transferred on Air Force assignments. She attended the University of South Florida in Tampa and pursued a degree in industrial engineering with a minor in economics. She resides in Miami with her husband of 33 years, and is the proud mom of a son currently doing his emergency medicine residency in New York. Currently, she is the President of the South Dade Amateur Orchid Club and is most successful growing orchids from the Cattleya Alliance, although more recently she is seeing great results with warm-growing cymbidiums.

Sandra Kurzban, membership Associate has been with us since October 2016. She handles, among other things, processing of memberships, affiliated societies and shows, email inquiries and fulfillment of publication orders. She is a talented artist and tabletop games aficionado. Daniella Estrada, membership assistant, is the new kid on the AOS block. She assists with membership functions, handles telephone inquiries, mail and

updates our daily logs. Victor Perara keeps our books and financial records in tip-top shape and prepares our monthly financial statements. He values health and fitness and loves a good meal!

In addition to their day-to-day responsibilities, our office staff also work in local AOS-sanctioned shows representing the organization, and promoting membership and its benefits to the public at large.

Register now at aos.org for the spring 2020 AOS members' meeting which is being held in Sacramento, California, April 15-19, hosted by the California-Sierra Nevada Judging Center. Come out early or stay a few days after the members

meeting to relax and see what this area has to offer you. Old Town Sacramento has the best railroad museum and restaurants and it is just a simple walk from the hotel! The event will be at the Embassy Suites on the Capitol Mall in Sacramento. They have a free shuttle to and from the airport seven days a week, so a rental car will not be necessary.

Until next time, happy growing!
— Susan Wedegaertner, AOS President
(email: susan@aos.org).

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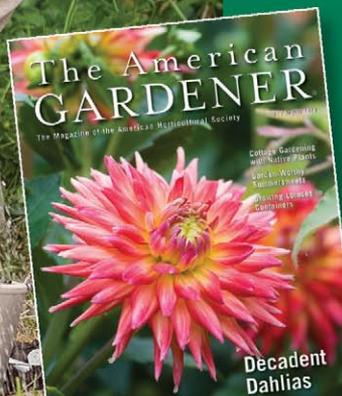
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New Orchid Stamps

by Arthur Chadwick



The new set of wild orchid stamps features 10 images taken around the country by native plant photographer, Jim Fowler. The public may recognize some of the blooms, particularly the two lady's slippers with their distinctive pouches." © 2020 USPS.

LAST MONTH, THE United States Postal Service introduced 10 new stamps that are sure to be a hit with plant lovers and outdoorsy people everywhere. The booklet features close-ups of orchid flowers and is the result of a lengthy process involving a slew of experts. It all started with an idea to showcase everyday phalaenopsis hybrids but soon morphed into a pictorial catalog of exotic wild orchids.

Initially, a graphic design team contacted native plant photographer and author, Jim Fowler, who directed them to view his thousands of orchid images on the photo sharing platform, Flickr. Mr. Fowler regularly travels the US and Canada taking pictures of orchid species, many of which are rare and endangered. He states, "As an orchidophile, I am always on the lookout for orchids growing in the roadside ditches and in the swamps and woodlands." He has written two books on the native orchids of North and South Carolina.

With over 250 native orchids in the US, it was a daunting job to narrow down the choices for the project. As art director for the stamp project, Ethel Kessler wanted to "showcase a variety of different color, shapes and sizes of flowers as well as represent the different growing regions where orchids can be found." In addition, she favored images that provided native

foliage in the background. Ms. Kessler has designed hundreds of stamps for the USPS and is best known for her 1998 Breast Cancer Awareness stamp that raised over \$70M for breast cancer research.

The public may recognize some of the flowers on the stamps, particularly the lady's slippers with their distinctive pouches. The green-and-white *Cypripedium californicum* from the West Coast and the white-and-magenta *Cypripedium reginae* from the East Coast are readily identifiable as orchids. On the other end of the spectrum is the relatively obscure *Triphora trianthophoros*, or "three-birds orchid." Its whereabouts are not widely known or easily accessible and the tiny blooms only last a matter of hours.

Once the preliminary design of the stamps was complete, it had to be approved by the 12-member USPS Citizen's Stamp Advisory Committee (CSAC). The group evaluates potential subjects that celebrate the American experience and reports its findings to the Postmaster General for a final decision. Naturally, the wild orchid designs flew through the committee.

Nowadays, first class stamps no longer have a denomination on them and, instead, are printed with "Forever" which means that the public can buy them at

the current rate of \$11.00 for a booklet of 20 (or 55¢ ea) and they will remain valid even if there is a price increase in the future. *Wild Orchids Forever* has a second meaning that is not lost on plant people. Over half of our native orchids are threatened by habitat loss and other environmental factors and these stamps help to bring awareness to the plight.

For all the visual glory of the orchid stamps, there were some missed opportunities. First and foremost, none of the individual stamps are labeled with any botanical identification so the viewer is left to wonder what is being shown. This omission is consistent with recent USPS floral stamp issues such as lilies and garden flowers but wild orchids require special treatment because the public is largely not familiar with them. Any nomenclature lettering would have to be small but, without it, the educational value is largely lost.

— 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, a retail store in Richmond, Virginia and boards over 13,000 orchids for local clients (email: art@chadwickorchids.com; website www.chadwickorchids.com).

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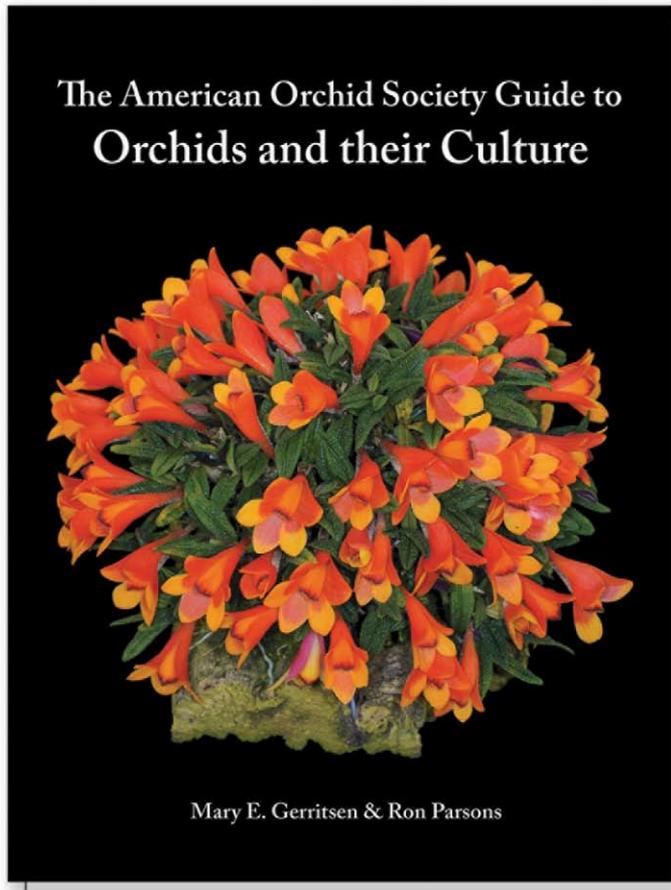
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CALL FOR GRANT APPLICATIONS

AOS Conservation Committee Accepting 2020 Grant Applications
By Thomas Miranda

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 2020. 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, 2020. Applications must be received no later than March 15, 2020. 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! — Thomas Miranda, Chair AOS Conservation Committee (email: conservation_committee@aos.org).

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March: The Month of Laughter

By Thomas Mirenda

IN APPROACHING CLOSE to two decades writing for *Orchids* magazine, I have found that orchid people really love it when I inject humor into my texts. Truly, love of comedy and laughter is a phenomenon shared by all but the most curmudgeonly of humans, and joy is an emotional state that feels so wonderful, we seek it out constantly. For all of us reading this, orchids unquestionably bring us unmatched joy. Even our animal friends engage in joyful play and banter, and their exuberance is contagious, making us lighter and more youthful with every bit of amusement we experience. It was once said that the world laughs in flowers. Particularly, it is the laughter of children playing that brings so much pleasant music to our souls.



Thomas Mirenda

Perhaps this is why the very serious nature of child activists such as Greta Thunberg makes us so uncomfortable. We can admire her idealism, bravery and commitment, not to mention her authentic emotional presentations that she delivers so eloquently, but it is disturbing to see what should be “a happy girl with a bright future” having to scold adults for the condition we have left the world for future generations. Indeed, I have searched far and wide for an amusing way to enter the debate on climate issues, and it is just impossible to find. So, we too must be serious in our approach. Imagine a world where wild orchids could no longer survive. At the upcoming World Orchid Conference in Taiwan, I invite you to join me and many others in activism that will preserve orchids, their habitats and all the creatures that interact with them. It is not a joke, but without a little seriousness, orchid conservation might never be accomplished.

ANTICIPATION By this month, orchids in your collection are often in blazing full bloom, phalaenopsis, cymbidiums, dendrobiums, paphiopedilums and many others are putting on glorious displays of floral loveliness, but throughout the next six months or so, the anticipation of new flowers can occur almost daily as a huge variety of orchids begin their new growths. Cattleyas, oncidium intergenerics and lycastes are producing

new roots and the beginnings of the new growths are starting to emerge from the sides of last year's pseudobulbs. For better branching on your rhizomes, carefully remove brown basal sheathing that may be covering developing growths. Vandas and phalaenopsis are also showing new root tips in advance of the production of vigorous new leaves. Even dry forest plants such as catasetums, cycnoches, deciduous dendrobiums and coelogynes are reanimating at last!

TAKING ACTION It may seem a bit early — indeed, there may still be snow on the ground — but now as the day length increases and the sun is rising higher in the sky, it is the time to get prepared for spring awakenings. Even though the serious potting season commences next month, the folks at your local garden center have been busy restocking their shelves with all the supplies you will need for optimum health and growth of your collection. They have missed you over the winter so go for a visit, and get the jump on things. Purchase good fresh pots in a variety of sizes, along with planting medium and fertilizers for the upcoming growing season. A few of your plants may already be growing out of their pots or just extremely root-bound. Nothing is more beneficial for most orchids than good fresh medium. Many of the best growers repot annually! While this is not a requirement for every kind of orchid, if weeds, ferns or god forbid, mushrooms are growing in your pots, fresh medium is recommended.

HERE COMES THE RAIN AGAIN With the advent of new roots and growths, warmer weather and increased photoperiod, more active and frequent watering begins this month. It can be a tricky time. If your plants are just starting to form new roots, it may be better to wait a few more weeks to water heavily. After all, it is the roots searching for moisture that causes them to grow and establish into their new medium. In addition, if tender new growths are holding water in their crowns, particularly after dark, it is likely they will rot. A little restraint right now will be appreciated by your plants, helping them establish once repotting commences.

HARDY SOULS For those of you who live in temperate regions, hardy



Stenorrhynchos albidomaculatum 'Huntington's Volcano' CCM/AOS exhibited by the Huntington Library and Botanical Gardens. The plant carried 459 flowers and 119 buds on 17 inflorescences when awarded in March of 2017.

orchids are just under the surface ready to sprout as soon as the snow melts and the earth warms. Hopefully you have marked the areas where your hardy orchids are planted and are monitoring the sites for signs of sprouting. Once danger of frost has passed, you might remove some of the protective mulch or pine straw you insulated them with to ease their emergence. Depending on where you are, some hardy orchids might already be emerging. Check the Go Orchids website (<https://goorchids.northamericanorchidcenter.org/>) for information about the native species that might be soon appearing at a forest near you and make plans to see them in all their joyful glory later in the spring or summer. They also need and deserve your protection.

In all seriousness, let the orchids' “laughter” continue unabated, protected for our beloved children and generations to come. — *Thomas Mirenda has been working professionally with orchids for over three decades. He is an AOS accredited judge and is the chairman of the American Orchid Society's Conservation Committee (email: biophiliak@gmail.com).*

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AFRICAN ORCHIDS

Into Africa, Part 3

Text by Thomas Mirenda/Photographs by Jenny Parsons

Fun in the Fynbos



MIRENDA AND PARSONS

MY EXPERIENCE IN Africa was truly revelatory. Exposure to the richness of this extraordinary continent instructed me well in the unique treasure present in every region of our earth. Beyond the incredible biodiversity present, above all else, my trek in Africa introduced me to some phenomenal human beings who I hope will be friends and collaborators for decades to come. Among them is a new acquaintance by the name of Jenny Parsons, who I have subsequently learned is a world class photographer and a major plant enthusiast.



Thomas Mirenda

Through a network of new friends in South Africa, Jenny invited me to tag along with her and her friends on a fabulous outing in an amazing coastal habitat known locally as the fynbos (pronounced fehn-bos) in a remarkable reserve near Betty's Bay in the Kogelberg Reserve. Indeed, the fynbos was festooned with incredible flowers, many of which are stimulated to bloom following fires, an important part of their ecology. I thought Jenny's photographs were so compelling and depicted such rare and unique orchid species that seeing them would be a real treat for *Orchids* readers. Here are some lovely images that have resulted in astounding botanical finds during daily walks with her dogs. What a lovely life she leads, and what a lovely place she calls her home. Jenny, thank you for sharing your botanical bounty with us.

ORCHIDS OF THE KOGELBERG BIOSPHERE, WESTERN CAPE, SOUTH AFRICA

By Jenny Parsons

The Kogelberg Biosphere and surroundings is a biodiversity hotspot, where the natural vegetation is the fynbos. It is part of the Cape Floral Kingdom, which has the most biodiverse plant species in the world (>9,000). In simple terms, the fynbos is the sum of four different parts — the proteoids, ericoids, restioids and the geophytes (Esler et al. 2014). The orchids seen on my walks in the fynbos are all terrestrial orchids and endemic to South Africa with some only flowering after fire.

BARTHOLINA

Bartholina is a genus with two species that are better known as spider orchids. Seeing these delicate orchids was a highlight of a very special botanical year. They were described by Manning (2007)



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as small tuberous perennials with hairy stems with a leaf that is hairy, rounded and pressed against the ground.

Bartholina burmanniana is about 9 inches (23 cm) tall. This terrestrial species produces a single-flowered inflorescence; the sepals green and the petals and lip pale mauve (Johnson and Bytebier, 2015). It is endemic to the southwestern and southern Cape of South Africa, and found in fynbos and restioid-dominated vegetation. It was spotted on a Custodians of Rare and Endangered Wildflowers (CREW) outing in September of 2019. Small, whispery and oh so delicate!

Bartholina etheliae is considered Near-Threatened (ICUN Red List of Threatened Species) and endemic to Southern Africa. Delicate and often found in dry fynbos hidden under bushes, the flower sepals are green and petals a pale purple-blue with terminal white knobs. The inflorescence reaches a height of no more than 11 inches (28 cm; Bean and Johns 2005). I was privileged to see this rare and exquisite spider orchid in November 2019.

BONATEA

Bonatea is a genus of 20 species, of which 10 are found in South Africa and two in the fynbos (Manning 2007).



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- [1] The large, scentless flowers of *Satyrium carneum* are pollinated by various species of sunbirds.
- [2] *Bartholina burmanniana* was one of the first Cape orchids to appear in the published literature. The first figure, prepared from dried material, appeared in 1804 and followed in 1818 by a rendering from live material.
- [3] *Bartholina etheliae*. The pollinator is not known with confidence but among the potential pollinators are members of the Tabanidae — the horsefly family.

Considered robust and terrestrial, the inflorescence is terminal and unbranched. *Bonatea speciosa* has many resupinate flowers, which are green and white in color. Commonly known as the green wood orchid, it was seen among the coastal scrub lining the roadsides of our little village, Pringle Bay. Hidden but oh so beautiful, I just loved the dense flowers that have a strong perfume at night to attract hawk moths as pollinators (Johnson and Byterbier 2015).

DISA

Disa is a genus of 183 species of which 143 are endemic to South Africa; most are found in the Cape Floral Kingdom (Johnson and Byterbier 2015). The characteristics of this genus according to Manning (2007) are: tuberous perennials, leaves along the stem or at the base, the inflorescence simple — sometimes singular or a composite spike, flowers resupinate, hooded and spurred. They are found in a variety of colors.

Disa sabulosa is a rare and endangered endemic with a small range between Pringle and Betty’s Bay, in the extreme southwestern part of the Cape. Last recorded on the Cape Peninsula 50 years ago, it is now presumed extinct. The species only flowers after fire on the Hangklip Sand fynbos. It was exciting to find a small population of 30-odd plants. Described as a stout terrestrial, 3.15–4 inches (8–10 cm) tall, the leaves are pear-shaped and wavy and the inflorescence is dense and many-flowered. The sepals are green and petals yellow (Johnson and Byterbier 2015).

Disa bivalvata is a South African endemic, found in perennial seeps or on moist sandstone slopes. It is a stunningly intricate *Disa*, which, according to Johnson and Byterbier (2015), is pollinated by spider-hunting wasps. The plant was spotted along the sandy flats next to the Palmiet River in the Kogelberg Nature Reserve. As described by Manning (2007), it “bears bicolored flowers in a flat-topped cluster, the sepals are white with an obsolete spur, the petals and lip maroon.” *Disa atricapilla* is also endemic and very similar to *Disa bivalvata*, but the shape and color of the lateral sepals are different. They are keeled and can be red, black or white while the petals and lip are maroon. It is found in seeps and pollinated by male thread-waisted wasps (Johnson and Byterbier 2015). Both species only flower after fire.

Disa venusta is endemic to the Western Cape, South Africa. It is



- [4] *Bonatea speciosa* flowers produce a sweet, honeysuckle-like fragrance and are pollinated by large twilight-active hawkmoths feeding on the copious nectar present in the flowers’ spurs.
- [5] *Disa atricapilla* are pollinated exclusively by male thread-waist wasps.
- [6] *Disa bivalvata* is pollinated by male spider-hunting wasps that appear to be attracted to the very fragrant flowers.
- [7] Populations of *Disa venusta* on the Cape Peninsula are vanilla-scented while no scent has been detected in those near Cape Hangklip, Kleinmond, Hermanus and Bredasdorp.
- [8] *Ceratandra harveyana* is much less common than *Ceratandra bicolor* and populations are usually stumbled upon rather than found at will.
- [9] *Ceratandra bicolor* flowers have a large oil-producing gland on the blade of the lip and are visited by bees that harvest the oil by scraping the gland with their forelegs.



considered vulnerable due to habitat loss and lack of fire stimulus. This plant was seen on Hangklip sandstone which was burned a year ago. We found a population of only three plants. A slender reed-like terrestrial described by Johnson and Bytebier (2015) as having radial leaves and a lax inflorescence with 2–12 flowers that are blue to purple with the lip paler or white. The dorsal sepal is hooded and the lip bearded. It was a beautiful rare little orchid that was a treat to find.

Disa cornuta, commonly called the inkspot Disa has an inflorescence that is dense and the flowers are described as downward-facing, typically white with a purple helmet and a dark spot on the lip (Marais 2017). This species flowers mostly after fire.

CERATANDRA

Ceratandra is a genus of six species, all of which are endemic to the fynbos and commonly known as shield orchids. They are terrestrials with numerous narrow leaves on the stem. The inflorescence is terminal and can be loose or dense with many flowers. Manning (2007) describes the genus as having “median (dorsal) sepal is united with the petals and bent back, the lip is united to the column and is anchor or kidney-shaped” (p. 152).

Ceratandra harveyana is rare and only seen after fire. A large population of over 100 individuals was seen on a southern seep of the sandstone slopes of the Kogelberg Mountains — a fantastic record seen in October 2019. Two other species, *Ceratandra atrata* and *Ceratandra bicolor*, were seen in wet seeps near the river,. The latter two are pollinated by oil-collecting bees (Johnson and Bytebier 2015).



MIRENDA AND PARSONS

HOLOTHRIX

Holothrix, a genus known as the thread orchids are described by Manning (2007) as small, tuberous perennials, mostly with hairy stems. Two leaves form a basal pair against the ground. Flowers are small, dense and usually form a one-sided inflorescence. Of the 55 odd species, 13 occur in the fynbos. I found a small population of the slender, dainty and hairy *Holothrix cernua* in the burnt sandy flats in September 2019. This species flowers mostly after fire. The flowers are yellow to cream-color; the height of plant is 9½ inches (24 cm).

EVOTELLA

Evotella a genus known as monkshood orchids has only two species, both of which are endemic to the Western Cape of South Africa. *Evotella carnosa* is a robust terrestrial up to 21.6 inches (55 cm) tall. The species flowers after fire and were found in a damp seepage area. The dense, beautiful inflorescence has flowers described as having green sepals, purple to pink petals and a whitish lip that forms a hood over the column (Marais 2017).

SATYRIUM

Satyrium is a genus of 91 species, of which 88 occur in Africa (41 in South Africa) and three in Asia. Manning (2007) describes the genus as tuberous perennials with leaves scattered along the stem, sheathing it. The plants flower in a dense, sometimes head-like raceme. *Satyrium erectum* is 31½ inches (80 cm) tall with two fleshy leaves pressed to the ground and the rest enfolding the stem (Bean and Johns 2005). The flowers are pink, hooded and unscented. They are found on the sandy coastal flats and slopes in the fynbos and can be close to the sea. The species is endemic to southwestern and southern Cape, South Africa.

Satyrium hallackii subsp. *hallackii* is rare and found in isolated populations in the Western and Eastern Cape, South Africa, and locally in moist sandy areas of Pringle Bay. It is considered endangered and under threat from habitat loss and alien vegetation. *Satyrium carneum* flowered en masse after the fires on the sandy flats near Pringle Bay. These orchids, pollinated by sunbirds (Johnson and Bytebier 2015) are becoming increasingly rare in the fynbos. Orange-colored *Satyrium coriifolium*, which is also stimulated by fire, were found in the same location.



