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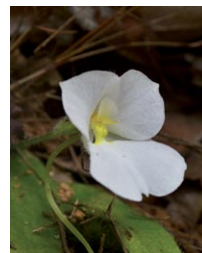
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Orchis simia, commonly called the monkey orchid, ranges from southern England, through Europe and Russia to Turkmenistan and into northern Africa. Photograph by Spiro Kasomenakis

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PRONUNCIATION GUIDE

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

Anacamptis (an-a-KAMP-tis)
Anemone (an-EM-oh-nee)
Angraecum (an-GRAY-kum)
anthrophophora (an-throh-POFF-ore-ah)
argolica (are-GOH-lih-ka)
argus (ARE-gus)
Aristolachia (a-riss-toh-LAK-ee-a)
Asphodelus (as-foh-DEL-us)
atropurpureum (at-roh- pur-PUR-ee-um)
attenuata (a-ten-yew-AY-ta)
attica (ATT-ih-ka)
bakeri (BAY-ker-eye)
bergonii (ber-GONE-ee-eye)
bombyliflora (bom-bee-lee-FLORE-a)
boryi (BORE-ee-eye)
Bulbophyllum (bulb-oh-FILL-um)
calocaerina (kal-oh-ser-EE-na)
calodytion (kal-oh-DIK-tee-on)
Catasetum (kat-a-SEE-tum)
Cattleya (Kat-lee-a)
chlorantha (klor-AN-tha)
ciliata (sil-ee-AY-ta)
clusii (CLUS-ee-eye)
coccinea (kok-SIN-ee-a)
Coeloglossum (see-loh-GLOSS-um)
collina (kol-LEE-na)
coriophora (kore-ee-OH-fore-a)
cornuta (kor-NEW-ta)
coronaria (kore-oh-NARE-ee-ah)
cretensis (kree-TEN-sis)
cretica (KREE-tih-ka)
crispissima (krisp-ISS-ih-ma)
Cryptophoranthus (kryp-to-for-AN-thus)
Dactylorhiza (dak-till-oh-RYE-za)
dayanum (day-AY-num)
delphinensis (del-fin-EN-sis)
Dendrobium (den-DROH-bee-um)
Diplochilos (dip-loh-KYE-los)
Diplomeris (dip-loh-MER-iss)
discolor (DISS-kuhl-ur)
doerfleri (DORF-ler-eye)
eburneum (ee-BURN-ee-um)
elephanticeps (el-lih-FAN-tih-seps)
endresianus (en-dree-see-AY-nus)
Epidendrum (ep-ih-DEN-drum)
Erlangense (err-lang-EN-see)
Euphorbia (yew-FOR-bee-a)
fenestratum (fen-eh-STRAY-tum)
ferrum-equinum (fer-rum-EK-kwin-um)
fuciflora (few-see-FLOR-ah)
fusca (FOOS-ka)
gloriana (glore-ee-AY-na)
gortynia (gore-TIN-ee-a)
gracilentum (grass-il-EN-tum)
Habenaria (hab-ih-NARE-ee-a)
harryana (hair-ee-AY-na)
heldreichii (held-RYKE-ee-eye)
Himantoglossum (him-an-toh-GLOS-sum)
hirsutum (her-SOO-tum)

hypodiscus (hye-poh-DIS-kus)
infracta (in-FRAK-ta)
iricolor (ear-EE-kuhl-ur)
islandica (eye-LAND-ih-ka)
italica (ih-TAL-lih-ka)
josephii (joh-SEF-ee-eye)
kermesina (ker-meh-SEE-na)
labukensis (la-boo-KEN-sis)
lactea (LAK-tee-a)
lappaceum (lap-AY-see-um)
laxiflora (lak-sih-FLOR-a)
lehmannii (lay-MANN-ee-eye)
Lepanthes (leh-PAN-theez)
lepidotus (leh-pih-DOH-tus)
lindenii (lin-DEN-ee-eye)
lingua (LING-you-a)
longifolium (lon-gee-FOL-ee-um)
lutea (LOO-tee-a)
macrura (MAK-rur-a)
maculata (mak-yew-LAY-ta)
Mandragora (man-dra-GORE-a) (man-DRA-gor-a)
mariannea (mar-ee-ANN-a)
mascula (mas-KEW-la)
Masdevallia (mas-deh-VAIL-lee-a)
moorei (MORE-eye)
morganii (more-GAN-ee-eye)
nana (NAN-a)
Neotinea (nee-oh-TIN-ee-a)
niveum (NIV-ee-um)
nutans (NEW-tanz)
oblongifolium (ob-long-ih-FOL-lee-um)
oestrifera (es-TRIH-fer-a)
officinalis (oh-fiss-in-AY-iss)
omegaifera (oh-meg-a-IF-er-a)
Ophrys (OFF-riss)
Orchis (ORE-kiss)
Paeonia (pay-OH-nee-a)
papilionacea (pap-ee-lee-oh-NAY-see-a)
paralius (par-AY-lee-us)
Paraphalaenopsis (pare-a-fail-en-OP-sis)
pauciflora (paw-see-FLOR-a)
peristeria (pair-ih-STAIR-ee-a)

phaedra (FEE-dra)
phryganae (FREE-gan-ee)
pinnata (pin-NAY-ta)
platyglossa (plat-ee-GLOS-sa)
Pleurothallidinae (plur-oh-thal-LID-ih-nee)
Pleurothallis (plur-oh-THAL-liss)
praedicta (pree-DIK-ta)
pseudoanatolica (soo-do-an-a-TOL-ih-ka)
Pteromarula (ter-oh-MAR-yew-a)
pulchella (PUL-kel-la) (pul-KEL-la)
pyramidalis (peer-ah-mih-DAY-liss)
quadripunctata (kwad-rih-punk-TAY-ta)
rhodochneila (roh-doh-KYE-la)
rolfeanus (rolf-AY-nus)
roseo-purpureus (roh-zee-oh-pur-PUR-ee-us)
saccatum (sak-KAY-tum)
sanchezosana (san-chez-hoe-SAY-na)
schenkii (SHENK-ee-eye)
schoederiana (shoh-der-ee-AY-na)
Scilla (SIH-la) (SIL-la)
Scolopax (SKOH-loh-paks)
Serapias (ser-AP-ee-as)
sesquipedale (ses-qwih-ped-AY-lee)
sicula (SIK-yew-la)
sieberi (SEE-ber-eye)
sittiaca (sit-ee-AY-ka)
Sobralia (so-BRAL-ee-ah)
sommieri (som-mee-AIR-ee)
sphegodes (sfeh-GOH-deez)
Specklinia (spek-LIN-ee-a)
spuneri (SPOO-ner-eye)
tenthredinifera (ten-thred-ih-NIF-er-a)
Tipularia (tip-yew-LAIR-ee-a)
tovarensis (toh-var-EN-sis)
Tulipa (TOO-lih-pa)
umbilicata (um-bill-lih-KAY-ta)
uniflora (yew-nih-FLOR-a)
Vanda (VAN-da)
vultriceps (VUL-trih-seps)
Xanthopan (XAN-tho-pan)
Zootrophion (zoo-TROH-fee-on)

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Aerangis. *Angraecum*. *Cattleya*: aclandiae; amethystoglossa; intermedia; lawrenceana; leopoldii; luteola; schilleriana; violacea; walkeriana. *Cyanoches*: barthiorum; cooperi. *Dendrobium*: atrovioleaceum; johnsoniae; laevifolium; purpureum; spectabile. *Encyclia*. *Oncidium*: papilio; papilio v. alba; kramerianum. **MANY MORE!**

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Caladenia discoidea

Yunnan, China Mar 14 – Mar 27. To follow the Taiwan WOC. Tour includes Jinghong Botanic Garden, Wild Elephant valley, and sites for *Paph. bellatulum*, *villosum*, and *wenshanense*. Other orchid genera will include *Coelogyne*, *Dendrobium*, *Holcoglossum*, *Phalaenopsis*, *Pleione*, *Vanda* and more.

Costa Rica April (Dates TBA). Tour includes Lankester Botanical Garden, reserves at Bosque de Paz, Monteverde, and others. We expect to see *Brassavola*, *Brassia*, *Encyclia*, *Epidendrum*, *Masdevallia*, *Maxillaria*, *Pleurothallis*, *Sobralia*, and many others.

Western Australia September (Dates TBA). Beginning in Perth, we will travel south to Albany, visiting many orchid rich sites along the way. We expect to see *Caladenia*, *Diuris*, *Prassophyllum*, *Pterostylis*, and *Thelymitra*, among others, many interesting flowering and carnivorous plants, and parrots, cockatoos, and kangaroos.

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Call For Nominations

The AOS Board of Trustees seeks nominations for members of the Board of Trustees of the American Orchid Society, for all six officers (for 2020-2022) and four trustees (for 2020-2023). Members may nominate any member in good standing, including themselves, and shall provide a rationale as to why they should be considered. All nominations will be evaluated by the Nominating Committee and a slate will be mailed, in accordance with the by-laws, prior to the election at the Members Meeting in the spring of 2020. The following competencies have been determined by the Board and will be used in the evaluation.

All nominees shall:

- be members of the AOS, and embrace the mission and priorities of the AOS;
- exhibit integrity and ethical behavior;
- possess strong interpersonal and communications skills;
- have board experience (preferred but not required), preferably with a non-profit organization.

Expertise in some of the following is desirable and will weigh in the evaluation:

- finance, business and/or investment strategies,
- legal background,
- development/fund raising,
- strategic planning and implementation,
- marketing,
- conservation, research or education.

Responsibilities:

- attend conference-call type meetings when called (Two per month for officers, one for trustees);
- attend two face-to-face members' meetings annually (must pay own travel expenses, there is no compensation);
- actively participate and contribute in Board activities and work;
- financially support the organization in a manner commensurate with one's ability, while seeking additional financial support elsewhere;
- advocate on behalf of the organization and be ambassadors to the orchid community.

Send nominations to:

nominating_committee@aos.org

Nominations will be accepted up to close of business September 25, 2019.