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**PTERYGODIUM**

Pterygodium, commonly referred to as the bonnet orchids, number 20 species endemic to Africa, of which 19 occur in South Africa. Described by Manning (2007), the flowers are in a loose spike, yellow to greenish, often resupinate, shallowly hooded and strongly scented. *Pterygodium acutifolium* is endemic to the Western and Eastern Cape, South Africa. Pollinated by oil-collecting bees (Johnson and Byterbier 2015), the inflorescence is lax- to densely-flowered. The flowers are small (approximately 0.4 inch (1 cm) and butter yellow. Flowering mostly after fire, they are found in seepage areas of the Kogelberg sandy flats.

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— Thomas Mirenda has been working professionally with orchids for over three decades. He is an AOS accredited judge and is the chairman of the American Orchid Society's Conservation Committee (email: biophilialk@gmail.com).

— Jenny Parsons an amateur botanist lives in Pringle Bay, Western Cape, South Africa; part of the Kogelberg Biosphere renowned for its fynbos diversity. She is a passionate naturalist and nature photographer and a member of Botanical Society of South Africa. In addition, she is a member of the South African Biodiversity Institute's Custodians of Rare and Endangered Wildflowers (CREW) program. She majored in botany (BSc) in the 1980s at Rhodes University, Grahamstown and holds a BSc with Honors in Geography specializing in hydrology and soils. She is currently researching an MSc. (Investigation into the movement of the Pringle Bay Chacma Baboon troop in relation to the environmental factors using GIS). Self-employed and working with her husband, a geohydrologist with Parsons & Associates Specialist Groundwater Consultants, she enjoys walking with their dogs every day in the natural fynbos in and around Pringle Bay (Instagram [jenny.parsons.568](https://www.instagram.com/jenny.parsons.568) and Facebook Jenny Parsons).

[10] Particularly robust plants of *Holothrix cernua* can reach up to nearly 9 ½ inches (24 cm) tall.

[11] *Pterygodium acutifolia* flowers secrete oil from specialized oil-producing glands. The flowers are pollinated by oil-collecting bees about the size of small carpenter bees.

[12] *Satyrium coriifolium*. Another of the sunbird-pollinated satyriums, this species are threatened by increasing urbanization and invasive alien vegetation.

[13] The flowers of *Satyrium erectum* are variably colored from pale to deep pink and rare carmine-colored individuals have been found.



COLLECTORS' ITEM

Zootrophion Hybrids

Text and photographs, unless otherwise credited, by Leon Glicenstein



I READ THE article on the pleurothallid genus *Zootrophion* by Tom Mirenda and Wolfgang Rysy in the September, 2019, issue of *Orchids* with great interest. Although it was an excellent treatment of the species, they failed to mention that there are also a few hybrids in this genus. I know, it takes some special (weird?) imagination to even think of making hybrids in a genus that does not even open its flowers except for small windows, but there are some strange (or perhaps one should say “creative”) people out there (apologies if I have maligned anyone). There are presently three interspecific hybrids registered in the genus:

The first was registered by Hoosier Orchid Company in 2007 as *Zootrophion* Pink Banana, a cross of *Zootrophion vulturiceps* ‘Kasey’ and *Zootrophion dodsonii* ‘Bananarama’. The *Zo. dodsonii* ‘Bananarama’ varietal name was given to the plant by Wojciech (Woji) Klikunas because, as the picture shows, the flower was yellow and hence, looked like a banana. The flowers of the hybrid were about 1-inch (2.5-cm) long and varied in color from yellow with fine pink spots to those which appeared pink because there were so many spots — like a pointillist painting — over the yellow base color.

In 2010, the second one was registered by Marilyn Light of Canada. It was *Zootrophion* Fireworks, a hybrid of *Zo. dodsonii* ‘Lemon Drops’ and *Zootrophion atropurpureum*. The two images shown are the actual parents used in this cross. If one looks at the picture of the *Zo. atropurpureum* parent it looks like the *Zootrophion fenestratum* image in Mirenda and Rysy’s article. The hybrid was registered with *Zo. atropurpureum* as the pollen parent, and the World Checklist of Selected Plant Families considers *Zo. fenestratum* as a synonym of *Zo. atropurpureum*. As the AOS follows the Checklist with regard to species nomenclatures, we will keep the parents as the plant was registered. The flowers are approximately 1.14-inch (29-mm) long. The photographs show two color forms of the flowers of this hybrid.

The last one registered, in 2013, was *Zootrophion* King Vulture, a hybrid of *Zo. dodsonii* ‘Bananarama’ and *Zo. hypodiscus*. The flower was about ¾-inch (1.9-cm) long, cream-colored and with the apical tip of the flower the bloody red of the *Zo. hypodiscus* parent.

Marilyn Light has a fourth hybrid, as yet unregistered, of *Zootrophion alvaroi* and *Zo. dodsonii*. It may flower this winter (2019–2020) so we can see what it looks



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- [1] *Zootrophion* Pink Banana (*vulturiceps* ‘Kasey’ × *dodsonii* ‘Bananarama’) — plant in flower. The dark reddish stains on the foliage are the expression of anthocyanin pigments in the leaves. Note the characteristic carriage of the flowers near the base of the plant.
- [2] The attractive, crystalline flowers of *Zootrophion* Pink Banana clearly show characteristics inherited from both parents..
- [3] *Zootrophion vulturiceps* ‘Kasey’ CHM/AOS, AM/AOS.
- [4] *Zootrophion dodsonii* ‘Bananarama’.



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MICHAEL MACCONAILL



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MICHAEL MACCONAILL

- [5] As its name implies, the flowers of *Zootrophion atropurpureum* are some of the darkest in the entire genus.
- [6] *Zootrophion dodsonii* 'Lemon Drops' CHM/AOS. This species produces flowers that hang nearly vertically from the inflorescence and have some of the longest opening slits in the entire genus.
- [7–8] The resulting hybrid, *Zootrophion Fireworks*, clearly exhibits characteristics inherited from both parents. Flowers carriage varies from more or less horizontal to sharply downswept. Colors vary from darkly colored examples taking after the *atropurpureum* parent to those much closer to the lighter parent. The floral slit appears to be dominated by the *dodsonii* parent.

like.

I am sorry that while at Hoosier Orchid Company I did not make another *Zootrophion* hybrid. Because the *Zo. hypodiscus* plant we had was light yellow with a bloody red tip, I should have crossed it with *Zo. vulturiceps*. I would have expected (hoped for?) a flower that was light cream color with a bloody red tip and I would have registered as *Zootrophion* Prometheus' Bane. For those who do not remember the old myth, the Titan Prometheus was punished by Zeus (king of the gods of Mount Olympus in Greece) for stealing fire from the gods and giving it to the mortals, thereby aiding in the beginnings of civilization, by being chained to a rock in perpetuity and every day an eagle (the symbol of Zeus) would plunge its beak into Prometheus' body and eat his liver, which would then grow back for the next day's eagle feast (imaginative beings, those gods) until Heracles freed him. I hope someone, sometime will make this cross.

In general the pleurothallids, with the possible exception of *Dracula*, *Masdevallia*, *Pleurothallis* and *Restrepia*, have been underutilized in hybridization. Perhaps this will change in the future. There are even more possibilities for imaginative hybridization in the genus *Zootrophion*. Hmm . . . What would a hybrid of *Zootrophion endresianum* × *Zo. dodsonii* or *Zo. vulturiceps* look like? Would the spots of *Zo. endresianum* come through? If they did, one could perhaps register it as *Zootrophion* Rubella. So much to ponder. So much to do. Then again, many uncurious people would say or think, "Why bother?"

— Leon Glicenstein, PhD, is an international lecturer who speaks to orchid and plant societies. He has grown orchids for more than 55 years and was a breeder of novel orchid hybrids for the former Hoosier Orchid Company, especially in the *Gongorinae*, *Zygopetalinae*, *Pleurothallidae*, *angraecoids*, *jewel* and *painted-leaf* orchids; Orlando Avenue, State College, Pennsylvania 16803 (glicenstein33@msn.com).



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- [9] The flowers of *Zootrophion hypodiscus* are broader than they are long giving them a rather boxy appearance and the floral opening slits are quite large exposing the sepals and petals.
- [10] The flowers of *Zootrophion endresianum* with their light base color and bright contrasting red spots have a rather whimsical appearance.
- [11] *Zootrophion* King Vulture (*dodsonii* 'Bananarama' × *hypodiscus*) plant.
- [12] This *Zootrophion* King Vulture flower is dominated by the *hypodiscus* parent. Its too bad that the bright contrasting coloration of the *dodsonii* parent did not make a stronger impact on the flowers of the hybrid.



Sylvia Strigari

Chaubardiella pacuarensis

Text by Franco Pupulin/Watercolor by Sylvia Strigari

Tribe CYMBIDIEAE
Subtribe ZYGOPETALINAE
Genus CHAUBARDIELLA Garay

Chaubardiella pacuarensis Jenny, Orchideen (Hamburg) 40:91. 1989. Type: Costa Rica. [Turrialba]: road by Río Pacuare near Turrialba, *R. Jenny3* (holotype, G).

Epiphytic, caespitose *herbs* to 25 cm tall. *Roots* thick, about 2 mm in diameter. *Stem* completely hidden by the imbricating sheaths. *Sheaths* strongly conduplicate, the basal ones provided with scarious margins, to 2 cm long, the upper one foliaceous. *Leaves* 3–5, the conduplicate base 1.5–2.0 cm long, the blade elliptic-oblancheolate, acuminate, strongly carinate abaxially, 10–21 x 1.2–2.8 cm, dark green. *Inflorescence* basal, 1–3 per shoot, unifloral, peduncle to 4 cm long, provided with 2–3 triangular, acute bracts. *Floral bracts* in pairs, the outer one infundibular, broadly ovate, acute, to 8 x 7 mm, the inner lanceolate-elliptic, 10 x 3–4 mm. *Ovary* and pedicel terete-subclavate, to 5 mm long. *Flower* nonresupinate, pendent, translucent white to greenish cream. *Dorsal sepal* oblanceolate, obtuse, distinctly concave toward the apex, 21–30 x 11–14 mm. *Lateral sepals* oblanceolate, obtuse, slightly falcate, 22–30 x 12–15 mm. *Petals* obovate-spatulate, the broadly obtuse apex sometimes emarginate, slightly concave distally, 20–28 x 12–15 mm. *Lip* cochleate, broadly ovate when spread, the apex truncate to emarginate, deeply concave, the lateral margins slightly undulate, provided with a basal, laminar, broad semicircular, minutely papillose callus, the apex irregularly crenulate, narrowly U-shaped in natural position, 15–26 x 13–26 mm. *Column* semiterete, subtruncate at apex, widest in the central portion, 8–10 x 5–7 mm, with two rounded to elliptic, fleshy wings to about 3 mm below stigma, forming an indistinct, concave foot at the base; rostellar teeth filiform-acuminate. *Anther cap* cucullate, subrectangular, flattened, bilocular. *Pollinia* four, oblong-clavate, in two pairs of different sizes, on a quadrate stipe and an obovate-rhombic, curled, hyaline viscidium.

Leslie A. Garay and “Stalky” Dunsterville described the first species of *Chaubardiella*, as *Chaubardia tigrina*, in 1961, in the

second volume of their series *Venezuelan Orchids Illustrated* (Dunsterville and Garay 1961:72). *Chaubardia tigrina*, however, is morphologically only very superficially similar to the other true species of the genus *Chaubardia*, typified by *Chaubardia surinamensis*. Not only are the species of *Chaubardia* pseudobulbous plants (vs lacking pseudobulbs in *Chaubardiella*), but the resupinate flowers (vs. nonresupinate in *Chaubardiella*) are produced on erect inflorescences (vs. pendent in *Chaubardiella*) and are provided with a lip composed of a large, callused hypochile and a lanceolate-rhombic epichile, while the lip of *Chaubardiella* is entire, subquadrate to ovate, concave at the base with the distal half flattened, and provided with a laminar, transverse callus. Also phylogenetically, *Chaubardiella* is only distantly related to *Chaubardia*. In the combined molecular analyses carried out by Mark Whitten and coworkers (2005), *Chaubardiella* was strongly supported as monophyletic in a clade that includes the strictly South American *Aetheorhyncha* and *Ixyophora*, perhaps close to *Pescatoria* and *Warczewiczella*.

When Garay (1969) created *Chaubardiella* to accommodate his *Chaubardia tigrina*, he did not immediately recognize the true phylogenetic relationships of the genus, and in its first synopsis of *Chaubardiella* he included, together with several true members of *Chaubardiella* (previously assigned to *Chaubardia*, *Kefersteinia*, and *Stenia*), other species that are best included in *Stenia*, likely on the basis of similar pollinarium morphology (Garay 1969).

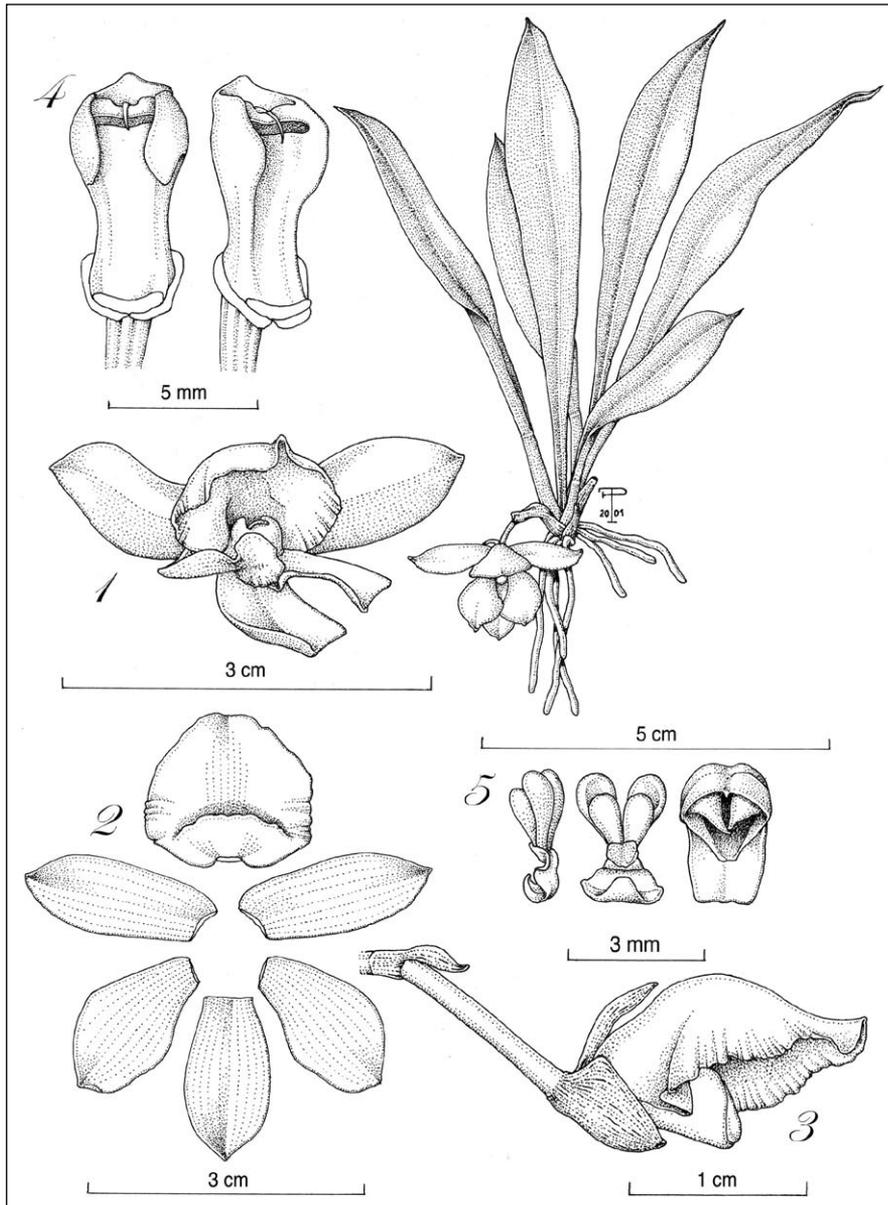
The name *Chaubardiella* is derived from *Chaubardia*, and *-ella*, a Latin diminutive, in allusion to the supposed affinities between the two genera and to the original generic placement of the type species.

Today, the genus is interpreted as comprising eight or nine species of epiphytic fan-shaped herbs mostly without pseudobulbs, with a few leaves and pendent inflorescences bearing a single, nonresupinate flower, varying in color from white to purple, often spotted or striped dark brown or purple. In species of *Chaubardiella* the lip is basally concave and provided on the disc with a fleshy,

low, fan-shaped or horseshoe-shaped, transverse callus extending to about the middle of the lamina. The pollinarium, with four superimposed pollinia in two subequal pairs, has a quadrate stipe and an unusual, curled viscidium (Pupulin 2009). The genus ranges in distribution from Central America (Costa Rica) to Peru and Guyana in South America, where the species occur in shady habitats, often growing on trunks and the oldest, mossy branches in warm tropical, premontane to cloud, evergreen, and extremely wet forests at elevations of 400–1,800 meters. The highest diversity of *Chaubardiella* is recorded in the northern portion of the Andes (Pupulin 2009).

The only known pollinator of *Chaubardiella* is the bee *Euglossa cibella* (Roubik and Hanson 2004), and presumably all species of the genus are similarly pollinated by male euglossine bees attracted to the flowers by their aromatic compounds. The phytochemistry of *Chaubardiella tigrina* and *Chaubardiella hirtzii* has been studied by Günter Gerlach and Rainer Schill (1991), who found that the sesquiterpene β -farnesene (similar to the scent of gardenias) is the main component of the floral fragrance of the former species, while the monoterpene linalool (a floral-woody scent with a note of citrus) is the major scent component of the latter. As the flowers of *Chaubardiella* are nonresupinate, when searching for the perfume’s source the bee walks over the column, and the hook-shaped viscidium attaches the pollinarium at the base of one of its legs (Dodson and Escobar 1993, Roubik and Hanson 2004, Whitten et al. 2005, Pupulin 2009).

Rudolf Jenny proposed *Chaubardiella pacuarensis* in a paper that was part of a series devoted to taxonomic novelties in the Chondrorhyncha-Alliance, and *Chbl. pacuarensis* was described together with *Chondrorhyncha* (now *Aetheorhyncha andreettae*) (Jenny 1989). The plant that served as the type was collected with W. Mark Whitten of the University of Florida Natural History Museum in 1986 during a field trip to the shores of Río Pacuare, one of the largest rivers that drain the Talamanca mountain range towards the waters of the Caribbean. The name of the species refers to the Río Pacuare region, where *Chbl.*



recorded at elevations of 400–1,400 meters and where the species is endemic (Pupulin 2010). On the basis of the relatively few available records, I recorded the flowering time of the species from October to December, corresponding to a short dry season in central and southern Caribbean Costa Rica (Pupulin 2010).

Jenny compared his new species with *Chaubardiella chasmatochila* (Fowlie) Garay (a later name and a synonym of *Chaubardiella subquadrata*, described by Schlechter as *Kefersteinia* in 1923), from which it is vegetatively indistinguishable. *Chaubardiella pacuarensis* may be distinguished from *Chbl. subquadrata* by its white flowers (vs. concolor golden yellow), the shape of the lip, which is ovate when spread and provided with finely pleated edges (subquadrata, smooth in *Chbl. subquadrata*), and the basal callus minutely papillose (vs. glabrous).

A plant mostly found in very humid and warm regions, *Chbl. pacuarensis* can be grown both in pots and on plaques, provided constant watering and medium to quite deep shade, necessary to maintain its shiny leaves a dark green color.

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Chaubardiella pacuarensis. The plant.

1. Flower.
 2. Dissected perianth.
 3. Column and lip, lateral view.
 4. Column, ventral and three quarters views (the anther cap removed).
 5. Pollinarium (two views) and anther cap.
- All drawn from *Pupulin 2438* by Franco Pupulin.

pacuarensis is still rarely found. According to Jenny (1989), a few sterile specimens of *Chbl. pacuarensis* were found in the midst of plants of *Kefersteinia costaricensis*, from which they could be differentiated by the larger and darker leaves. When the plants flowered in cultivation a little later on, it was confirmed that they clearly belonged to the genus *Chaubardiella*, but to none of the then-known five described species. Clarence Horich, surely a trained collector, subsequently intensively searched the same area referred to by Jenny (1989), but he was unable to find any other plants of this species. Plants of *Chbl. pacuarensis* are in fact apparently rare, with populations restricted to the tropical and premontane wet forests along the Caribbean watershed of the Cordillera Central and the Cordillera de Talamanca, where they have been

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Selected Botanical Terms

abaxial - lower surface of a leaf
 acuminate - tapered to a point
 acute - pointed
 adaxial - upper surface of a leaf
 bilocular - two-celled
 caespitose - clumped
 carinate - having a keel-like ridge
 clavate - club-shaped
 cochleate - like a spiral shell
 conduplicate - folded lengthwise
 convex - curved outward like the surface of a sphere
 crenulate - having a finely scalloped or notched edge
 cucullate - hooded
 elliptic - oval
 emarginate - having a notched margin or tip
 epichile - distal portion of the lip
 epiphyte - growing on another plant for support and not as a parasite
 falcate - sickle-shaped
 filiform - threadlike
 foliaceous - resembling a leaf
 hyaline - glassy, translucent
 hypochile - basal portion of the lip
 imbricate - overlapping
 infundibular - funnel-shaped
 laminar - flat

lanceolate - narrow oval tapering to a point at each end
 mesochile - middle portion of the lip
 oblanceolate - narrow at attachment, rounded apically
 obovate - egg-shaped with the wide end up
 obtuse - blunt or rounded
 ovate - egg-shaped with the narrow end up
 papillose - covered with small protuberances, like a cat's tongue
 pedicel - a stem carrying a single flower
 peduncle - the lower part of the inflorescence below the first bud
 phytochemical - any biochemically active compound found in plants
 pleuridia - multibranching structures
 plicate - pleated
 pollinarium - structure that is attached to the insect during pollination
 quadrate - four-angled
 recurved - bent or curled backward
 reflexed - bent backward
 resupinate - rotated to bring the lip lowermost
 revolute - rolled backward or inward
 rhizome - horizontal stem
 rhombic - diamond-shaped

rostellar - relating to the portion of an orchid column separating the male and female features
 scarious - dry and membranous
 sigmoid - S-shaped
 sinus - space or indentation between two lobes of a leaf
 spatulate - having a broad, rounded end; spoon-shaped
 staminode - sterile or abortive stamen; in Cyripedioidea, the flat structure that covers the two fertile anthers
 stipe - a small stalk
 sub - prefix meaning nearly or almost as in subpyriform - almost pear-shaped
 sympatric - found growing together; habitats that overlap
 terete - cylindrical or pencil-shaped
 trilobed - having three parts
 truncate - abruptly terminated as if cut off
 type - specimens on which a description is based
 viscidium - the sticky pad on the caudicle or stipe of the pollinarium that attaches the pollinarium to a pollinator

Fertilizer Basics

By Ray Barkalow

PEOPLE SPEND A lot of time worrying about what fertilizer to use on their orchids, and manufacturers make so many different blends that it is difficult to know which is the right one and how much to use. Generally, just about any fertilizer may be used on your orchids, within certain guidelines. To make it really simple, select a formula that contains good levels of N (nitrogen), P (phosphorus), and K (potassium), plus a wide array of minor and trace elements. If your water supply does not already contain them, use a fertilizer formula that contains calcium and magnesium as well.

Delving into it more, there are two ways to determine what the plants want by tissue analysis and by the chemical analyses of the solutions they get in nature. Analysis shows that about 95% of dry plant tissue is carbon (C), oxygen (O), hydrogen (H), and nitrogen (N). The first three are supplied by the air and water, with the nitrogen coming from our nutrient solutions. Potassium (K), phosphorus (P), calcium (Ca) and magnesium (Mg) make up the majority of the remaining few percent, with all of the other elements being present in truly trace amounts.

Looking at the nutrient solutions that literally rain down on epiphytes in the forest, we find that they typically contain no more than 10–20 ppm total dissolved solids (TDS) at the onset of a rain storm (it's almost pure water after that), and that the analysis shows it's nutritionally almost all nitrogen.

Both analyses suggest that nitrogen is the key fertilizer nutrient, and indeed that is true, but how do we reconcile that with the fact that too much nitrogen can suppress blooming? Not to worry — the key is simply giving the plants a small amount of fertilizer, frequently, and not overdoing it. More on that in a moment, but that leads us to the question about the use of “bloom-booster” formulas — the blends with augmented levels of phosphorus in the formulation. In fact, no fertilizer “boosts” blooming. Since excessive nitrogen can suppress blooming, the added phosphorus merely dilutes the nitrogen, allowing the plants to bloom normally. If you are not overdoing it in the first place, this is simply no issue.

HOW MUCH FERTILIZER SHOULD BE

USED? Like pretty much all other factors of orchid growing, there is no set answer, and “it depends.”

As a general rule, in order for any plant to gain a pound of mass — a matter of weeks for corn, a year or so for a cattleya, a couple years for a phalaenopsis, or a lifetime for a tiny pleurothallid — it must absorb and process about 200 pounds (25 gallons) of water, but only 5 grams of N-P-K fertilizer!

As it is the most important nutrient, professional growers base their nutrient concentrations on the amount of nitrogen provided to the plants over a finite time to harvest, having selected a fertilizer formulation that gives the ratios they want for the other elements. The same applies to hobby orchid growers, so we have to include the frequency of feeding in our estimates. For bi-weekly feeding, 150–200 ppm N is common and 75–100 ppm N if you feed weekly. Personally, growing my plants on a very warm deck in southeastern North Carolina, I use roughly 25 ppm N at every watering, two or three times a week.

Do not let the “ppms” bother you. A simple estimate is to divide 2 by the percent N on the fertilizer label. The result is the teaspoons per gallon for 25 ppm N. For you “metricated” folks, 2.3 percent N gives milliliters per liter for the same concentration. For example, for 25 ppm N using an 8-3-4 formula, we divide 2 by 8 to get $\frac{1}{4}$ teaspoon per gallon. If we were using a 30-10-10, then $\frac{2}{30} = \frac{1}{15}$ teaspoon per gallon would result in the same nitrogen concentration.

NUTRIENT AVAILABILITY Choosing a fertilizer that contains the correct nutrients in the proper concentrations, however, is only part of the story. A critical aspect that is often overlooked is the availability of those nutrients to the plant.

Minerals, whether naturally occurring in the soil or in fertilizers, are only absorbed by plants if they are in the form of ions in solution. The size and reactivity of those ions determines how readily they can be taken out of solution and absorbed by the plants, and the pH of the solution is probably the most significant factor in controlling the ionization of the minerals. Greatly simplified, depending upon the pH, a mineral can be insoluble and

unavailable to the plant, soluble but in a form that is difficult for the plant to readily absorb, or soluble and in a form that the plant can absorb with ease. Without going into solubility details of the specific ions, research has shown that a pH of around 5.5–6.5 is ideal for the vast majority of orchids, but don't be too concerned if your solutions are moderately outside of that range, as the plant and potting medium affect the pH as well.

Remember that the chemistry of your nutrient solution is determined by both the fertilizer and your water supply. Figuring that most people will use tap water, most general-purpose formulas are designed with a generic array of dissolved solids in mind, so will provide a good pH when used out of the box. If those are used in pure water — reverse osmosis, distilled, deionized or collected rainwater — it is likely that the pH will be extremely acidic and not suitable for the plants. In that case, the addition of a neutralizer is necessary. The use of formulas designed for pure water supplies can preclude the need for such adjustments.

WHAT DO FERTILIZER COMPONENTS DO? There are approximately 20 elements necessary or beneficial for plant growth and blooming. Some are derived from air and water — carbon (C), hydrogen (H) and oxygen (O) — while others are mostly absorbed from the nutrient solutions we provide. Six of the elements that should be supplied in your fertilizer solution: the macronutrients, including nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg) and sulfur (S). The remaining essential elements, the micronutrients, are required in small amounts only: boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), sodium (Na), zinc (Zn), molybdenum (Mo) and nickel (Ni). Additionally, it appears that both silicon (Si) and cobalt (Co) may play a beneficial role in plant health.

Below is a brief synopsis of the roles the elements from fertilizers play in the life of your plants:

Nitrogen (N) is a major component of proteins, hormones, chlorophyll, vitamins and enzymes essential for plant life. Nitrogen metabolism is a major factor in stem and leaf growth (vegetative growth). Too much nitrogen can delay or

prevent flowering, while deficiencies can cause yellowing of the leaves and stunted growth.

Phosphorus (P) is necessary for photosynthesis, protein formation and almost all aspects of growth and metabolism. It is essential for flowering. Phosphorus deficiency is rare, as plants actively absorb it, storing excess amounts in cell vacuoles.

Potassium (K) is necessary for the formation of sugars, starches, carbohydrates, protein synthesis and cell division in plants. It helps to control water absorption and loss, improves the physical sturdiness and cold hardiness of your plants and enhances flower color. A lack of potassium can result in mottled, spotted or curled leaves, or a burned look to the leaves.

Sulfur (S) is a structural component of amino acids, proteins, vitamins and enzymes and is essential to produce chlorophyll, so a deficiency usually shows up as light green leaves.

Magnesium (Mg) is a critical structural component of the chlorophyll molecule and is necessary for functioning of plant enzymes to produce carbohydrates, sugars and fats. Magnesium-deficient plants show yellowing between veins of older leaves, and they may appear limp. Some feel that regular supplementation of magnesium in fertilizers is important.

Calcium (Ca) plays a role in the functioning of enzymes, is part of the structure of cell walls, helps control the water content of cells and is necessary for cell growth and division. Unlike most other nutrient minerals, once incorporated in plant tissues, calcium cannot easily move to other plant tissues, so it must be supplied regularly. Without a sufficient supply of calcium, your plants may display stunted or stopped growth. Other possible symptoms include distorted new growth, black spots on leaves or yellow leaf margins.

Iron (Fe) is necessary for enzyme functionality and is important for the synthesis of chlorophyll. It is essential for young, actively growing tissues. Iron deficiencies are indicated by the pale color of young leaves followed by yellowing, and large veins. An adequate supply of soluble iron in the plant nutrient also inhibits the formation of phenol compounds, which can kill roots.

Manganese (Mn) is involved in enzyme activity for photosynthesis, respiration and nitrogen metabolism. In young leaves, a deficiency may be indicated by a network of green veins on a light green

background similar to that seen in an iron deficiency. Dark spotting may occur near the veins. In extreme cases, the light green parts become nearly white, and leaf loss may occur.

Boron (B) is used in cell wall formation, for membrane integrity within cells, for calcium uptake and may aid in the transfer of nutritional sugars between plant parts. Boron affects a variety of plant functions, including flowering, pollen germination, seed development, cell division, water balance and the movement of hormones. Boron must be available throughout the life of the plant as, like calcium, it is fixed in the plant once absorbed. Deficiencies can lead to very stunted or irregular growth, with leaves that are thick, curled and brittle. Roots can become discolored, cracked and covered with brown spots.

Zinc (Zn) is a component of enzymes or as an important aid in the functioning of them, especially auxins, the plant growth hormones. It is essential to carbohydrate metabolism and protein synthesis. Deficient plants have mottled leaves with irregular chlorotic areas. Zinc deficiency leads to iron deficiency causing similar symptoms.

Copper (Cu) is concentrated in roots of plants and plays a part in nitrogen metabolism. It is a component of several enzymes and may be part of the enzyme systems that use carbohydrates and proteins. Deficiencies can result in the die back of the tips of new growths.

Molybdenum (Mo) is a structural component of the enzyme that reduces nitrates to ammonia. Without it, the synthesis of proteins is blocked and plant growth ceases. Seeds may not form completely, and nitrogen deficiency may occur if plants are lacking molybdenum. Symptoms may include pale green leaves with rolled or cupped margins.

Chlorine (Cl) is involved in osmosis,

the ionic balance necessary for plants to take up mineral elements and in photosynthesis. Deficiency symptoms include wilting, stubby roots, chlorosis (yellowing) and bronzing. Flower scent may be decreased.

Nickel (Ni) is required for iron absorption. Plants grown without additional nickel will gradually reach a deficient level at about the time they mature and begin reproductive growth. If nickel is deficient, plants may fail to produce viable seeds.

Sodium (Na) is involved in osmotic (water movement) and ionic balance in plants (much as it is in people).

Cobalt (Co) is required for nitrogen fixation, so a deficiency could result in nitrogen deficiency symptoms.

Silicon (Si) is found as a component of cell walls. Plants with supplies of soluble silicon produce stronger, tougher cell walls making them more heat and drought tolerant. There is also some evidence that silicon plays a role in the prevention of fungal infections in the case of tissue damage.

IN SUMMARY As orchids are fairly slow growers in the plant world, the nutrient demand is low, but still an important part of our overall cultural regimen. Fertilizer will not improve blooming, will never fix a deficiency in another aspect of your culture, and “more” is never “better.” Feed regularly but sparingly, and give your plants the growing conditions they have evolved to expect in nature, and they will grow and bloom to their maximum, genetically programmed capability.

— Ray Barkalow.

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Phaius

by Peggy Alrich and Wesley Higgins

A Central Africa to Southern Asia Genus



Loureiro

Flora Cochinchinensis, 2: 517 & 529 (1790).

ETYMOLOGY From the Greek for gray or dusty (*phios*). Refers to the predominantly dark hue of the dying flowers.

GENERITYPE *Phaius tankervilleae* (Banks ex L'Héritier) Blume (*Limodorum tankervilleae* Banks ex L'Héritier), selected by Blume, *Mus. Bot.*, 2: 177 (1856).

GENERIC SYNONYMS *Cyanorkis* Thouars, *Nouv. Bull. Sci. Soc. Philom. Paris*, 1:317 (1809); *Gastorkis* Thouars, *Nouv. Bull. Sci. Soc. Philom. Paris*, 1:317 (1809); *Pachyne* Salisb., *Trans. Hort. Soc. London*, 1:299 (1812); *Limatodis* Blume, *Bijdr. Fl. Ned. Ind.*, 375 (1825); *Tankervillia* Link, *Handbuch*, 1:251 (1829); *Hecabe* Raf., *Fl. Tellur.* 4:44 (1838); *Pesomeria* Lindl., *Edwards's Bot. Reg.*, 24 (Misc.):5 (1838); *Phajus* Hassk., *Cat. Hort. Bot. Bogor. Alt.*:41 (1844), orth. var., and *Paraphaius* J.W. Zhai and F.W. Xing, *Molec. Phylogen. Evol.*, 77:221 (2014).

Forty-four terrestrial or epiphytic species are found in low to upper elevation, hill scrub, savannas to open montane forests from Gabon to Congo (DRC), Madagascar, Réunion, Sri Lanka, eastern India, southern China (Xizang to Fujian), Taiwan, southern Japan, Myanmar to Vietnam, Malaysia, Indonesia, New Guinea and eastern Australia (Queensland

to New South Wales) to the southwestern Pacific Archipelago.

These plants have clustered stems, with or without pseudobulbs that are sometimes cylindrical and rather cane-like, each with large, pleated, thinly textured and sometimes petiolate leaves. The erect, numerous flowered inflorescence has large flowers opening successively so that the plant remains in bloom for extended periods. The similar, narrow, spreading sepals and petals are dark red, yellow or white to purple-brown in color. The white or pink, distinctly tubular, short, simple or lobed lip has a wavy, recurved front margin speckled purple. The fleshy, rather long to short column is largely free from the simple or trilobed lip that partly encloses the footless column. The spurless or long to short, narrow to cone-shaped, often yellow spur has a forked tip. These flowers have a variety of unusual, unique, and often spectacular color combinations. Pollinia, eight, in two groups of four, clustered, clubshaped, waxy, attached to short caudicles, viscidium elongate, at an angle to the pollinia, sometimes absent.

The genus *Phaius* is currently unplaced at the subtribe level because preliminary molecular studies suggest that this genus consists of at least two separate lineages and is nested within the genus *Calanthe*. (Ormerod and Kurzweil 2019; Xiang et al. 2014; Yukawa 2013;

Zhai et al. 2014).

CULTURE Plant these in large pots with an organically rich loam mix with a bit of manure added. Should be kept moist year round and provided shade. New plants can be grown from the old flower spikes; lay the spike in a flat tray filled with sand and half cover them. Keep in a shady moist area and new plants will emerge from the nodes of the spike in one to two months.

— *Peggy Alrich is a freelance graphic designer (email sunflowerltd@earthlink.net).*

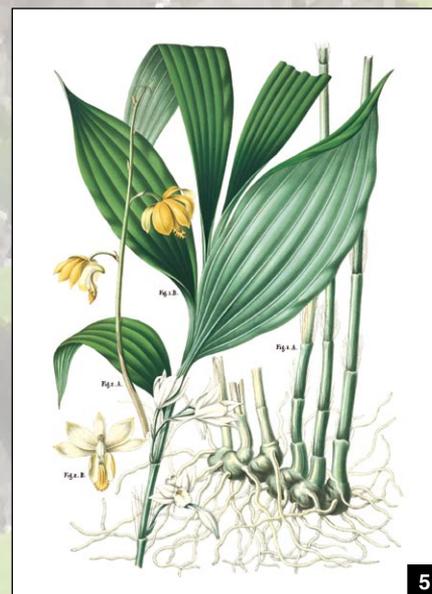
— *Wesley Higgins is an AOS accredited judge (email wesley.higgins@comcast.net).*

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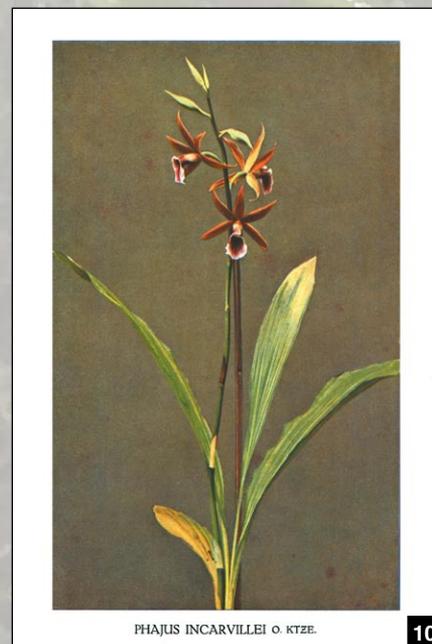


Pub. by S. Curtis, Walmoth, Aug. 1. 1817.



Antique Plates — Phaius

- [1] *Phaius tankervilleae* as *Limodorum tankervilleae*, *Botanists' Repository*, 6:t.426 (1797).
- [2] *Phaius tankervilleae* as *Bletia tankervilleae*, *Botanical Magazine*, 44:t.1924 (1817).
- [3] *Phaius flavus*, *Collection des Orchidées*, t.3 (1858).
- [4] *Phaius wallichii*, *Plantae Asiaticae Rariores (Wallich)*, 2:t.158 (1831).
- [5] *Phaius pauciflorus* and *flavus* (as *P. crispus*), *Flora Javae*, t.4 (1828).
- [6] *Phaius maculatus*, *Orchid Album*, 8:t.381 (1889).
- [7] *Phaius flavus* as *Phaius maculatus*, *Botanical Magazine*, 68:t.3960 (1842).
- [8] *Phaius grandiflorus*, *Flore des Serres et des Jardins de l'Europe*, 7:t.738 (1851–1852).
- [9] *Phaius grandiflorus*, *Orchid Album*, 11:t.502 (1897).
- [10] *Phaius tankervilleae* as *Phaius incarvillei*, *Orchideen*, t.5 (1914).



Caularthron and its Hybrids

BY JEAN ALLEN-IKESON



A FEW YEARS ago, I wrote a Parting Shot about my favorite orchid that would be the last to go if I had to take down the greenhouse. *Laeliocatarthron* Fair Jewel 'Lilac Bells' HCC-CCM/AOS is full of charm with its strong, upright inflorescences, tendency to put up multiple inflorescences and new growths and clusters of 10–15 flowers per inflorescence. The flowers are the most delicate and alluring opal color. The leaves and pseudobulbs grow nearly straight up so that an 8-inch (20.3-cm) pot could easily have 30 or 40 growths and 15 or 20 inflorescences without taking up valuable bench space.

Where do all these wonderful characteristics come from? *Caularthron*, which is pronounced like you are clearing your throat, (aka *Diacrium*) is a lesser-known genus in the cattleya alliance with only four species recognized by the World Checklist of Selected Plant Families. Two species are relatively new and little is known about them: *Caularthron amazonicum* and *Caularthron kraenzlinianum*. *Caularthron bilamellatum* was described in 1958 and looks like a second-rate version of the popular species, *Caularthron bicornutum*. Both are white, while *Cau. bicornutum* can have a pink flush, with charming small spots on the lip. *Caularthron bicornutum*, described in 1837, has numerous clones with good form and especially wide petals. The sepals and petals are pointed on their ends, a characteristic that follows the sepals into generations of hybrids. Both of these latter species are fragrant (Withner 1998).

The genus has a couple of odd characteristics. The first is that they are easily self-pollinated by bees or wasps (Moir 1980) because disturbance causes the easily loosened pollinia to drop onto the stigmatic surface as in the case of *Cau. bicornutum*, a characteristic that degenerates into cleistogamy in *Cau. bilamellatum*. Cleistogamy is simply a term for flowers that tend to self-fertilize without manipulation by insects, birds or humans. Sometimes it is so extreme that the flowers are fertilized before they are open or when they just begin to open. Some wild-collected clones of *Guarianthe aurantiaca* are also famous for that.

Fowlie (1961) reported a dwarf, less-common, pinkish form of *Cau. bilamellatum* from Venezuela in which cleistogamy was less evident. Cleistogamy may partially account for the lack of popularity of this species and difficulty in producing hybrids that are not selfings.

A second interesting characteristic of the genus is that the pseudobulbs become



JAY MORRIS

hollow as they age and provide a home to numerous species of ants (Withner 1998, Fowlie 1961, Fisher and Zimmerman 1988) in a similar fashion to *Myrmecophila*, once known as *Schomburgkia*. Oddly enough, in the spring, I usually see a small army of ants marching through my greenhouse that take up residence in my Fair Jewel if allowed. They do not seem to be particularly interested in any other plant and used to bypass the schomburgkias. A few days of dripping some ant killer (a honey-thick mixture of sugar, water and borax) along the bench usually does the trick. Since that product has become harder to find, I simply switched to the obvious and made my own with Twenty Mule Team Borax that is usually found in building centers as it is considered an industrial cleaner. Just sprinkling it on ant beds in the lawn works well but you may have to reapply the following year or six months later. The only downer is that it has a tendency to kill the grass where you sprinkle it, so I would not recommend putting it directly in or on your pots or orchids. My only other foray into trying to get rid of a large ant bed on the edge of my ditch was a bit of serendipity to see how much they liked an outdated bottle of Frank's Red Hot sauce. Obviously, the queen was not amused as the bed shrank and few ants were there for a couple of months. The borax is far more effective.

Because of the affinity of ants for *Caularthron*, the genus has previous been suggested to perhaps be related to *Myrmecophila* or even *Epidendrum*, with which it breeds readily. A phylogenetic analysis using nuclear ribosomal DNA shows that it is in an alliance with *Epidendrum* and *Barkeria* but separated from *Encyclia*,

[1] *Caularthron bicornutum* photographed by Greg Allikas. The inset close-up, photographed by Fred Clarke, is an exceptionally round, full-formed unawarded select clone.

[2] *Laeliocatarthron* Fair Jewel 'Lilac Bells' CCM/AOS grown by the author.

Prosthechea and *Myrmecophila* (van den Berg et al. 2000). However, ants seem to be more attracted to the nectar that *Cau. bilamellatum* produces from the base of the leaves (Fisher and Zimmerman 1988) and to the hollow pseudobulbs rather than to its phylogenetic connections. The adaptation for living synergistically with ants seems to have evolved in parallel to other ant-adapted genera or species.

There are a number of AOS awards to *Cau. bicornutum*. Most are cultural awards due to its propensity to grow rapidly in warmer conditions into a vertically compact specimen plant with generally eight to 16 flowers per each of numerous inflorescences. Perhaps the nicest is 'Sunset Valley Orchids' AM/AOS in terms of full, round and almost perfectly symmetrical flowers. The texture tends to be sparkling so the white flowers are elevated to elegance and shown to perfection well above the leaves.

The species is not always the easiest to bloom and they grow best in warm conditions. This limits its desirability for the average orchid grower. The good news is that the species has some rather useful dominant characteristics that can make it a darling in hybridization. Generally, temperature intolerance is not dominant so hybrids are generally easy to grow and tolerant of intermediate conditions.

ALLEN-IKESON

The hybrids range from crosses with *Cattleya coccinea* (*Sophranitis*) such as *Caulocattleya* Hot Lips to *Broughtonia sanguinea* such as *Caultonia* Alice Hart and to *Laelia albida* with its most successful, first-generation hybrid, *Caulaelia* Snowflake. There are 58 hybrids with species or a natural hybrid, which demonstrates a tolerance of a wide range of crosses. Additionally, there are nearly as many crosses to hybrids, although the primary crosses to species are the most successful as a whole. Many major hybridizers have worked with *Cau. bicornutum* including Goodale Moir, Stewart Orchids, Jones & Scully, Rod McLellan Co., Leon Glicenstein, Pendleton, H&R, Carter & Holmes and, in particular, Sunset Valley Orchids. They were all seduced by its charm and potential.

Most hybrids are white to opal, light lilac or light pink, but interestingly *Clty.* Hot Lips is intense rose red with the lines or dots coalescing into lines on the lip typical of the *Cau. bicornutum* parent and on a small plant. The cost was the number of flowers per inflorescence. The color and the floriferousness were the exception to what generally occurs (Glicenstein 2013).

The spotting on the lip of *Cau. bicornutum* hybrids is reasonably common and adds charm. Spots and parallel or French-lace lines, which can appear to be made up of dots or small spots, can pop up in the hybrids as well on the sepals and petals. A reasonably recent hybrid, *Epiarthron* Kevin Mark Ragbir 'Iliana's Delight' AM/AOS (× *Epidendrum stamfordianum*) had striking, small "old rose" spotting on both the sepals and petals.

Many of the clones of *Caulocattleya* Chantilly Lace (× *Cattleya* El Dorado Splash) are peloric due to the peloric parent El Dorado Splash, whose parent *Cattleya* Little Dipper and grandparent *Cattleya* Batalinii, an F1 apparently of the aquinii form of *Cattleya intermedia*. Because *C. intermedia* is so far back in the pedigree, the peloricism mainly affects the color and not the petal form. Chantilly Lace has full, round petals with parallel rows of small spots or spots coalescing into lines along the length of the central portion of the petals, mimicking the lip. The four awarded clones average nearly eight flowers per inflorescence and are larger than the *Cau. bicornutum* parent at an average of 2.7-inch (6.9-cm) natural spread. Awarded clones of *Cau. bicornutum* average 2–2.6 inches (5–6.5 cm).

Fred Clarke has gone in a similar



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IFIMA SALDANA



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ARNOLD GUM



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direction with a new hybrid of *Laeliocatathron* Silver Maker, an F2 and F3 *Cau. bicornutum*, which has splash petals in its pedigree with another dose of splashes from *Cattleya* Dubiosa, with its strongly peloric pedigree. The other parent is *Cattleya* Hsinying Excell, also a peloric. The goal is to increase the intensity of the pink and produce purple flares (Clarke 2019).

Other hybrids of *Cau. bicornutum*, include an unusual cross called *Tetrarthron* Jeanette Mallory with *Tetramicra canaliculata*, a miniature plant with parallel veins on the trilobed lip and a mass of dense small spots and lines on the sepals and petals, which displays veining on the sepals and petals as well.

The spots on the sepals and petals of *Cattleya amethystoglossa* have been converted to French-lace veining on *Caulocattleya* Pink Glory 'Ken' HCC/AOS. Such conversions are one of the interesting questions facing orchidists: Why do markings occur? Why do they occur when they occur? Are spots related to lace veining or lines? Can one become

- [3] *Caulocattleya* Hot Lips.
- [4] *Epiarthron* Mark Kevin Ragbir 'Iliana's Delight' AM/AOS grown by Iliana Hanna.
- [5] *Caulocattleya* Chantilly Lace 'Best' HCC/AOS grown by Cat Orchids.
- [6] *Laeliocatathron* Silver Maker 'Sunset Valley Orchids' AM/AOS grown by Fred Clarke.
- [7] *Tetrarthron* Jeanette Mallory 'Fischer' CCM/AOS grown by Seagrove Orchids.
- [8] *Caulocattleya* Pink Glory 'Ken' HCC/AOS grown by Judy O. Margolis.
- [9] *Jackfowlieara* Appleblossom 'Luna' AM/AOS grown by Lois Geren.
- [10] *Jackfowlieara* Appleblossom 'Eunice' AM/AOS.
- [11] A light yellow form of *Jackfowlieara* Appleblossom.
- [12] An exceptionally brilliant yellow example of *Jackfowlieara* Appleblossom.

ALLEN-IKESON

the other in the next generation? Certainly, the spots do in this hybrid. Although *Cau. bicornutum* is white and we do not know what lurks in the genes for markings, some do display a pale veining of sorts.

Such blending of spots to lines or veins, veins to spots, or a mixture of both does occur in other genera. *Dendrobium bifalce*, which has spots roughly arranged in lines in the sepals and petals, produced vibrant French-lace veins in *Dendrobium Bitan*, a cross with *Dendrobium tangerinum*, which has striped sepals but solid or overlaid petals. *Dendrobium bifalce* famously has introduced veining into *Dendrobium bigibbum* hybrids via *Dendrobium Dalvey*.

Phalaenopsis exhibiting candy-stripe veining in an early hybrid called *Phalaenopsis Ella Freed*, which was a cross of a long line of whites with *Phalaenopsis Samba*, in turn a cross with another white on *Phalaenopsis lueddemanniana*, has blotched, horizontal barring on the sepals and petals. *Phalaenopsis amboinensis* is another species with horizontal and concentric, irregular bars, spots or blotches on the sepals and petals. So what in the genetics converted the barring to lacy candy stripes that mainly run longitudinally on the sepals and petals? Like the white *Cau. bicornutum* crossed to hybrids with bars or spots, the lace pattern appears. While we think of most candy-stripe phalaenopsis as having lavender or plum markings, they also occur with yellow backgrounds and red candy stripes as in *Phalaenopsis Bonnie Vasquez 'Zuma Creek'* FCC/AOS. Yet another clone, *Phal. Bonnie Vasquez 'Zuma Canyon'* HCC/AOS has concentric, narrow red bars or striping. The markings are perpendicular to those of the candy-striped clones and other hybrids. Patterns are truly one of the great questions that little is known about, other than they occur!

One of the earlier hybrids was *Caulocattleya Lin Toy* (× *Cattleya walkeriana*) whose flowers were a delicate pale lavender. This hybrid exhibits, according to Clarke (2001), the color suppression of *Cau. bicornutum* in that the F1 hybrids are soft pastels, whether they are pink, lavender or pale yellow. He saw this as an asset to produce shell-pink hybrids that mature quickly on strong stems.

Caulaelia Snowflake, registered by Stewart Orchids in 1966, has been the most successful hybrid of *Cau. bicornutum*. This charming white hybrid, which is a cross to *L. albida*, is typical of many *Cau. bicornutum* hybrids: it is white,



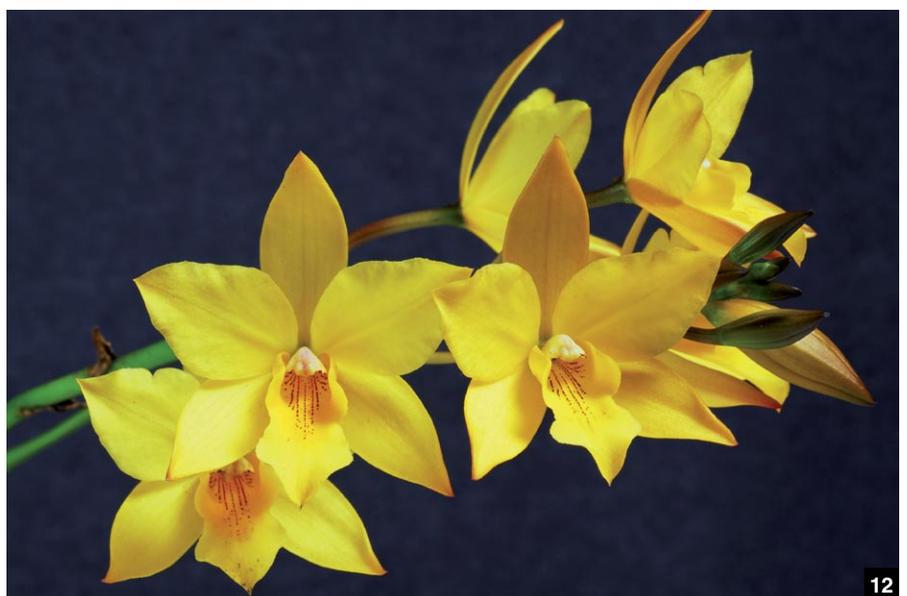
CHARLES RIMNER



GREG ALLIKAS



FRED CLARKE



GREG ALLIKAS

floriferous, the flowers are held above the foliage and the plant is vigorous, readily producing multiple growths that result in specimen plants. Most important to hybridizers, it is fertile and has produced close to 50 hybrids.

Best known and most successful of these hybrids and a favorite of beginner or experienced growers alike is *Jackfowlieara* Appleblossom (aka *Iwanagaara*). The other parent is a brilliant-orange hybrid with wonderfully heavy substance called *Rhyncattleanthe* Orange Nugget. The inventive hybridizer, Rod McLellan Co., was trying to introduce brighter colors and larger size onto *Cau. bicornutum* without losing its floriferousness and vigor. It worked somewhat. Many clones opened pale yellow and turned light lavender or developed a pink blush on all or part of the sepals and petals. Some were ivory. *Iwanagaara* Appleblossom 'Golden Elf' AM/AOS had concolor shocking bright lemon-yellow sepals and petals. When I think of Appleblossom hybrids, I always have the image of those with a strong picotee on the margins of the petals such as the clone 'Luna' AM/AOS with its deep rose picotee or the clone 'Eunice' AM/AOS with its soft-yellow flowers and apricot margins on the petals. The picotee likely comes from Orange Nugget, which has darker margins on the petals.

Clarke (2019) is working on other yellow-to-orange breeding in his Olympic series using a gold Appleblossom or a cross with *Rhyncattleanthe* Twentyfour Carat and Appleblossom called *Jackfowlieara* (aka *Clarkeara*!) Olympic Gold. He is weaving other reds and yellows into the pedigrees for more consistent yellow or gold flowers on strong stems.

Jackfowlieara Quick Million 'Sunset Valley Orchids' (*Laeliocattleya* Ann Akagi × Appleblossom) earned an AM/AOS for breeder and exhibitor Clarke. The parent, *Laeliocattleya* Ann Akagi, is a cross of *Laeliocattleya* Puppy Love and *Cattleya nobilior*. Quick Million is creamy white with a lavender picotee courtesy of the Appleblossom parent. It is a charming full round flower with a nice flat and full lip and came in at 3.2 inches (8.1 cm) with seven flowers on a single erect inflorescence.

Jackfowlieara Hsinying Blossom has intense orange flowers with a reddish picotee and a red splash on the distal end of the lip and red lines deeper in the throat, likely from the *Cau. bicornutum* grandparent. This floriferous hybrid of Appleblossom from Ching Hua is a cross with *Rhyncattleanthe* Love Passion.



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When Appleblossom is crossed on a large, standard cattleya with a full "brasso" (from *Rhyncholaelia digbyana*, which is dominant after three or four generations) lip, such as *Rhyncholaeliocattleya* Galway Bay with a strong pedigree for yellow and gold, the result is a larger flower that is somewhat cupped, yellow gold but with a bright-yellow lip with a red splash distally and a red picotee. Given the breeding, the floriferousness is excellent. Brasso lips tend to be almost oblong, flat and open over the column, ruffled on the edges and with a deep cleft on the apex. They are often impressive.

Rhyncholaeliocattleya Erin Kobayashi is one of my most favorite cattleyas. The awarded clones are chartreuse to golden yellow. In my greenhouse, mine is a bright, deep yellow with heavy substance. The flowers are consistent year in and year out no matter what the growing conditions are. The flowers from the cross with Appleblossom, *Jkf.* Olympic Erin, are yellow with a pale rose picotee. The full, round flowers have particularly full, wide petals. Appleblossom has improved the floriferousness. This is another hybrid from Sunset Valley Orchids.

When crossed with species previously classified as schomburgkias, Appleblossom flattens and smooths the sepals and petals while the schomburgkia



JAMES HARRIS

[13] *Jackfowlieara* Olympic Gold 'Solid Yellow'

[14] *Jkf.* Olympic Gold × *Rhyncholaeliocattleya* Love Sound

[15] *Leonara* Quick Million 'Sunset Valley Orchids' AM/AOS

[16] *Jkf.* Appleblossom × *Rlc.* Erin Kobayashi 'Good as Gold'

[17] *Kautskyara* Jack Kepley 'One and Only' HCC/AOS grown by Woodland Orchids.

[18] *Laeliocatarthron* Silver Star 'Sunset Valley Orchids II' AM/AOS grown by Fred Clarke.

[19] *Caulocattleya* Star Twinkle 'Snowbird' from the collection of the late Steven Mc Nerney.

parent intensifies the color. For example, *Kauskyara* Jack Kepley (× *Myrmecophila tibicinis*) and *Jackfowlieara* Joseph's Dream Coat (× *Laelia splendida*) both show the characteristic high flower count. The bonus, however, was the color. Jack Kepley 'One and Only' HCC/AOS is rose with burnt orange around the margins of the sepals and petals. The lip was yellow with burnt orange on the margins as well. *Jackfowlieara* Joseph's Dream Coat 'Orange Urchin' HCC/AOS had orange sepals and petals with a yellow lip with purple-red distally.

Another cross with a former schomburgkia species, now *Laelia undulata*, is *Caulaelia* Orchidglade 'Davidson's Amethyst Gem' CCM/AOS produced, like the laelia parent, long inflorescences. Both parents contributed to over 20 flowers per inflorescence. Like the clonal name suggests, the flowers were a light amethyst but fading to white basally. What is interesting about this hybrid is the end of the award description that states 'immature flowers beet purple'. This suggests that the *Cau. bicornutum* parent is suppressing the color as the flower matures, which is not entirely unusual. However, the deep-beet color is lurking and might be useful in a F2 hybrid. Unfortunately, the only registered offspring of this cross was with *Brassavola nodosa*, which is not exactly the parent to use to bring out the beet color or improve the already stellate form.

Caulocattleya Colmaniae was originally made in 1908 and is a cross of *Cau. bicornutum* and *Cattleya intermedia*. The hybrid was likely remade as three clones were awarded in the late 1970s to 1980s. The most interesting is the clone 'Janet' HCC/AOS, which likely resulted from a peloric *intermedia*. The color is what sets this clone apart. It is described as having off-white petals with "purple edging and flushing on either side of the tips." The lip also had purple edging along the distal lobe of the lip. While the flower is somewhat stellate, it is the wonderful color combination that sets this hybrid apart from other *Cau. bicornutum* hybrids. Perhaps crosses with brightly colored pelorics to something like Appleblossom might produce interesting results. Indeed, Colmaniae has three awarded offspring, each with interesting color. *Laeliocatarrhon* Silver Star 'Sunset Valley Orchids II' AM/AOS (× *Laelia anceps*) has deep rose-lavender flares, *Caultonleya* Nora 'Mitsuko' HCC/AOS (× *Cattleytonia* Keith Roth) had sepals and rosy-violet petals with more intense splashes, and



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Caultonleya Pink Splash 'Robsan' HCC/AOS (× *Bro. sanguinea*) had a lavender-pink picotee on the petals, sepals and lip on a white base color. The latter two hybrids are likely warm growing.

Clarke (2019) has crossed *Laeliocatarrhon* Silver Angel to *Cattleya* Memoria Robert Strait, using a mutated clone of the latter that is white with dark magenta flares and a fuchsia lip. Silver Angel is a grandchild of Silver Star so hopefully this cross will produce intensely colored splashes on white flowers as you might expect.

Interestingly, Moir (1980) reported two green hybrids with *Cau. bicornutum*. The first, *Proarthron* Daiquari, was described as having "beautiful pale green" flowers. While he reported that it would breed, only one hybrid was registered (1980). The other green hybrid named *Catcaullia* Ocean Spray is a cross of the species with *Catyclia* Envy, a green hybrid with a colored lip. The resulting hybrid was pale green with a light pink lip. Other crosses to green flowers seem to turn out white, pink tones or the results have not been published, other than to perhaps register the offspring.

Crosses with standard cattleyas have not often been successful, but one worth noting made by Stewart Orchids is a cross of *Cau. bicornutum* and an older (1949) hybrid named *Cattleya* Wheal Rose produced an unusual result for *Cau. bicornutum* crosses. Wheal Rose was a full, round white, but had a large ruffled lip that appears to be rose in the throat and side lobes. A suffused band of soft yellow separates the rose from the white on the balance of the lip. The resulting hybrid named *Caulocattleya* Star Twinkle was relatively flat as the *Cau. bicornutum* parent had flattened the recurved dorsal but left points on the apex of the lateral sepals. The interesting aspect is that the lip is much fuller, ruffled and round than



STEVE MONERNEY

Cau. bicornutum and has a wonderful rose color in the throat and centrally, with yellow speckles reminiscent of the freckles in the parent. The balance is white. The result was a charming flower with unusual color and color location in the lip. *Caularthron bicornutum* is a parent that can produce disappointing offspring but at other times, wonderful surprises.

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Artist Georgia O'Keeffe

Text and photograph by Arthur E. Chadwick

MOST OF THE well-known artists who depicted cattleyas were botanical illustrators of the 1800s. Countless examples of their works can be found in the great orchid books, *The Orchid Album*, *Lindenia* and *Reichenbachia*. But there is one famous artist who had a far different approach.

Georgia O'Keeffe had a tremendous impact on the horticultural world with her 200+ flower paintings. She lived nearly a century (1887–1986) and created a whole new genre of botanical art in which the subjects are larger than life. Two pastels, in particular, are worth noting.

The first work, "Narcissa's Last Orchid, 1940," shows a single white cattleya flower against a swirling pink background. The humorous title references an orchid that O'Keeffe received from her friend, Narcissa Swift King, a famed Chicago socialite. Apparently, the gift was not acknowledged so this was the first and last orchid gift.

The flower is portrayed realistically and has been cropped to focus attention on the detailed lip. Most cattleyas have a lip of contrasting color (in order to attract pollinators) but Narcissa's orchid is pure white. Florists referred to this type of orchid as a "Royal" and it was popular in corsages at the time.

The hybrid name of this cattleya is not known but is surely of *Cattleya intermedia* breeding, as there are few white species with little or no coloration in the lip. This spring-blooming Brazilian species has modestly-sized, pure white flowers and would have to be bred with a larger pure white parent in order to be a usable cut flower.

Just a year after the Narcissa painting, O'Keeffe released a second orchid work, "An Orchid, 1941," featuring a frilly-lipped, greenish yellow blossom on its side. The subject is close and somewhat abstract so it is not easy to distinguish the individual flower parts. However, experienced growers know what the general breeding line is.

The blossom closely resembles that of *Rhyncholaelia digbyana*, a prized species in any collection whose ethereal lime green flower is punctuated with hundreds of 1-inch (2.5-cm) long hairs radiating outward from the lip. It is the National Flower of Honduras and can also



Rhyncholaelia digbyana, historically called *Brassavola digbyana*, is the source of the so-called brasso lip of today's *Rhyncholaeliocattleya* hybrids.

be found in Mexico, Costa Rica and Belize. The blooming season covers nearly half the year, from December to May, with individual flowers lasting several weeks.

Growers can identify this species strictly by the foliage, which is short, stiff and of a silvery matte finish. The plant only produces one flower per lead but large specimens can be covered with blooms.

Hybridizers have been using *Rl. digbyana* since the earliest days of orchid breeding to impart large frilly lips in the offspring. There is even a term for this type of cattleya hybrid. If a flower has a "Brasso-lip," it means that the labellum is extra frilly and of *Rl. digbyana* lineage.

Like the Narcissa painting, the hybrid name of "An Orchid, 1941" is not known. However, there are only a handful of possibilities given the recessive color genes of yellows and greens in cattleyas and the limited combinations from this time period. Aside from *Rl. digbyana*, the species most likely to be in the lineage of this hybrid are *Cattleya dowiana*, *Cattleya tenebrosa* (Aurea) and *Cattleya xanthina*.

The orchids in the two O'Keeffe paintings are very different — a cut flower "Royal" and a wildly-colored "Brasso," but the acclaimed works have numerous similarities. In both cases, the flowers are tightly cropped to focus attention on the intricacy of the lips. Also, the paintings both have swirling backgrounds and refer to cattleyas simply as orchids in their titles. O'Keeffe goes further into the abstract with "An Orchid, 1941" by selecting an already ethereal flower, turning it on its side, and weaving the background into the petals.

Georgia O'Keeffe's two orchid paintings are just a sampling of her lifetime of innovative art. She has been called the "Mother of American Modernism" and was awarded the National Medal of Art in 1985. Her works can be found at major art museums around the country. www.okeeffemuseum.org.

— Arthur E. Chadwick (email: art@chadwickorchids.com)



DIGITAL IMAGE (C) 2003 MoMA, N.Y.

Georgia O'Keeffe's painting called *An Orchid*, 1941, © 2020 Georgia O'Keeffe Museum / Artists Rights Society (ARS), New York.

Small-Flowered Phalaenopsis

Part 1: The Miniature Multiflorals

BY ANDREW COGHILL-BEHRENDIS

HYBRIDIZING WITH THE small-flowered phalaenopsis dates back to the 1880s. They received little attention, however, until a century later when several new hybrids were produced that caught the attention of the orchid-growing community, which was captivated by their profusion of small blooms. Starting at that time, efforts to produce small-flowered hybrids greatly increased and have continued to this day, though the goals of hybridizing efforts have shifted.

Over the past 30 years, the breeding of small-flowered phalaenopsis has generally followed two main courses. One of those lines of breeding — the multiflora miniature phalaenopsis — chiefly uses species from subgenus *Phalaenopsis*, sections *Phalaenopsis* and *Sauroglottis*. The other line of breeding — the novelty phalaenopsis — incorporates species from subgenus *Polychilos*. Finally, there is another, more recent, third avenue of breeding, which has achieved some impressive results, harnessing the best attributes of both of the previous avenues.

It has been considered desirable traditionally for phalaenopsis flowers to be round, full and flat; the petals should be broad and flat, filling in the gap between the sepals. The color should be definite and clear. Markings, when present, should be pleasing. Substance should be equal to or greater than the average of the parents.

Phalaenopsis OX Honey Star 'OX 1667' FCC/AOS is a superb example of phalaenopsis aesthetics. The petals are nicely round, broad and full and the flower as a whole — with the exception of the lip — fills out a circle when drawn around the segments. The dorsal sepal is somewhat broader than the lateral sepals, and they are held in the same plane as the petals. Colors are distinct and clear, and the lip is brightly colored. The award description states the plant had “thirty-one fabulous, superbly well-formed, and richly colored and patterned Harlequin flowers and one bud on two branching inflorescences.” The presentation was well spaced and nicely shingled to give the observer a good look at all the flowers.

When you look at small-flowered phalaenopsis, however, you cannot necessarily expect all these qualities to be present. Flowers in these groups tend to be more star-shaped (stellate) in nature, sometimes with pointed segments, with the sepals nearly matching the petals in size and taking on a more prominent role in the overall shape of the flower. John Martin



JEA SHANG PHOTOGRAPHY

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(1996) sums up the approach that we must take when evaluating *Phalaenopsis* in that “we must use knowledge of the special qualities of each of the species which we have acquired through judging experience, remembering we are actually seeing three separate breeding lines: (1) large, round, (2) star-shaped, [and] (3) winged-petal multiflora” (Martin 1996).

BREEDING LINE I: THE MINIATURE MULTIFLORAL PHALAENOPSIS

The multiflora, miniature phalaenopsis derive the majority of their genetic background from only six species. Those include five species from section *Phalaenopsis*: *Phalaenopsis amabilis*,

[1] *Phalaenopsis equestris* 'Millbridge' AM/AOS, exhibited by Lester Olson, is an outstanding example of the line bred species. Photograph by Henry Kort.

[2] *Phalaenopsis* OX Honey Star 'OX 1667' FCC/AOS exhibited by OX Orchids Farm.

Phalaenopsis aphrodite, *Phalaenopsis sanderiana*, *Phalaenopsis schilleriana* and *Phalaenopsis stuartiana*, and one from Section *Sauroglottis*: *Phalaenopsis equestris*. Each of these species contributes a different set of traits to their progeny. Notably absent from this list is the only remaining species of Section *Phalaenopsis* — *Phalaenopsis*

COGHILL-BEHREND'S

philippinensis — which has been used with only minimal success in hybridizing with its most notable offspring being *Phalaenopsis* Mini Mark.

***Phalaenopsis amabilis* Blume 1825**

Phalaenopsis amabilis includes *Phalaenopsis rimestadiana*, which is now accepted as *Phal. amabilis* subspecies *amabilis*. *Phalaenopsis rimestadiana* was elevated to specific status in 1905 and used to register 18 first-generation hybrids between 1919 and 1954. Those hybrids were further used to create over 32,000 progeny; obviously, disentangling the true identities of all these hybrids would now be a monumental undertaking. Awarded clones of this species have a wide range of natural spreads — from 2.2–4.5 inches (5.6–11.4 cm) — with the median natural spread being 3.1 inches (8 cm). So while some clones could be characterized as “miniatures,” the majority of clones fall outside of this standard.

Phalaenopsis amabilis ‘Crystelle’ AM/AOS illustrates how floriferous this species can be. Martin (1996) notes that the original collected forms were floppy and open but that newer breeding is producing clones with much better substance.

***Phalaenopsis aphrodite* Rchb.f 1862**

The flowers of awarded clones of *Phal. aphrodite* are slightly smaller than those of *Phal. amabilis*, with natural spreads ranging from 2–3.9 inches (5–10 cm) and a median natural spread of 3 inches (7.5 cm), but are similarly light in substance. Additionally, many older or wild-collected forms have the added detriment of having pointed petals (Martin 1996). The use of *Phal. aphrodite* is important in the breeding of multifloral miniatures due to its ability to produce heavily branched inflorescences.

Phalaenopsis aphrodite ‘Jordon Winter’ AM/AOS was described by the judges as having “32 flowers on one five-branched inflorescence . . .” Predictably, however, the flowers were described as having light substance. This clone does show the typical orientation of the lateral sepals as more vertical.

Phalaenopsis aphrodite ‘Yen Lin’ AM/AOS-CCM/AOS shows the potential of this species given good culture. At the time of judging, this clone possessed “two hundred sixty-one delightful, full-formed, sparkling white flowers of unusually diminutive, and therefore extremely charming, size and 26 buds on 18 inflorescences presented on a multi-crown plant . . .”



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***Phalaenopsis sanderiana* Rchb.f 1882**

Interestingly, this species has only six awards; five of the awards predate 1965, and one award was from 1982. The natural spread of the flowers is about 3.1 inches (8 cm), making it larger than the definition for miniature, and it has the definite drawback of often having segments (especially the dorsal sepal) that are reflexed, sometimes heavily so.

Phalaenopsis sanderiana is what brings out desert tones in offspring and tends to produce a more uniform suffusion of color than *Phal. schilleriana*. Martin (1996) wondered that there had not been a sibling or selfing program established to improve the form of the species. It is not a prolific parent in hybridizing efforts, but is in the background of many complex hybrids.

The most recently awarded clone is *Phal. sanderiana* 'Linwood' AM/AOS. It had "twelve large flowers and eighteen buds on two inflorescences; sepals and petals deep pink, white at bases; lip white, shaded with pink." It is apparent in the award photograph that the clone exhibits a degree of the reflexing that is common in the species.

***Phalaenopsis schilleriana* Rchb.f 1860**

Awarded clones of *Phal. schilleriana* have natural spreads ranging from 2.2–2.7 inches (5.6–9 cm) with a median spread of 2.8 inches (7 cm), which is right at the edge of the miniature-size expectation. Along with *Phal. sanderiana*, this species is crossed with the large-flowered whites to give large, lavender flowers. When compared to *Phal. sanderiana*, *Phal. schilleriana* is more likely to produce branched inflorescences in its offspring.

Phalaenopsis schilleriana 'Krull-Smith' AM/AOS is a good representative of the species. It held "thirty-nine flowers on one multibranched inflorescence" at the time of judging. It also displays a form issue that is fairly common for the species: the petals are not rounded as in the previous species. Instead, they can be flattened distally (almost pentagonal in shape) or, in cases such as this, dimpled at their point.

Phalaenopsis schilleriana 'JM Sakura King' AM/AOS-CCE/AOS shows what can be accomplished with optimal cultural techniques. The plant carried "three hundred sixty full-formed, flat flowers and 54 buds spectacularly arranged on six massive, multi-branched, staked inflorescences to 140 cm long, over two large crowns."

***Phalaenopsis stuartiana* Rchb.f 1881**

The awarded clones of *Phal. stuartiana*



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have natural spreads ranging from 1.8–3.1 inches (4.6–7.8 cm) with a median spread of 2.5 inches (6.3 cm). In fact, with the exception of two clones, all are at or under the 2.75-in (7-cm) threshold to be considered miniature. *Phalaenopsis stuartiana* is highly floriferous, with hundreds of small flowers on branching

- [3] *Phalaenopsis aphrodite* 'Jordon Winter' AM/AOS exhibited by Krull-Smith.
- [4] *Phalaenopsis aphrodite* subsp. *formosana* 'Yen Lin' CCM/AOS exhibited by the 2011 TIOS Show Committee.
- [5] *Phalaenopsis amabilis* 'Mahvelous' CCM/AOS exhibited by Marcus B. Valentine.
- [6] *Phalaenopsis sanderiana* 'Linwood' AM/AOS exhibited by Waldor Orchids, Inc.
- [7] *Phalaenopsis schilleriana* 'JM – Sakura King' AM-CCE/AOS exhibited by Chih Ming Chen.
- [8] *Phalaenopsis schilleriana* 'Krull-Smith' AM/AOS exhibited by Krull-Smith.

inflorescences. Unfortunately, its substance is extremely poor and is passed along to progeny unless the other parent has very heavy substance (Freed 1981). The French have led the way in improving the form, size and intense coloration of the species. Even in the best clones, however, the substance is poor to fair (Martin 1996). What it does pass along to offspring is spots. The attractive spotting of *Phal. stuartiana* is, however, recessive and, while it will present in first-generation hybrids, it is disappointing in later generations.

There is some distinct color variation within this species. Most clones are white, with light to moderate magenta speckling on the dorsal sepal, the petals and the superior half of the lateral sepals. The inferior half of the lateral sepals is either more heavily spotted or is completely suffused magenta. *Phalaenopsis stuartiana* 'Taisuco B90-68' AM/AOS-CCM/AOS highlights what the species is capable of. It held "one hundred ninety-two high quality flowers on seven branched inflorescences to 51 cm long presented over a 50-cm wide crown."

In some clones, the base color is faint yellow and there are two clones, awarded as forma nobilis, that are a definite clear yellow. Yellow is important in some of the current breeding efforts and these two clones could present a distinct avenue for new and improved hybridizing with the species. *Phalaenopsis stuartiana* f. *nobilis* 'Meidarland' CHM/AOS was commended in particular for its strong yellow color, with the description noting its "breeding potential and color intensity, this cultivar being the darkest yellow awarded so far for this form of the species."

***Phalaenopsis equestris* (Schauer) Rchb.f 1849**

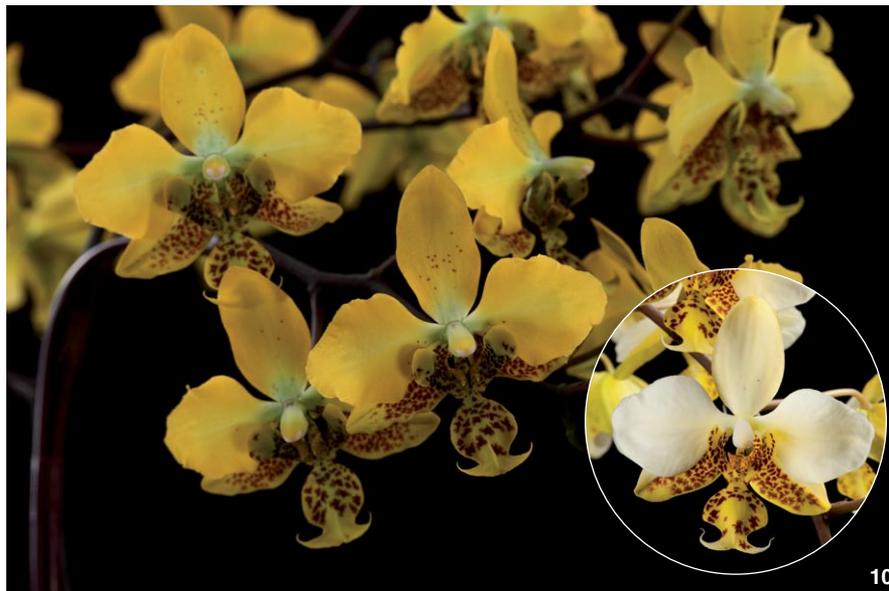
Phalaenopsis equestris is the species from which the multi-minis get much of their diminutive size. Tom Harper (1997) calls it "the star of multifloral miniatures." The species has a strongly branching habit and the pink blush present in many clones often translates to striping in offspring (harlequins). There are also many color forms to choose from, making it attractive to hybridizers.

Awarded clones of this species range in natural spread from 0.9–1.7 inches (2.2–4.2 cm), with 1.1 inches (2.9 cm) the median size. Of particular note is the clone 'Riverbend' AM/AOS. It is a proven tetraploid that is larger and heavier than the diploids and revolutionized *Phal. equestris* breeding (Harper 2007). After 'Riverbend' received its AM/AOS in 1982,



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many hybridizers were encouraged to remake earlier hybrids using the much improved clone. One of the first hybrids bred from this clone was *Phalaenopsis* Cloud of Butterflies (Music × *equestris*), which caught the attention of the orchid-growing community; more hybrids quickly followed (Harper 2007). Keiki development and tendencies toward pelorism are both common in this species and these traits can be passed on to offspring.

One of the disadvantages is that flowers open sequentially with older flowers fading as new ones are still opening. Even when using the 'Riverbend' clone as a parent, this is a trait that can only be bred out after one or two generations (Harper 2007). Additionally, flowers often "swirl around the inflorescence rather than presenting in a more desirable shingled manner" (Harper 2007). When

[9] *Phalaenopsis stuartiana* 'B90-68' CCM/AOS exhibited by the Taiwan Sugar Company.

[10] *Phalaenopsis stuartiana* f. *nobilis* 'Meidarland' CHM/AOS exhibited by Meidarland Orchids and photographed by Jea Shang Photography. 'Highjack' AM/AOS (inset) exhibited by James and Annette Lurton, photographed by Richard Noel, is a much lighter example of the form.

considering the form of *Phal. equestris*, it is easily noted that the segments do not facilitate the full, rounded standard expected for *Phalaenopsis*. All the segments are rather spade-shaped and the petals are significantly longer than needed to "complete the circle" and the sepals are strongly reflexed. Finally, Carri Raven-Reimann noted that "the type form



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[11] *Phalaenopsis equestris* var. *rosea* is distinguished by rounder segments and lack of yellow on the lip crest. Photograph by Greg Allikas.

[12] This example of *Phalaenopsis equestris* f. *aurea* has a fainter, more orange, midlobe. Photograph by Greg Allikas.

[13] *Phalaenopsis equestris* that completely lack expression of yellow on the midlobe are examples of the alba form of the species. Photograph by Greg Allikas.

[14] This clone of *Phal. equestris* f. *aurea*, 'Montclair' AM/AOS, has a very bright yellow midlobe. Photograph by Larry Vierheilig.

[15] *Phalaenopsis equestris* f. *cyanochila* 'Toshi' AM/AOS exhibited by Tyler Tajima. Photograph by Alyn Nishioka.

[16] *Phalaenopsis equestris* 'Krull-Smith' AM/AOS exhibited by Krull-Smith. Photograph by Greg Allikas.

of *Phal. equestris* has long, narrow leaves that can produce large plants in their progeny" (Harper 2007) and that when breeding for multi-minis, more compact plants are used.

Phalaenopsis equestris 'Krull-Smith' AM/AOS is a good representative of the species. It possesses the typical coloration, presentation and form of *Phal. equestris* and, when awarded, held "fifty-three flowers and 19 buds on one branched, arched inflorescence."

One other trait of the species is that it can produce peloric blooms — and influence pelorism in its progeny. A good example of this is *Phal. equestris* 'Soroa Firewings' HCC/AOS. Not only do the petals take on the deep fuchsia of the lip, but all the segments are more deeply colored than is typical for the species.

There is a fairly common color form, described as forma *aurea*, that has solid-white segments and a yellow lip. The clone 'Montclair' AM/AOS was awarded as *Phal. equestris* f. *aurea* and described as having "sepals, petals and column white; lip white, overlaid yellow proximally, midlobe overlaid yellow centrally, veined darker yellow." Pure white forms, lacking even yellow on the lip and crest are properly call f. *alba*.

A less common color form is *Phal. equestris* f. *cyanochila*, which is well represented by the clone 'Toshi' AM/AOS. This clone had, according to the award description "sepals white; petals white with a light blue blush proximally; lip midlobe blue with white distal tip, yellow proximally with orange spots, side lobes striated blue; column white, blushed light blue, anther cap light yellow; substance good; texture crystalline."

THE MINIATURE MULTIFLORAL HYBRIDS

Interest in the breeding of miniature multiflorals was sparse in the mid-1980s, with only Herbert Hager doing extensive breeding (Harper 2007). Soon, other breeders took up the cause and, by the end of the 1990s, these plants were readily available.

Goals in hybridization are to achieve the same color, form and presentation as in standard large-flowered phalaenopsis. Additional possible advantages are more-compact plants, plants that flower twice per year and the development of keikis in some clones (Harper 2007). Unfortunately, overcoming some of the negative traits of the species is not always possible. Poor form, substance and presentation are always lurking in the genetics of the



multifloral miniature hybrids.

***Phalaenopsis* Cassandra (*equestris* × *stuartiana*)**

Phalaenopsis Cassandra is the cornerstone of multifloral miniature phalaenopsis breeding. It combines the floriferousness, heavily branching habit and diminutive size of both species. Additionally, both species contribute color and patterning, which can be pleasing.

Phalaenopsis Cassandra 'Harford' HCC/AOS is a good example of a clone dominated by the *Phal. stuartiana* parent. The white flowers display fine spotting on the segments and the lip. At the time of judging, the plants possessed "forty-three flowers and one bud on one inflorescence," inheriting the floriferousness of both parents.

A clone more resembling the *Phal. equestris* parent is evident in *Phal. Cassandra* 'Tammy Lee' HCC/AOS. It held 89 flowers and two buds on six inflorescences beautifully presented on upright inflorescences from a main plant

[17] *Phalaenopsis* Cassandra 'Tammy Lee' HCC/AOS exhibited by JADE Orchids. Photograph by Greg Allikas. Left insert: 'Harford' HCC/AOS exhibited by Tom McBride and the Little Greenhouse. Photograph from the AOS Award Archives. Right insert: 'KHM 1356' exhibited by I-Hsin Biotechnology Co., Ltd and photographed by Jea Shang Photography.

[18] *Phalaenopsis* I-Hsin Timothy Christopher 'LIB' HCC/AOS exhibited by Larry Baker.

[19] *Phalaenopsis* Timothy Christopher 'Soroa Cotton Ball' HCC/AOS exhibited by Soroa Orchids and photographed by Charles Marden Fitch. The propensity for *Phal. equestris* to produce peloric forms can be seen in 'Zuma Odyssey' AM/AOS (inset) exhibited by Zuma Canyon Orchids. Photograph by Greg Allikas.

and two flowering keikis. What is notable about both of these clones is that the form of the segments is much improved, although they display significant reflexing inherited from *Phal. equestris*.

A more recent clone, which underscores the ability of *Phal. equestris* to produce peloric offspring, is *Phal. Cassandra* 'KHM 1356' AM/AOS. It was described by the judges as having "20 fully peloric flowers on two compact inflorescences on a small-scale, 15-cm plant; sepals old ivory-white, basally speckled rust red; petals fully peloric to give three identical, fully formed lips, old ivory-white, midlobe proximal halves pale yellow speckled rust red, side lobe proximal thirds yellow dotted rust red."

***Phalaenopsis* Timothy Christopher (Cassandra × aphrodite)**

Timothy Christopher is a small-flowered white multifloral. It has received considerable recognition and has been used extensively as a parent with nearly 200 first-generation offspring.

The clone *Phal.* Timothy Christopher 'Soroa Cotton Ball' HCC/AOS was a member of the group that received an Award of Quality. It is a fine example of the grex and carried "nineteen pristine flowers and four buds beautifully presented on two inflorescences; sepals and petals white; lip midlobe white, yellow basally, side lobes speckled red near base." It appears to have relatively good form for the breeding, but also has the poor substance of *Phal. stuartiana* and *Phal. aphrodite* — indeed, the photographic evidence suggests mechanical damage (bruising and missing flower segments) that could result partly from the poor substance.

***Phalaenopsis* I-Hsin Timothy Christopher (Cassandra × amabilis)**

This grex is an analogous version of Timothy Christopher, but using *Phal. amabilis* in the place of *Phal. aphrodite*. There is only one awarded clone, but it appears to be an improvement over its counterpart. *Phalaenopsis* I-Hsin Timothy Christopher 'LIB' HCC/AOS possessed "thirty-four full, flat, flowers and 29 buds on three branched inflorescence; flowers white; lip callus and base of midlobe lemon yellow, side lobes stippled maroon basally, inferior margin lemon yellow . . ." One thing about both *Phal.* Timothy Christopher and *Phal.* I-Hsin Timothy Christopher is that the full, broad petals of the large white parents do not seem to carry heavy influence in the offspring.

***Phalaenopsis* Swiss Miss (equestris × Mildred Karleen)**

Phalaenopsis Swiss Miss was bred by



Hager Orchids in 1974. Mildred Karleen is a complex hybrid, with over ½ of its heritage from *Phal. amabilis*, over ¼ from *Phal. equestris* and the rest from *Phal. aphrodite* and *sanderiana*. When crossed back to *Phal. equestris*, we get the grex *Phal.* Swiss Miss.

This grex has no awards — either through the AOS or internationally — but it has been used to create one of the more important miniature multifloral hybrids through *Phalaenopsis* Be Glad.

***Phalaenopsis* Be Glad (Swiss Miss × Cassandra)**

Phalaenopsis Be Glad has *Phal. equestris* as a grandparent on both sides. The results are quite varied with certain clones approaching *Phal. equestris* in appearance and others similar to the *Phal. stuartiana* grandparent.

The grex has not been awarded since 1999 when the clone 'Red, Red Wine' AM/AOS matched only one earlier clone

[20] *Phalaenopsis* Be Tris 'Twinkle' HCC/AOS exhibited by New Vision Orchids; photograph by James McCulloch. Insert: 'Ventura Farms' HCC/AOS exhibited by Ventura Farms; photograph by Arthur Pinkers.

[21] *Phalaenopsis* Brother Spring Dancer '833' AM/AOS exhibited by Sylvia and Jacques Cahill. Photograph by Heshka Lorne. Left inset: 'Louisiana' AM/AOS exhibited by Al Taylor and photographed by Charles Riner. Right inset: 'Rachel' HCC/AOS exhibited by Sandra Higham and photographed by Julius Klehm.

in the highest award to the grex to date. 'Red, Red Wine' held "fifty-five flowers and one bud on one heavily branched inflorescence; sepals and petals white with pale rose suffusion, more intense near column; lip intense dark wine red . . . substance firm; texture crystalline;

biplanar form from *Phalaenopsis equestris* precluded higher score."

Carri Raven-Reimann (Harper 2007) noted that "some of the best *Phal.* Be Glad hybrids have come from breeding it back to a species. In fact, some very interesting and desirable hybrids have come from breeding multi-floral miniatures back to small-flowered phalaenopsis species."

***Phalaenopsis* Be Tris (Be Glad × *equestris*)**

Phalaenopsis Be Tris was bred by Krull-Smith in 1989 at the advent of the multi-mini phalaenopsis craze and is confirmation of Raven-Reimann's assertion that crossing back to a species can produce impressive results as evidenced by the grex's award record.

Phalaenopsis Be Tris 'Ventura Farms' HCC/AOS, awarded more recently, is a semipeloric clone. It held "fifteen flowers and nine buds on two inflorescences; flowers white; sepals and petals overlaid deep rose centrally, petals peloric, margins feathered, overlaid rose apically." The flowers exhibit the tendency toward pelorism in *Phal. equestris* hybrids with the petals presenting some color reminiscent of the lip including the presence of a callus on the petals.

Phalaenopsis Be Tris 'Twinkle' HCC/AOS is more typical of the grex with "eight flowers and 18 buds on one branched inflorescence; sepals and petals white infused dark amethyst on basal two-thirds; lip royal purple with white picotee."

***Phalaenopsis* Brother Spring Dancer (Be Tris × Timothy Christopher)**

Phalaenopsis Brother Spring Dancer had three awarded clones that show some remarkable similarities in color and form. All demonstrate the tendency of *Phal. equestris* hybrids to defy uniform presentation.

Phalaenopsis Brother Spring Dancer '833' AM/AOS had "thirty-eight beautifully arranged flowers on a compact, four-branched inflorescence; sepals and petals white, flushed hot pink proximally; lip deeper hot pink, narrow margin white." Given the *Phal. equestris* background of this hybrid, it is acceptable to call the arrangement beautiful, though by any other standard the presentation would be poor. The flowers also exhibit marked reflexing of the sepals, which should be expected to have been eliminated (or severely reduced) by this stage in the breeding line.

Phalaenopsis Brother Spring Dancer 'Rachel' HCC/AOS shows a much lighter blush than the previous clone. When judged, it held "[t]wenty-five well



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arranged, moderately flat flowers on a compact, two-branched inflorescence . . ." The same notes regarding arrangement and form apply to this clone as well, with the addition that the petal shape are much more influenced by the *Phal. equestris* in the background of the parents.

Phalaenopsis Brother Spring Dancer 'Louisiana' AM/AOS presents a lovely flower with pink blush and veining and much improved form over the clones previously discussed. When judged, the plant held "nineteen well arranged, full, round, flat flowers and three buds on one five-branched inflorescence . . ." The photographic evidence of this clone shows both the beautiful veining and flower form that can be obtained from this line of breeding, but also the extremely poor presentation that can result.

***Phalaenopsis* Zuma's Pixie (Carmela's**

***Pixie* × *equestris*)**

Phalaenopsis Zuma's Pixie was bred by Zuma Canyon Orchids in 1992. The Carmela's Pixie parent has doses of *Phal. Cassandra*, *Phalaenopsis* Mildred Karleen and *Phalaenopsis* Harlequin in its background. This heritage has made Zuma's Pixie a cornerstone of much of the harlequin and striped multi-mini breeding of the past few decades.

Phalaenopsis Zuma Pixie 'Cat's Paw Purr-fect' AM/AOS held "thirty-five flowers and 22 buds on three inflorescences, one inflorescence with two blooming keikis; flowers white heavily overlaid cerise with even white picotee outlining entire flower; lip dark cerise; substance firm; texture satiny . . ." It is worth noting that the substance of this clone was identified as "firm," which is substantial for this line of breeding.

Phalaenopsis Zuma's Pixie 'Nobby' HCC/AOS is the most recently awarded clone of the grex and held "seventy-six delicate miniature flowers and 10 buds on four erect, branched inflorescences produced on a two-growth plant; sepals and petals white, heavily overlaid fuchsia, picotee halo white." This clone shows the reason for the drive in producing these multifloral miniatures; even with just four inflorescences, the branching habit produces a spectacular display of blooms.

***Phalaenopsis* Sogo Vivien (Zuma's Pixie × Sogo Alice)**

Phalaenopsis Sogo Vivien is nearly ¾ *Phal. equestris*. The clone 'Diana' AM/AOS-CCM/AOS held "seventy-four well-displayed flowers, 17 buds and one keiki on four branched inflorescences, averaging 38 cm in length, borne on a beautifully grown plant 36 cm wide by 15 cm tall . . . sepals and petals rose-pink with white margins, veined dark rose." This clone both has remarkable form for the breeding — with the influence of *Phal. amabilis* showing through quite demonstrably — and shows the veining that has led to the harlequin hybrids.

***Phalaenopsis* Arco Little Caroline (Sogo Vivien × Arco Stripes)**

The Arco Stripes parent has doses of Be Glad and Carmela's Pixie as grandparents. The clone 'Arco' AM/AOS was described by the judges as having "23 very full, boldly striped mini-multifloral flowers and 30 buds presented beautifully on one five-branched, topiary-like inflorescence; sepals and petals white overlaid light pink, boldly striped magenta, heavily branched from base to narrow white margins; lip deep, rich magenta, calli yellow dotted red; substance firm; texture glistening."

Phalaenopsis Arco Little Caroline 'Lotus' AM/AOS (85) was awarded in 2012 with "thirty-three shapely and boldly striped flowers and 20 buds arranged nicely on one multi-branched inflorescence; sepals and petals white vividly striped rose-lavender; lip deep red-purple . . ."

As the preceding sections identify and consistent with Carri Raven-Reimann's words (Harper 2007), the farther that we move from the foundational species involving the cornerstone of multifloral miniature breeding in *Phal.* Cassandra and compare it to the cornerstone of the novelty line of breeding (*Phalaenopsis* Princess Kaiulani), you find progeny of Cassandra and Princess Kaiulani are relatively similar when looking at the number of first-generation hybrids, total



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offspring, and number of awards granted to the top 13 offspring. There are some distinct differences between the two, however, which point to some of the qualities that impact how we judge or see the two types of miniature phalaenopsis. The first point is that the number of awards to the hybrids is more heavily weighted to the most awarded hybrids among the multifloral miniatures; while this observation is debatable, when taken into consideration with the number of generations removed, it points to Raven-Reimann's assertion: most of the quality multifloral hybrids are not far removed from the component species. Novelty hybrids, by contrast, are more durable in quality. This is borne out in the dates of the awards as well. The number of awards to multifloral miniature hybrids has been on the decline, while awards to novelty hybrids have been relatively continuous. Finally, if you look at how far removed the awarded hybrids are from the original, it can be seen that the novelty hybrids retain their quality, even as they are further removed from the species in question. Note that the only multifloral miniature that is more than two generations removed from *Phal.* Cassandra (*Phalaenopsis* Joyful), has as one of its parents a species (*Phalaenopsis pulcherrima*).

Next up? Part 2 will be *Phalaenopsis* subgenus *Phalaenopsis* section *Polychilos* species such as *amboinensis*, *bellina*, *gigantea*, *lueddemanniana*, *micholitzii*, *venosa*, and *violacea* and hybrids that make up this "novelty" phalaenopsis breeding line.

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 Harper, T. 1997. New Directions in Hybridizing with Phalaenopsis Species. The Phalaenopsis Newsletter



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- [22] *Phalaenopsis* Zuma's Pixie 'Nobby' HCC/AOS exhibited by Nobby Orchid Nursery; photograph by Jea Shang Photography. Inset: 'Cat's Paw Purr-fect' AM/AOS exhibited by Craig and Diana Plahn and photographed by Craig Plahn.
- [23] *Phalaenopsis* Sogo Vivien 'Diana' AM/AOS exhibited by Carib Plants, Inc.
- [24] *Phalaenopsis* Arco Little Caroline 'Arco' AM/AOS exhibited by Arco Orchids.
- [25] *Phalaenopsis* Arco Little Caroline 'Lotus' AM/AOS exhibited by Lien Hua Orchids.

7(2):15–19.
 Harper, T. 2007. The Mini but Mighty Multi-floral Phalaenopsis. *Phalaenopsis* 16(3):13–15, 20–26 [transcription of a program presented by Carri Raven-Reimann in 2006, Sacramento Symposium].
 Martin, J. 1996. A Good Phalaenopsis. Transcript of a presentation given by Dr. Martin to the Dallas Supplemental Judging Center on January 13, 1996.

—Andrew began growing orchids about 13 years ago in Iowa City, Iowa when he inherited a lightstand from extended family. He and his son, Quincy, are now active members of the Eastern Iowa Orchid Society and Andrew was promoted in March of 2019, to an associate judge in the Chicago judging center (email:mistercoghill@hotmail.com).





- [1] *Lepanthes* Barad-dur 'J & L' HCC/AOS (*ionopectera* x *escobariana*) 76 pts. Exhibitor: J & L Orchids; photographer: Robert Hesse. Northeast Judging Center
- [2] *Paphiopedilum* Memoria Sandra Pechter Song 'Graham Finale' HCC/AOS (*Wössner* Ministar x In-Charm Lovely) 75 pts. Exhibitor: Dave Sorokowsky; photographer: Chaunie Langland. Pacific Central Judging Center
- [3] *Oncidium nevadense* 'Cosmos' AM/AOS 81 pts. Exhibitor: Terry Thompson; photographer: Ross Leach. Pacific Northwest Judging Center
- [4] *Paphiopedilum* Snow Cloud 'Michal' AM/AOS (*emersonii* x *Fanaticum*) 81 pts. Exhibitor: John McCallen; photographer: Ken Jacobsen. Pacific Central Judging Center
- [5] *Arpophyllum alpinum* 'Casuka' HCC/AOS 77 pts. Exhibitor: Masaki Asuka; photographer: Ken Jacobsen. Pacific Central Judging Center
- [6] *Zootrophion vulturiceps* 'Windflower' AM/AOS 80 pts. Exhibitor: Betty Kelepecz; photographer: Arnold Gum. Pacific South Judging Center
- [7] *Arpophyllum laxiflorum* 'KOTOWA' CCM/AOS 81 pts. Exhibitor: Masaki Asuka; photographer: Ken Jacobsen. Pacific Central Judging Center
- [8] *Phragmipedium* Les Dirouilles 'Eagle' AM/AOS (*Sorcerer's* Apprentice x *Grande*) 81 pts. Exhibitor: Gordon Cromwell; photographer: Mike Pearson. Pacific Northwest Judging Center
- [9] *Rhyncholaeliocattleya* Innocent Girl 'Barrick' AM/AOS (*Cattleya* Misty Girl x *Pastoral*) 82 pts. Exhibitor: Brad and Judy Barrick; photographer: Ross Leach. Pacific Northwest Judging Center
- [10] *Cattlianthe* Memoria Francis Takakura 'Parker' AM/AOS (*Cattleya* C. G. Roebling (1895) x *Guarianthe bowringiana*) 80 pts. Exhibitor: Matt Godlove; photographer: Mike Pearson. Pacific Northwest Judging Center
- [11] *Cattleya labiata* var. *coerulea* 'Arnie' AM/AOS 85 pts. Exhibitor: Arnold Gum; photographer: Arnold Gum. Pacific South Judging Center
- [12] *Fredclareara* Beverly Danielson 'Tyrone' AM/AOS (*After Midnight* x *Catsetum* Orchidglade) 84 pts. Exhibitor: Charles Fouquette; photographer: Arnold Gum. Pacific South Judging Center
- [13] *Paphiopedilum micranthum* (Eburneum) 'Roadrunner' HCC/AOS 78 pts. Exhibitor: Zack Bray; photographer: Ross Leach. Pacific Northwest Judging Center
- [14] *Paphiopedilum micranthum* 'Expressway' AM/AOS 84 pts. Exhibitor: Zack Bray; photographer: Ross Leach. Pacific Northwest Judging Center
- [15] *Ceratostylis pleurothallis* 'MikeAl' CCM/AOS 88 pts. Exhibitor: Michael Curtin; photographer: Ross Leach. Pacific Northwest Judging Center
- [16] *Gomesa radicans* 'The Lone Ranger' CCM/AOS 83 pts. Exhibitor: Clayton Moore, Jr.; photographer: Ross Leach. Pacific Northwest Judging Center





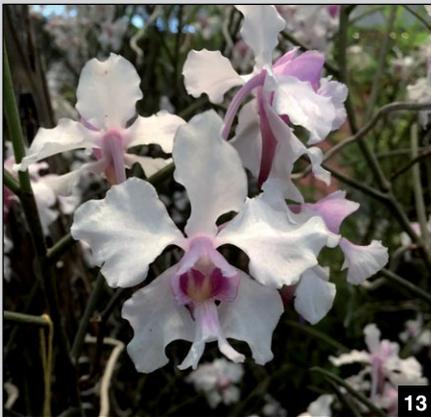
- [1] *Renantanda* Butterfly Beach 'Golden Phoenix' HCC/AOS (*Renanthera citrina* x *Vanda suavis*) 75 pts. Exhibitor: Santa Barbara Orchid Estate; photographer: Larry Vierheilg. Pacific South Judging Center
- [2] *Laelia moyobambae* 'Kent Forbes Methmann' AM/AOS 80 pts. Exhibitor: Frank Methmann; photographer: Larry Vierheilg. Pacific South Judging Center
- [3] *Laelia* Splendid King 'Ice Castle' AM/AOS (Splendid Spire x *anceps*) 80 pts. Exhibitor: Santa Barbara Orchid Estate; photographer: Larry Vierheilg. Pacific South Judging Center
- [4] *Catasetum* Dentigrianum 'Sunset Valley Orchids' HCC/AOS (*denticulatum* x *tigrinum*) 77 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinkers. Pacific South Judging Center
- [5] *Cattleya* Sarah Elizabeth 'Unicorn' HCC/AOS (Mark Jones x Jungle Elf) 79 pts. Exhibitor: Donna Ballard; photographer: Arthur Pinkers. Pacific South Judging Center
- [6] *Masdevallia* Elven Gem 'Satyr Hill' AM/AOS (*welischii* x *infracta*) 80 pts. Exhibitor: Betty Kelepecz; photographer: Arnold Gum. Pacific South Judging Center
- [7] *Aerangis kotschyana* 'Porcelain' AM/AOS 83 pts. Exhibitor: Cal-Orchid, Inc.; photographer: Larry Vierheilg. Pacific South Judging Center
- [8] *Epidendrum difforme* 'Santa Barbara' CCE/AOS 92 pts. Exhibitor: Santa Barbara Orchid Estate; photographer: Arthur Pinkers. Pacific South Judging Center
- [9] *Fredclarkeara* Alexa's Raspberries 'Sunset Valley Orchids' HCC/AOS (*Mormodia* Painted Desert x *Catasetum expansum*) 79 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinkers. Pacific South Judging Center
- [10] *Cycnoches* Richard Brandon 'Sunset Valley Orchids II' AM/AOS (*warszewiczii* x Jean E. Monnier) 83 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinkers. Pacific South Judging Center
- [11] *Cycnoches* Richard Brandon 'SVO Swan Song' AM/AOS (*warszewiczii* x Jean E. Monnier) 86 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinkers. Pacific South Judging Center
- [12] *Rhyncattleanthe* Thi-Ti 'Sweetheart' CCM/AOS (*Rhyncholaeliocattleya* George Angus x *Cattlianthe* Kauai Starbright) 83 pts. Exhibitor: Francisco Rodríguez Vargas; photographer: Irma Saldaña. Puerto Rico Judging Center
- [13] *Fredclarkeara* Enter Light 'SVO Grasshopper Too' AM/AOS (After Dark x *Catasetum pileatum*) 83 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinkers. Pacific South Judging Center
- [14] *Brassocattleya* Gulfshore's Beauty 'Green Dean' HCC/AOS (*Brassavola nodosa* x *Cattleya dorminiana*) 79 pts. Exhibitor: Ruben Colmenares; photographer: Arthur Pinkers. Pacific South Judging Center
- [15] *Brassolaelia* Caribbean Holiday 'FCO' AM/AOS (*Brassavola nodosa* x *Laelia undulata*) 80 pts. Exhibitor: Francisco Martínez Rivera; photographer: Irma Saldaña. Puerto Rico Judging Center
- [16] *Propetalum* La Jolla Delight 'Marie's Surprise' CCM-AM/AOS (*Promenaea stapelioides* x *Zygotetalum* Kiwi Dusk) 86-85 pts. Exhibitor: Annette and Bill Lucas; photographer: Bruce Hugo. Rocky Mountain Judging Center



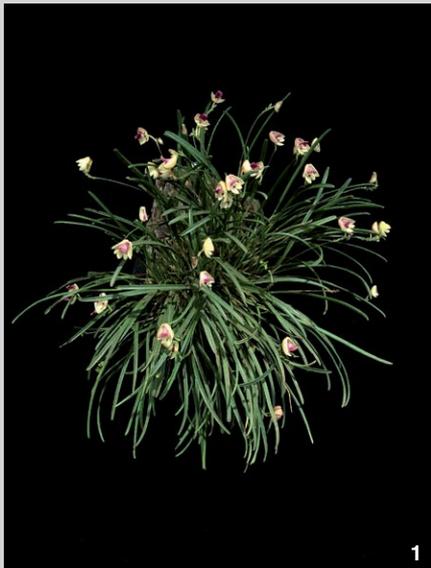


- [1] *Vanda* Banjong Topaz 'Golden Glades' AM/AOS (Duang Porn x *sanderiana*) 82 pts. Exhibitor: Mike Pitiriciu; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [2] *Cycnoches barthiorum* 'Pink Dove' HCC/AOS 75 pts. Exhibitor: Markus Ehrlich; photographer: Bruce Hugo. Rocky Mountain Judging Center
- [3] *Oberonia punctata* 'Windswept's Rockets' CBR/AOS. Exhibitor: Windswept in Time Orchids; photographer: Cheryl Belczak. Toronto Judging Center
- [4] *Paphiopedilum* Krull's Black Jack 'Krull-Smith' AM/AOS (Krull's Black Uncle x Macabre) 84 pts. Exhibitor: Krull-Smith; photographer: Nick Nickerson. West Palm Beach Judging Center
- [5] *Phragmipedium* Yelva Myhre 'Bloody Mary' AM/AOS (Rosalie Dixler x *kovachii*) 80 pts. Exhibitor: Dr. Leslie Ee; photographer: Joe Dicker. Toronto Judging Center
- [6] *Paphiopedilum henryanum* 'Howard P. Martin' CCM/AOS 83 pts. Exhibitor: Howard P. Martin; photographer: Cheryl Belczak. Toronto Judging Center
- [7] *Catasetum macrocarpum* 'Memoria Daria Vargas' AM/AOS 80 pts. Exhibitor: Francisco Rodríguez Vargas; photographer: Irma Saldaña. Puerto Rico Judging Center
- [8] *Brassocattleya* Green Bird 'Aieser' AM/AOS (Binosa x *Brassavola* Little Stars) 81 pts. Exhibitor: Noel Soler-Figueroa; photographer: Irma Saldaña. Puerto Rico Judging Center
- [9] *Paphiopedilum moquetteanum* 'Wen' HCC/AOS 76 pts. Exhibitor: Chee Chong; photographer: Joe Dicker. Toronto Judging Center
- [10] *Phalaenopsis* LD's Bear Queen 'Green Eagle' AM/AOS (*bellina* x Dragon Tree Eagle) 82 pts. Exhibitor: Pat van Adrichem; photographer: Judith Higham. Western Canada Judging Center
- [11] *Pleurothallis sanchoi* 'Duck Creek' CHM/AOS 83 pts. Exhibitor: Dave Miller; photographer: Cheryl Belczak. Toronto Judging Center
- [12] *Habenaria* Regnierii 'Windswept' AM/AOS (*carnea* x *rhodocheila*) 85 pts. Exhibitor: Windswept in Time Orchids; photographer: Cheryl Belczak. Toronto Judging Center
- [13] *Cattleya* Christmas Bouquet 'Olivier' HCC/AOS (*percialiana* x Mini Purple) 77 pts. Exhibitor: John Vermeer; photographer: Joe Dicker. Toronto Judging Center
- [14] *Vanda* Kulwadee Fragrance 'Blue Spot' HCC/AOS (Gordon Dillon x Guo Chia Long) 76 pts. Exhibitor: Laura Grant; photographer: Joe Dicker. Toronto Judging Center
- [15] *Miltonidium* Guann Shin Pink Lady 'Kumud' HCC/AOS (Plum Fancy x *Oncidium tigrinum*) 78 pts. Exhibitor: Anand Savani; photographer: Helena Rame. West Palm Beach Judging Center
- [16] *Bulbophyllum claptonense* 'Libia' FCC/AOS 90 pts. Exhibitor: Diana Garcia; photographer: Nicolas Gomez. West Palm Beach Judging Center





- [1] *Phragmipedium* Suzanne Decker 'Mario Palmieri' AM/AOS (*kovachii* x Cape Sunset) 86 pts. Exhibitor: Mario and Silvia Palmieri; photographer: Jorge Carlos. West Palm Beach Judging Center
- [2] *Lycaste* Alma de mi Alma 'Ale Bianchi' AM/AOS (*Shoalhaven* x *guatemalensis*) 81 pts. Exhibitor: Carlos Bianchi; photographer: Jorge Carlos. West Palm Beach Judging Center
- [3] *Lycaste* Shoalhaven 'Cali Bianchi 1802' FCC/AOS (*virginialis* x *Koolena*) 90 pts. Exhibitor: Carlos Bianchi; photographer: Jorge Carlos. West Palm Beach Judging Center
- [4] *Lycaste* x *smeeara* 'Marito Palmieri' AM/AOS (*depppei* x *virginialis*) 82 pts. Exhibitor: Mario and Silvia Palmieri; photographer: Jorge Carlos. West Palm Beach Judging Center
- [5] *Jumellea comorensis* 'Memoria Hermann Meyer' CCE/AOS 94 pts. Exhibitor: Alexandra Kontos; photographer: Helena Rame. West Palm Beach Judging Center
- [6] *Rhyncholaelia glauca* 'Memoria Carlos Hernandez' HCC/AOS 75 pts. Exhibitor: Helmut Ibanez; photographer: Jorge Carlos. West Palm Beach Judging Center
- [7] *Guarianthe* x *guatemalensis* 'Silvia de Palmieri' AM/AOS (*aurantiaca* x *skinneri*) 80 pts. Exhibitor: Mario and Sylvia Palmieri; photographer: Jorge Carlos. West Palm Beach Judging Center
- [8] *Laeliocattleya* Mi Morena 'Anagracia de Reyes 2018' AM/AOS (*Laelia splendida* x *Cattleya tigrina*) 82 pts. Exhibitor: Anagracia de Reyes; photographer: Jorge Carlos. West Palm Beach Judging Center
- [9] *Prosthechea panthera* 'Silvia Bor' CCE/AOS 92 pts. Exhibitor: Silvia Bor; photographer: Jorge Carlos. West Palm Beach Judging Center
- [10] *Maxillaria sanderiana* 'Alfreda Velasquez Martinez' JC/AOS. Exhibitor: Antonieta Velasquez Martinez; photographer: Jorge Carlos. West Palm Beach Judging Center
- [11] *Restrepia guttulata* 'Emma & Enrique' AM/AOS 85 pts. Exhibitor: Enrique Novales; photographer: Jorge Carlos. West Palm Beach Judging Center
- [12] *Epidendrum sobralioides* 'Rodrigo Castillo' AM/AOS 83 pts. Exhibitor: Carlos Bianchi; photographer: Jorge Carlos. West Palm Beach Judging Center
- [13] *Papilionanthe vandarum* 'Kai' AM/AOS 84 pts. Exhibitor: Smita Radia; photographer: Helena Rame. West Palm Beach Judging Center
- [14] *Cymbidium* Spotted Leopard 'Orquifollajes' AM/AOS (*Yowie Flame* x *Solana Beach*) 82 pts. Exhibitor: Orquifollajes; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [15] *Vandachostylis* Sophia Demorizi 'Nana' HCC/AOS (*Vanda Butterscotch* x *Conference Gold*) 79 pts. Exhibitor: Melida Demorizi; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [16] *Vanda coerulea* 'Orchid Dynasty' CCE/AOS 95 pts. Exhibitor: Orchid Dynasty; photographer: Bruce Hugo. Rocky Mountain Judging Center

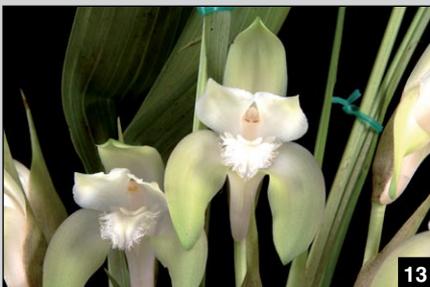




- [1] *Polystachya aconitiflora* 'Bliss' CCE/AOS 94 pts. Exhibitor: Alexandra Kontos; photographer: Helena Rame. West Palm Beach Judging Center
- [2] *Rhyncholaeliocattleya* Scott Ware 'Romeral' AM/AOS (Bold Red x Goldenzelle) 86 pts. Exhibitor: Jardines Romeral; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [3] *Cattleya* Lemon Whisper 'Carlos Arango' FCC/AOS (Fred Cole x bicolor) 90 pts. Exhibitor: Jardines Romeral; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [4] *Zelenkocidium* Cheiro Kukoo 'Christiane' AM/AOS (Kukoo x *Oncidium cheiroporum*) 81 pts. Exhibitor: Ingeborg Gonella; photographer: Helena Rame. West Palm Beach Judging Center
- [5] *Dendrobium amabile* 'Mostazal' AM/AOS 85 pts. Exhibitor: Claudia Uribe; photographer: Nicolas Gomez. West Palm Beach Judging Center



- [6] *Laelia colombiana* f. *xanthina* 'Orquivalle Gold' AM/AOS 85 pts. Exhibitor: Orquideas Del Valle; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [7] *Dracula simia* 'Entreflores' CCE-FCC/AOS 91-90 pts. Exhibitor: Daniel Piedrahita; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [8] *Cyrtioiopsis* Brugensis 'Ligia' AM/AOS (*Miltoniopsis vexillaria* x *Cyrtochilum edwardii*) 86 pts. Exhibitor: Colomborquideas Ltda.; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [9] *Anguloa brevilabris* 'Orquifollajes' CCE/AOS 90 pts. Exhibitor: Orquifollajes; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [10] *Anguloa brevilabris* 'Katia' CCE/AOS 96 pts. Exhibitor: Gustavo A. Aguirre; photographer: Nicolas Gomez. West Palm Beach Judging Center
- [11] *Prosthechea sceptrata* 'La Tizona' CCE/AOS 92 pts. Exhibitor: Judith Estrada; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center



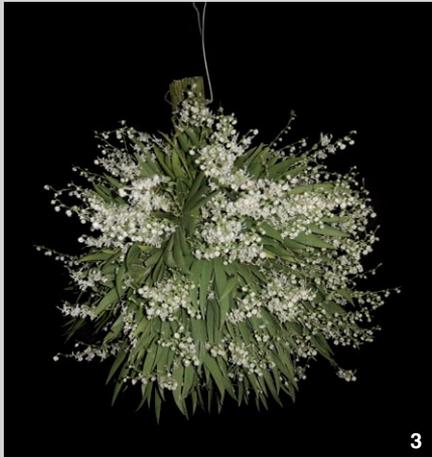
- [12] *Masdevallia pachyura* 'Entreflores' AM/AOS 80 pts. Exhibitor: Daniel Piedrahita; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [13] *Sudamerlycaste cobbiana* 'Mostazal' AM/AOS 84 pts. Exhibitor: Claudia Uribe; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [14] *Brassocatanthe* Booth Lee 'Mostazal' AM/AOS (*Brassanthe Maikai* x *Cattleya Jalapa*) 86 pts. Exhibitor: Claudia Uribe; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [15] *Dracula amaliae* 'Entreflores' AM/AOS 86 pts. Exhibitor: Daniel Piedrahita; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [16] *Ida grandis* 'Mostazal' CCM/AOS 85 pts. Exhibitor: Claudia Uribe; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center







- [1] *Maxillaria luteograndiflora* 'La Mirina' CCE/AOS 92 pts. Exhibitor: Miriam Greindinger; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [2] *Masdevallia* Angel Glow 'Libia' AM/AOS (Angel Frost x Marguerite) 85 pts. Exhibitor: Diana Garcia; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [3] *Bulbophyllum trigonosepalum* 'Tom's Image - Joan' HCC/AOS 76 pts. Exhibitor: Tom Kuligowski; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [4] *Laelia superbians* (Alba) 'Clara' AM/AOS 85 pts. Exhibitor: Adelaida Angel de Bohmer; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [5] *Cattleya quadricolor* 'Aqua Clara' AM/AOS 83 pts. Exhibitor: Claudia Piedrahita; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [6] *Rhyncholaeliocattleya* Egyptian Queen 'Mostaza' AM/AOS (Esther Costa x *Cattleya bicolor*) 83 pts. Exhibitor: Claudia Uribe; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [7] *Paphiopedilum* Hamlet's Quest 'Manzur La Aldea' AM/AOS (Macabre x *sukhaku-lili*) 83 pts. Exhibitor: David Manzur; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [8] *Brassocattleya* Marg Putman 'Doris' AM/AOS (*Cattleya intermedia* x Morning Glory) 81 pts. Exhibitor: Krull-Smith; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [9] *Cattleya violacea* 'ICABARU' AM/AOS 83 pts. Exhibitor: Jose Fernandez Londono; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [10] *Warzewiczella timbiensis* 'Luzka' AM/AOS 80 pts. Exhibitor: Karina Arango; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [11] *Oncidium* Tropic Breeze 'Spring Song' HCC/AOS (*wydleri* x *Acemanda*) 78 pts. Exhibitor: Beatriz Escobar; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [12] *Rhyncholaeliocattleya* Déesse 'Cocuy' AM/AOS (Ferrières x *Cattleya* La-martine) 83 pts. Exhibitor: Jardines Romeral; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [13] *Oncidium naevium* 'Juan Pablo' AM/AOS 85 pts. Exhibitor: Arturo Jose Carrillo; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [14] *Elleanthus escobarii* 'Lindau' CHM/AOS 84 pts. Exhibitor: Erik Jordan; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [15] *Prosthechea sceptra* 'Solmaria' AM/AOS 85 pts. Exhibitor: Maria Luisa Hincapie; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center
- [16] *Maxillaria luteoalba* 'Emma' CCM/AOS 85 pts. Exhibitor: Gustavo A. Jimenez; photographer: Nicolas Gomez Rios. West Palm Beach Judging Center





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- [1] *Phragmipedium* Fritz Schomburg 'El Retiro' AM/AOS (*kovachii* x *besseae*) 84 pts. Exhibitor: Juan Felipe Posada; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [2] *Cattleya* Hardyana (1896) 'Emma' AM/AOS (*dowiana* x *warszewiczii*) 85 pts. Exhibitor: Katherine Acevedo; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [3] *Ornithocephalus manabina* 'Orquifol-lajes' CCE/AOS 91 pts. Exhibitor: Francisco Villegas; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [4] *Dendrobium lawesii* 'Paiva' AM/AOS 81 pts. Exhibitor: Nora Angel de Bernal; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [5] *Maxillaria procurrans* 'Stellita' AM/AOS 81 pts. Exhibitor: Gustavo Jimenez; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [6] *Acineta antioquiiae* 'Sergio' HCC/AOS 78 pts. Exhibitor: Lucia Jaramillo; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [7] *Huntleya burtii* 'Entreflores' AM/AOS 84 pts. Exhibitor: Daniel Piedrahita-Thiriez; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [8] *Eriopsis rutidobulbon* 'Mi Bohio' AM/AOS 84 pts. Exhibitor: Carolina Carder G.; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [9] *Porroglossum nutibara* 'Entreflores' CCE/AOS 90 pts. Exhibitor: Daniel Piedrahita; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [10] *Rossioglossum grande* 'Juan' AM/AOS 81 pts. Exhibitor: Ivan Bolanos Otero; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [11] *Masdevallia platyglossa* 'Entreflores' HCC/AOS 79 pts. Exhibitor: Daniel Piedrahita-Thiriez; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [12] *Laelia colombiana* f. *xanthina* 'Francisco' AM-CCM/AOS 82-86 pts. Exhibitor: Henry Eder; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [13] *Maxillaria fulgens* 'Martina' CCM/AOS 81 pts. Exhibitor: Pedro Friedrichsen; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [14] *Pleurothallis adeleae* 'Iroquois Spirit' CCM/AOS 84 pts. Exhibitor: David Mellard; photographer: Carson Barnes. Atlanta Judging Center
- [15] *Cymbidium* Kevin Hipkins 'Tygr Jade' HCC/AOS (*Bluenose* x *devonianum*) 76 pts. Exhibitor: Ed Dumaguin; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [16] *Masdevallia ova-avis* 'Mostazal' CCM/AOS 82 pts. Exhibitor: Claudia Uribe Jaramillo; photographer: Juan Carlos Uribe. West Palm Beach Judging Center





- [1] *Masdevallia* Copperwing 'Entreflores' CCM/AOS (*veitchiana* x *decumana*) 81 pts. Exhibitor: Daniel Piedrahita-Thiriez; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [2] *Encyclia cordigera* 'Orquivalle' AM/AOS 82 pts. Exhibitor: Orquideas Del Valle; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [3] *Angraecum* Longidale 'Bonnie' FCC/AOS (*sesquipedale* x *longicalca*) 92 pts. Exhibitor: Bonnie & Will Riley; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [4] *Fredclarkeara* Dark There After 'Biltmore's Dark Matter' AM/AOS (After Dark x *Catasetum* Donna Wise) 83 pts. Exhibitor: Marc Burchette; photographer: James Harris. Carolinas Judging Center
- [5] *Fredclarkeara* Dark There After 'Buie' AM/AOS (After Dark x *Catasetum* Donna Wise) 87 pts. Exhibitor: Carolyn Fuentes; photographer: Charlotte Randolph. Alamo Judging Center
- [6] *Cattleya* Pompano Beach 'Orquivalle' AM/AOS (Horace x New Albion) 84 pts. Exhibitor: Orquideas Del Valle; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [7] *Cattleya quadricolor* 'Ines Morales' AM/AOS 81 pts. Exhibitor: Juan Manuel Palacio; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [8] *Warczewiczella amazonica* 'Monica's Eden' HCC/AOS 77 pts. Exhibitor: Monica Gaylord; photographer: Charlotte Randolph. Alamo Judging Center
- [9] *Maxillaria eburnea* 'Cristina' CCM/AOS 88 pts. Exhibitor: Carlos Uribe; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [10] *Anathallis sclerophylla* 'Esperanza' CCM/AOS 85 pts. Exhibitor: Esperanza Mejia de Moreno; photographer: Juan Carlos Uribe. West Palm Beach Judging Center
- [11] *Cattleya* Pure Soul 'Yutaka Morimoto' HCC/AOS (Dubiosa (1890) x Stephen Oliver Fouraker) 77 pts. Exhibitor: Fred Missbach; photographer: Carson Barnes. Atlanta Judging Center
- [12] *Paphiopedilum* Autumn Moon 'First Love' AM/AOS (Via Luna Este x Skip Bartlett) 81 pts. Exhibitor: Marriott Orchids; photographer: Julie McMillan. Carolinas Judging Center
- [13] *Vanda* Alexander Green 'Little Alex' AM/AOS (Fuchs Fanfare x Robert's Delight) 80 pts. Exhibitor: Wayne T Green; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [14] *Paphiopedilum* Franz Glanz 'Monster' FCC/AOS (*armeniicum* x *emersonii*) 92 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [15] *Cattleya* Pink Pet 'Davis Doll' HCC/AOS (Pink Doll x Orpetii) 77 pts. Exhibitor: James G. Morris; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [16] *Myrmecattaleia* Carol de Biase 'Bentree' HCC/AOS (*Laeliocattleya* Millie Perner x *Myrmecocattleya* Memoria Louise Fuchs) 79 pts. Exhibitor: Bonnie & Will Riley; photographer: Tom Kuligowski. West Palm Beach Judging Center





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- [1] *Cattleya* Tsiku Paradis 'Grass Valley' AM/AOS (Bright Angel x *cernua*) 82 pts. Exhibitor: Ted McClellan; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [2] *Paphiopedilum* Mountain Mama 'James Curtis' AM/AOS (Hsinying Franz x *adductum*) 81 pts. Exhibitor: Krull-Smith; photographer: Julie McMillan. Carolinas Judging Center
- [3] *Phragmipedium* Bright Spot 'Orchid-heights' HCC/AOS (Memoria Dick Clements x Twilight) 78 pts. Exhibitor: Looking Glass Orchids; photographer: James Harris. Carolinas Judging Center
- [4] *Lycaste virginalis* 'Michelle' AM/AOS 83 pts. Exhibitor: Marina de Cordova; photographer: Jorge Carlos. Carolinas Judging Center
- [5] *Lycaste virginalis* var. *armeniaca* 'Nena Linda' AM/AOS 84 pts. Exhibitor: Fredy Archila Morales; photographer: Jorge Carlos. Carolinas Judging Center
- [6] *Paphiopedilum villosum* 'Dynamo' HCC/AOS 76 pts. Exhibitor: Marriott Orchids; photographer: James Harris. Carolinas Judging Center
- [7] *Lycaste lasioglossa* 'Melissa Archila' AM/AOS 83 pts. Exhibitor: Fredy Archila Morales; photographer: Jorge Carlos. Carolinas Judging Center
- [8] *Lycaste Gladys Eljuri* 'Cristina Stwolinski' HCC/AOS (Kiama x Alan Salzman) 77 pts. Exhibitor: César Maaz Stwolinski; photographer: Jorge Carlos. Carolinas Judging Center
- [9] *Lycaste guatemalensis* 'Martin Alejandro' HCC/AOS 77 pts. Exhibitor: Fredy Archila Morales; photographer: Jorge Carlos. Carolinas Judging Center
- [10] *Lycaste* Reina Del Cisne 'Alejandro Moino' AM/AOS (*angelae* x Kiama) 81 pts. Exhibitor: José Alejandro Ruiz Moino; photographer: Jorge Carlos. Carolinas Judging Center
- [11] *Paphiopedilum* Silver Stone 'Magnum' AM/AOS (Saint Ouens Bay x Elfstone) 82 pts. Exhibitor: Marriott Orchids; photographer: James Harris. Carolinas Judging Center
- [12] *Paphiopedilum* Elfin Moon 'Magnum' AM/AOS (Gege Hughes x Elfstone) 82 pts. Exhibitor: Marriott Orchids; photographer: James Harris. Carolinas Judging Center
- [13] *Rossioglossum insleayi* 'Martin' AM/AOS 83 pts. Exhibitor: Lesly de Cofiño; photographer: Jorge Carlos. Carolinas Judging
- [14] *Maxillaria strumata* 'Oscar Rodrigo' CCM/AOS 86 pts. Exhibitor: Fredy Archila Morales; photographer: Jorge Carlos. Carolinas Judging
- [15] *Stelis megachlamys* 'Thelma de Cortez' CCM/AOS 83 pts. Exhibitor: Fredy Archila Morales; photographer: Jorge Carlos. Carolinas Judging
- [16] *Elleanthus graminifolius* 'Juan Jose Reyes' CBR/AOS. Exhibitor: Anagracia Castellanos de Reyes; photographer: Jorge Carlos. Carolinas Judging Center

MARCH

6–7—Greater North Texas Orchid Society Show “Orchid Majesty,” Richardson Civic Center, 411 W Arapaho Rd., Richardson, TX; Contact: Linda Horton, 972–977–6969; henry.horton4@verizon.net

6–8—Central California Orchid Society Spring Show, Fresno Home and Garden Show, Fresno Fair Grounds, 1121 S. Chance Ave., Fresno, CA; Contact: Gordon Wolf, 209–999–0181; gwsangca@yahoo.com

6–8—Martin County Orchid Society Show, Martin County Fairgrounds, Building G, 2616 SE Dixie Hwy., Stuart, FL; Contact: Debbie Wilson, 561–351–1515; davedebwilson@hotmail.com

6–8—Maryland Orchid Society Show and Sale, Maryland State Fairgrounds, 2200 York Road, Timonium, MD; Contact: Marc Kiriou, 443–509–0084; gothiclord01@yahoo.com

6–8—Orchid Society of the Ozarks “10th Annual Orchids in the Garden,” Botanical Garden of the Ozarks, 4703 North Crossover Road, Fayetteville, AR; Contact: Stephen Marak, 479–841–4275; samarak@cox.net

6–8—Triad Orchid Society Show, A.B. Seed Education Annex, 8432 Norcross Road, Colfax, NC; Contacts: Will Bottoms, 336–420–8872; wlbottoms@gmail.com/Tammy Goldberg, 336–491–3670; famgoldberg@hotmail.com

7–8—2020 Greater Akron Orchid Society Spring Show, Rohr and Sons Nursery–Garden Center, 7211 Portage Street NW, Massillon, OH; Contact: Jane Bush, 440–429–5779; bushjj@juno.com

7–8—Mount Baker Orchid Society Show and Sale, Skagit Valley Gardens, 18923 Peter Johnson Road, Mount Vernon, WA; Contact: Elizabeth Pernotto, 360–647–1752; betsyp1045@gmail.com

7–8—Northeastern Wisconsin Orchid Society Spring Show, DoubleTree by Hilton, 150 Nicolet Road, Appleton, WI; Contact: Dave Bluma/Lorraine Heydon, 920–869–2247; lorrainesgems@yahoo.com

7–8—Tampa Bay Orchid Society Show “Orchids 20/20 Perfect Vision,” Tampa Scottish Rite Center, 5500 Memorial Highway, Tampa, FL; Contact: Eileen Hector, 813–368–7353; TampaBayOrchidSociety@verizon.net

7–8—Tucson Orchid Society Show “Fiesta de las Flores,” Mesquite Valley Growers, 8005 E. Speedway Blvd., Tucson, AZ; Contact: Wes Addison, 520–

305–6150; wesadd@cwa-cpa.com

12–15—Asociación Caldense de Orquideología “XV Exhibition of Orchids,” Recinto del Pensamiento, Kilometro 11 Vial Magderlena, Manizales, Colombia; Contact: José Fernando Jimenez Velez, (+57) 3122735889; ferjimenez69@hotmail.com

13–14—Englewood Area Orchid Society “Orchids by Lemon Bay,” Englewood United Methodist Church, 700 E Dearborn Street, Englewood, FL; Contact: Mary Anne DiGrazia, 941–697–9237; tommaryanne@centurylink.net

13–15—Orchid Society of Coral Gables Show, Fairchild Tropical Botanic Garden, Garden Room, 10901 Old Cutler Road, Coral Gables, FL; Contact: Melana Davison, 760–212–8919; orchidiva@att.net

13–15—Santa Barbara International Orchid Show, Earl Warren Showgrounds, 3400 Calle Real, Santa Barbara, CA; Contact: Nancy Melekian, 805–403–1533; info@sborchidshow.com

14–15—Calcasieu Orchid Society “Easter Parade of Orchids,” 1911 Historic City Hall Arts and Cultural Center, 1001 Ryan Street, Lake Charles, LA; Contact: Keith Joiner, 318–614–3516; kjoiner2000@yahoo.com

14–15—Denver Orchid Society Spring Show and Sale “High on Orchids,” Denver Botanic Gardens, 1007 York Street, Denver, CO; Contact: Shirlee McDaniels, 303–905–7014; shirlee5280@gmail.com

14–15—Illinois Orchid Society Spring Show and Sale “Living Gems,” Chicago Botanic Garden, Nichol’s Hall, 1000 Lake Cook Rd., Glencoe, IL; Contact: David Kirk, 847–563–0212; david.kirk.a@gmail.com

14–15—Orchid Society of Western Pennsylvania Annual Spring Show “An Orchid Journey,” Crowne Plaza Hotel, 164 Fort Couch Road, Pittsburgh, PA; Contact: Sheila Nathenson, 412–576–1704; msnsan@gmail.com

20–22—Gulf Coast Orchid Alliance Show, North Collier Regional Park, 15000 Livingston Road, Naples, FL; Contact: Jim Longwell, 239–340–5520; jlongwell1@comcast.net

20–22—North Carolina Piedmont Orchid Society Show, Daniel Stowe Botanical Garden, 6500 South New Hope Road, Belmont, NC; Contact: Linda T. Wilhelm, 704–393–1740; orchidfrau@bellsouth.net

20–22—Windward Orchid Society Show, Samuel Wilder King Intermediate School, 46–155 Kamehameha Highway, Kaneohe, HI; Contact: Susan L. Lim, 808–728–1014; slim@hawaiiintel.net

21–22—Ann Arbor Orchid Society “Orchid Festival,” Methaei Botanical Gardens, 1800 North Dixboro Rd., Ann Arbor, MI; Contact: Abby Skinner, 517–816–7979; skinne11@msu.edu

21–22—Illowa Orchid Society Spring Show, Quad City Botanical Center, 2525 4th Avenue, Rock Island, IL; Contact: Deno Kandis, 309–737–2672; emkandis@mchsi.com

21–22—Jacksonville Orchid Society Show, Garden Club of Jacksonville, 1005 Riverside Ave., Jacksonville, FL; Contact: Eric Cavin, 904–334–8519; dirt2021@yahoo.com

21–22—London Orchid Society Show, Mother Teresa Catholic Secondary School, 1065 Sunningdale Road East, London, ON, Canada; Contact: Sean Moore, 519–645–7747; spmoore@rogers.com

21–22—Nutmeg State Orchid Society Show “Come See Our Bloomers,” West Hartford Meeting and Conference Center, 50 South Main St., West Hartford, CT; Contact: Sandy Myhalik, 860–677–0504; myhalik@comcast.net

21–22—Spokane Orchid Society Show and Sale, Spokane Community College–Student Lair, 1810 N. Green St., Spokane, WA; Contact: Jim Pearce, 509–299–5152; info@spokaneorchidsociety.org

21–22—Springfield Orchid Society Show and Sale, Springfield Greene County Botanical Center, 2400 S. Scenic Ave., Springfield, MO; Contact: Nathan Bell, 660–888–0225; nbell@cofo.edu

21–22—Wisconsin Orchid Society Show “Spring 2020 Orchid Festival,” Milaeger’s Garden Center, 4838 Douglas Ave., Racine, WI; Contact: Richard Odders, 262–632–3008; odders2445@gmail.com

27–29—Genesee Region Orchid Society Spring Show and Sale, Rochester Museum and Science Center, Eisenhart Auditorium, 657 East Avenue, Rochester, NY; Contact: Jonathan Jones, 585–721–7150; jonathanjones2012@gmail.com

27–29—New Hampshire Orchid Society Show “A Bounty of Orchids,” The Falls Event Center, 21 Front Street, Manchester, NH; Contact: Brenda Campbell, 603–668–3689; bbcampbell139@comcast.net

CALENDAR

27–29—Manitoba Orchid Society Show “Orchid Celebration,” Breezy Bend Country Club, 7620 Robin Blvd., Headingley, Manitoba, Canada; Contact: Rick Askinis, 204-470-1856; raskinis@hotmail.com

27–29—Orchid Society of Alberta “Orchid Fair 2020,” Enjoy Centre, 101 Riel Drive, St. Albert, AB, Canada; Contact: Darrell Albert, 780-903-2299; darrell.albert@alberta-it.com

27–29—San Diego County Orchid Society Spring Show “Orchid Magic,” Scottish Rite Center, 1895 Camino del Rio South, San Diego, CA; Contact: Deborah Halliday, 858-756-3578; debhallid@gmail.com

27–29—San Joaquin Orchid Society Annual Show, Sherwood Mall, 5308 Pacific Ave., Stockton, CA; Contacts: Patricia Reece, 209-824-2300; patty@mynewyorkdiamonds.com; Nanette La Belle, 209-405-0056

27–29—Terrebonne Orchid Society Show and Sale, Southland Mall, 5953 West Park Ave., Houma, LA; Contact: Karen Breaux/Denise Mitchell, 985-709-6348; kfbreaux@bellsouth.net

28–29—Central Florida Orchid Society Show “It’s Raining Orchids,” National Guard Armory, 2809 S Ferncreek Ave., Orlando, FL; Contact: Teri Scott, 407-463-0274; teriscottfla57@aol.com

28–29—Greater Omaha Orchid Society “33rd Annual Orchid Show and Sale,” Lauritzen Gardens, 100 Bancroft St., Omaha, NE; Contact: Jim Pyrzyński, 402-734-4112; jpyrzyński@cox.net

28–29—Jamaica Orchid Society Show, Jamaica Horticultural Society Show Hall, Gibson Drive, Kingston, Jamaica; Contact: Claude W. Hamilton, 876-927-6713; hamlynorchids@aol.com

28–29—Les Orchidophiles de Montréal “Orchidexpo 2020,” Collège de Maisonneuve, 2700 Bourbonniere St., Montreal, Quebec, Canada; Contact: Celine Camirand, 450-669-7937; celine.camirand@gmail.com

28–29—Michigan Orchid Society Spring Show, United Food and Commercial Workers Union Bldg., 876 Horace Brown Drive, Madison Heights, MI; Contact: Joe Peterson, 248-528-1453; jandjandabbey@aol.com

28–29—Nature Coast Orchid Society Spring Show 2020, VFW Post 8681, 18940 Drayton Street, Spring Hill, FL; Contact: Steve Mattana, 218-556-1895; stevemattana123@gmail.com

28–29—Sonoma County Orchid Society Spring Show and Sale, Santa Rosa Veteran’s Memorial Building, 1351 Maple Ave., Santa Rosa, CA; Contact: Alison Bies, 207-844-0909; orchidswtf@gmail.com

APRIL

3–5—Five Cities Orchid Society “Central Coast Orchid Show,” South County Regional Center, 800 W Branch St., Arroyo Grande, CA; Contact: Eric Holanda, 805-929-5749; cbh@charter.net

3–5—Pan American Orchid Society “Serenity of Orchids,” R.F. Orchids, Inc., 28100 SW 182 Ave., Homestead, FL; Contact: David Foster, 305-234-0185; davesorchids@gmail.com

3–5—Southeastern Pennsylvania Orchid Society International Orchid Show and Sale, Greater Philadelphia EXPO Center at Oaks, 100 Station Ave., Oaks, PA; Contact: Robert Sprague, 484-919-2922; bobsatcyndal@aol.com

4–5—Central Ohio Orchid Society Annual Show and Sale, Franklin Park Conservatory and Botanical Gardens, 1777 East Broad St., Columbus, OH; Contact: Dave Markley, 614-354-9044; davemarkley27@gmail.com

4–5—Cherry City Orchid Society Show “Orchid Fantasy,” Bonaventure of Salem, 3411 Boone Road SE, Salem, OR; Contact: Janeil Payne, 503-931-3441; janeilp@hotmail.com

4–5—Connecticut Orchid Society Show “Spring into Orchids,” Bristol Senior Center, 240 Stafford Avenue, Bristol, CT; Contact: Cheryl Mizak, 203-264-6096; cmizak@alcher.com

4–5—Desert Valley Orchid Society Show, Berridge Nurseries, 4647 E. Camelback Road, Phoenix, AZ; Contact: Karla Velesco, 602-410-6514; desrtvalleyorchid@gmail.com

4–5—Houston Orchid Society Show and Sale, Memorial City Mall, 303 Memorial City Way, Houston, TX; Contact: Jay Balchan, 713-898-1265; balchan.jay@gmail.com

4–5—Les Orchidophiles de Quebec “Orchidofolie 2020,” Pavillon Environnement, 2480 Boulevard Hochelaga, Quebec, Quebec, Canada; Contact: Michel Tremblay, 450-966-6339; mdppa.tremblay@sympatico.ca

4–5—Santa Cruz Orchid Society Show and Sale, Cabrillo College Horticulture Center, 6500 Soquell Drive, Aptos, CA; Contact: Linda Locatelli, 831-426-5631;

orchidlady@cruzio.com

4–5—The Central Pennsylvania Orchid Society’s 55th Annual Orchid Show, Ag Arena, Penn State University, Park Avenue, University Park, PA; Contact: Wade Hollenbach and Cathy Riemer, 570-837-9157; wadeh@ptd.net

4–5—Utah Orchid Society Bench Show, Red Butte Gardens, 300 Wakara Way, Salt Lake City, UT; Contact: Shawn Quealy, 801-831-7359; shquealy@comcast.net

4–5—Western North Carolina Orchid Society “An Orchid Expedition,” North Carolina Arboretum, 100 Frederick Law Olmsted Way, Asheville, NC; Contact: Mike Mims, 828-329-2126; michaelmims@gmail.com

9–11—Maui Orchid Society Easter Show, Maui Mall, 70 East Kaahumanu Ave., Kahului, Maui, HI; Contact: Bert Akitake, 808-250-1585; jakitake@hotmail.com

10–11—Fort Worth Orchid Society “The Shocking Beauty of the Orchid World,” Fort Worth Botanic Garden Conservatory, 3220 Botanic Garden Blvd., Ft. Worth, TX; Contact: Connie Koehler, 817-505-3867; angelunaware43@gmail.com

11–12—Flamingo Gardens Orchid Society Show, Flamingo Gardens, 3750 S Flamingo Rd., Davie, FL; Contact: Jan Amador, 954-347-2738; jbamador@bellsouth.net

15–19—2020 Spring Members Meeting, Embassy Suites Sacramento Riverfront, 100 Capitol Mall, Sacramento, CA; For more information visit the news and events page on www.aos.org or contact us at theaos@aos.org

16–18—2020 “20/20 Vision of Orchids” Show and Sale, Embassy Suites Sacramento Riverfront, 100 Capitol Mall, Sacramento, CA; Contact: Tom Pickford, 707-480-1760; tom@goodstuff.net

17–19—Asociacion Orquideologica de Cartago “Exposicion Nacional de Orquideas Cartago 2020,” Centro Comercial Paseo Metrópoli, La Lima, Entrada a Cartago, Cartago, Costa Rica; Contact: Carlos Granados, (506) 8379-1513; cagranados48@gmail.com

18–19—Central Indiana Orchid Society Show, Garfield Park Conservatory, 2505 Conservatory Drive, Indianapolis, IN; Contact: Foster Flint, 317-601-2649; flintlowell@hotmail.com

18–19—Gold Coast Cymbidium Growers Annual Show and Sale, Redwood City Community Activities Building, 1400

Roosevelt Ave., Redwood City, CA; Contact: Sylvia Darr, 650-450-1384; sylvdarr@gmail.com

18-19—Toronto Artistic Orchid Association Orchid Show, Center for Immigrant and Community Services, 2330 Midland Ave., Toronto, Ontario, Canada; Contact: Nancy Leung, 905-597-6665; nancyleung.taoo@gmail.com

18-19—Treasure Valley Orchid Society Show and Sale, Hilton Garden Inn Boise, 7699 Spectrum St., Boise, ID; Contact: Ruth Mayer, 208-860-5254; ruthmayer@cableone.net

18-19—Tulsa Orchid Society Show "Orchids: Jewels of the Jungle," Tulsa Garden Center, 2435 S. Peoria Ave., Tulsa, OK; Contact: Soundra Schacher, 918-299-6466; schacher1@cox.net

24-26—Acadian Orchid Society 2020 Show and Sale, Ira Nelson Horticulture Center, 2206 Johnson St., Lafayette, LA; Contact: Bobby Gianelloni, 337-349-8512; orsoc@centurytel.net

24-26—Sacajawea Orchid Society Show, Gallatin Valley Mall, 2885 West Main Street, Unit 3-J, Bozeman, MT; Contact: C. M. Spinelli, 406-282-7621;

companion406@gmail.com

25-26—Oregon Orchid Society Spring Show, Aquinus Center, 340 NE Clackamas Street, Portland, OR; Contact: Greg Stanley, 626-818-2806; greges1@aol.com

25-26—Ottawa Orchid Society Show "Orchidophilia," RA Recreational Centre, 2451 Riverside Drive, Ottawa, ON, Canada; Contact: David Cooper, 613-256-2853; david_cooper@storm.com

25-26—Southern Tier Orchid Society Show, Roberson Museum, 30 Front Street, Binghamton, NY; Contact: Carol Bayles, 607-275-9090; cjb4@cornell.edu

25-26—Vero Beach Orchid Society Annual Show "Golden Age of Orchids," Riverside Park, 3001 Riverside Park Dr., Vero Beach, FL; Contact: Carolyn Greene, 321-506-3909; vbosnewsletter@gmail.com

25-26—West Shore Orchid Society Show, Strongsville Recreation Center, 18100 Royalton Road, Strongsville, OH; Contact: Chester Kieliszek, 330-467-3731; kieliszekc@aol.com

Events preceded by an asterisk (*) in this listing will not be judged by the AOS.

Too cold in the winter greenhouse?

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

— Jean Allen-Ikeson

Fertilizing getting you down?

Use slow release fertilizer pellets (14-14-14) commonly used for hanging baskets that will last three months. This way your plants get continuous fertilizer when you are busy or away. Use more on heavy feeders and less on orchids such as paphiopedilums: 1/2 teaspoon (2.5 ml) for 4-inch (10-cm) pots, one teaspoon (5 ml) for 6-inch (15-cm) pots or a tablespoon (15 cml) for 10-inch (25-cm) pots.

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Vegetable Starter Trays for Orchid Seedlings

I USE SEEDLING starter trays with humidity domes in the fall and spring for my vegetables. It did not occur to me to use them in the greenhouse for my orchids but when I deflasked my first orchid seedlings a couple of months ago, I needed a place, protected from the elements, to put the fragile seedlings. I keep a small amount of water in the tray and the humidity dome on top with both vents open. It sits on a shelf in my Arizona greenhouse in the southeast corner. After the first month, my seedlings doubled in size (the seedlings are pictured in the larger containers). So, I decided to move a few of my more fragile orchid divisions into the tray to see if I could encourage strength and growth. After another month, I noticed new growth and better color on the leaves (the divisions are pictured in the smaller pots).

I feed them every other week with MSU high-potassium fertilizer. Once a week, I leave the lid off for several hours just to increase the airflow and prevent mold or fungi from growing. If you grow indoors, this would be a great place for orchids needing higher humidity or those that are more fragile. We often get small



divisions or purchase orchids in 2-inch (5-cm) pots because they are cheaper. This tray and dome will keep them protected as they grow. It fits well under a counter and you can even mount a grow light under the counter if you are growing in a more shaded

environment. These seedling starter trays with humidity domes cost under \$10. Be sure to get the heavy weight tray so that it will not collapse when moved.

— Cindy Jepsen (email: cindyjepsen@cox.net).

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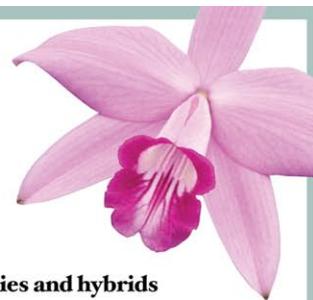


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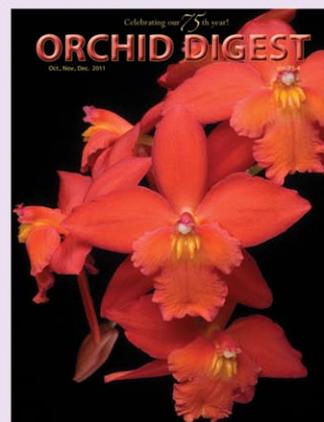
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Where to Place Baskets



MY NEW YEAR'S resolution was to enhance my skills and become knowledgeable about my orchid collection. Lately, I have been rearranging my orchids by cultural requirements and creating growing environments that will promote better vigor and growth in my plants. I am at the point where I am not killing my plants but they are just not growing or blooming as well as I would like them to.

As a result, I have been organizing some of my orchids into wire baskets. The medium-to-high light-loving orchids hang from the ceiling of my greenhouse with a retractable plant pulley (available from Amazon for about \$10.00/2-pack) so they are easy to pull down to check on them. My shade-tolerant orchids are in baskets sitting on the floor. Plants are further segregated by potting medium: moss vs bark. I water my bark baskets more often than my moss baskets. I am learning more about the individual requirements of my collection with this system plus I can fit more orchids into a small space. Who would not love that!

— Cindy Jepsen (email: cindyjepsen@cox.net).

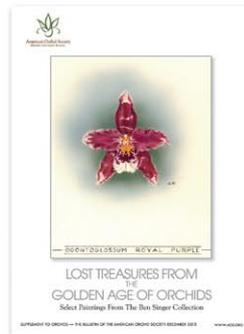
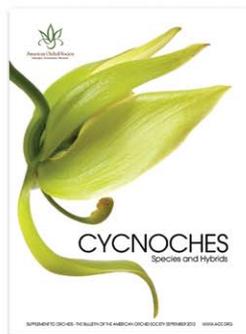
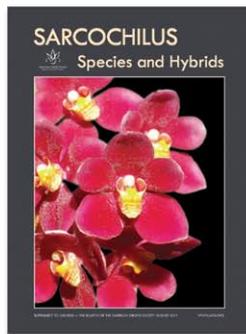
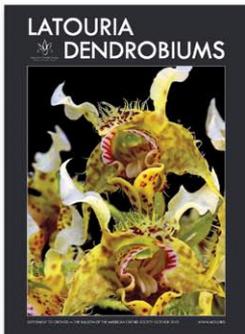
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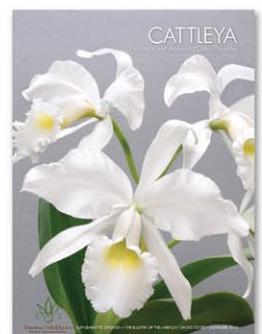


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The AOS welcomes the submission of manuscripts for publication in *Orchids* magazine from members and non-members alike. Articles should be about orchids or related topics and cultural articles are always especially welcome. These can run the gamut 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.

It Was a Beautiful Yesterday

Text by Bill Thoms/Photographs by Terry Bottom

DORIE WATCHED WITH me so I have a witness.

Once upon a time, a soft, brown hemispherical scale mommy said goodbye to all her li'l chilluns and sent them forth. So they went forth, and south, and east and west.

And lo they came unto a mighty spike rising heavenward like unto a tower, whereupon one said to another, "Where goest this?" And the other said, "You Babble" and they were sort of afraid; I mean sore afraid. But they all went forth at the speed of a jack-snail unto all parts of the greenhouse whereupon they did multiply past all understanding.

And as I gazed upon their progress, a deep sleep came over me like unto a nap which was soothing to all my extremities. When I awoke, I found I was overcome with desire, and this desire took the form of desiring to measure their progress, because a journey of a thousand plants starts with one spike.

- In the first ten seconds, lo, like unto Moses they wound up 0.4 inch (1 cm) away from their starting place.
- One minute later they were 2.5 inches (6 cm) away.
- At the end of one hour they were 12.5 FEET (3.8 m) AWAY.
- At the end of the day, they could have been 300 feet (91.6 m) away.

Like unto a football field, or an ARK, or the length of your greenhouse, or anyone's greenhouse.

But let us not be like unto counters of beans and be reasonable, and take a more conservative estimate, say, 1/10th of the OBSERVED SPEED, (0.04 inch in 10 seconds [0.1cm/10 seconds]). What you get is:

0.25 inch (0.6cm) in 1 minute, 1.25 feet (38 cm) in one hour and 30 feet (9.16 m) in one day; 30 feet in a day!

Let us continue to be reasonable and take 1/10th of THAT distance and you still wind up with almost 3 feet (0.9 m).

So, verily I say unto you, at 1/100th of the OBSERVED SPEED of these sweet little babies, they could still travel almost 3 FEET (0.9 m) in one day. And there are about 250 sweet little babies under EACH mommy.

And you thought you were making progress.

Pleasant dreams.

It is time to do a little multiplying myself, like separating their heads from their tails to give them twice as many problems.

Fair is Fair, Verily.

— Bill Thoms lives in Valrico, Florida





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