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PRESIDENT'S MESSAGE

ONE OF THE highlights of being your president is presenting awards to our members. One award I think is special is given when a committee chair or entire committee wants to recognize a volunteer who has worked especially hard for their committee. With approval of the Board, we usually present the well-deserved committee member with a plaque in appreciation of their hard work. Sometimes we are able to surprise the recipient when they attend the next members' meeting. But what happens if the recipient cannot attend? Well, that is when I get on a plane and present the award at their local orchid society meeting or at their home.

Last January, I traveled to St. Augustine, Florida to attend the St. Augustine Orchid Society meeting to present Terry and Sue Bottom the Certificate of Meritorious Achievement in Orchid Education for the articles they have written for *Orchids* magazine (Wedegaertner 2019).

In the middle of this last June, Phyllis Prestia, Chair of the Education Committee, and I flew to Tucson, Arizona to present Sandy Stubbings a Certificate of Meritorious Achievement in Orchid Education. The following is an excerpt from the letter the Education Committee wrote for Sandy's nomination:

"One of the Education Committee's central foci is to interest the youth of today in the knowledge of, and appreciation, for orchids. We believe that Sandy Stubbings has dedicated all of her efforts in this area of fostering young people's interest in, and enjoyment of, orchids by developing projects and activities over the years that educate young people about orchids.

As an Education Committee member for many years, Sandy has been instrumental in creating many of the AOS-sponsored activities and projects that remain successful in intriguing and inviting kids into the world of orchids. Here are a few of her creations:

- Kids Corner: Activities for children at orchid shows;
- Girl Scout Interest Project: Working with Scouts toward learning about orchids and earning the orchid patch;
- Kid's Art Projects: Drawing paper, pencils, crayons, and orchids;
- Kid's Field Trips: A trip to a local greenhouse;
- Orchid Hunt: Finding and identifying orchids at a show;
- The Photo Wall: Orchid photo display of inserting people's faces in orchids.



PHYLLIS PRESTIA

- Orchid Photo Sorting: Sorting orchid photos by any means, such as color or type;
- Young Orchidist: Writing about young people's experiences with orchids."

Sandy could not attend the AOS Members' Meeting in San Diego, so Phyllis and I wanted to surprise her at her new local orchid society meeting. After trying for a few months to work out the logistics, we realized that would not work. Phyllis contacted Sandy to tell her about the award before she heard about it through the "orchid grapevine." Sandy invited Phyllis and me to come and stay with her in Tucson. We had a wonderful visit, talking a lot about the Education Committee and getting younger people involved. Although Sandy is no longer on the Education Committee, she still has some great ideas and she has agreed to be a consulting member for those on the committee who want to continue her work to keep younger people interested in orchids. Phyllis and I cannot thank Sandy enough for her hospitality during our stay. We had a wonderful time!

I look forward to seeing you at our next Members Meeting October 16–20, 2019 in Homestead, Florida in conjunction with the East Everglades Orchid Society (EEOS) show. Come see who will be given a plaque of appreciation! Registration and hotel reservations are now open on the AOS web site (aos.org/news-and-events/members-meetings.aspx).



PHYLLIS PRESTIA

[1] Susan Wedegaertner (left) presents Sandy Stubbings (right) the AOS Certificate of Meritorious Achievement in Orchid Education.

[2] Girl Scout Orchid Patch.

For those with time outside the meetings, the EEOS is offering a day trip to experience the everglades by airboat and the Everglades Alligator Farm. The Redland area of South Florida is also home to many orchid nurseries. It should be a wonderful time in South Florida.

Until next time, happy growing!

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— Susan Wedegaertner, AOS President (email: susan@aos.org).

GREATIdeas

Text and photograph by Jean Allen-Ikeson

Power Outages Winter and Summer!



JEAN ALLEN-IKESON

Bev Tall's roof-mounted sprinkler system. If the power fails, a solenoid switch opens the water supply to the sprinklers.

MOST PEOPLE WORRY about power outages in winter because of the possibility of a freeze-out. I will always keep the image of Malcolm and Judy Adams huddled in one room with their orchids with a heater running off a borrowed gas generator that needed refueling every four hours during the Great Ice Storm in the northeast of the USA and eastern Canada in 1998. Malcolm and Judy were wonderful *masdevallia* and *paphiopedilum* growers living north of Montreal. Malcolm turned to Judy and said, "When the gasoline runs out after this refill, I cannot start the generator again, I am too sore." Someone heard him and the power came back on before the gas ran out. This was the seventh day without power.

Conversely, growers who live in hurricane-prone areas can describe that frantic rush to reinstall shade cloth before the sun scorches everything and with no help from fans unless they have a generator going. This happens even in the northern states. Lynn O'Shaughnessy lost an important and large collection of miniatures from her much-awarded, *pleurothallid*-group collection when the power failed in the summer and the heat cooked the plants.

Everyone needs a plan. Automatic generators that run off of natural gas or propane have become much more

common in the last 10 years and the price has come down. You do not need to be home if the power goes out. But they need maintenance and oil changes just like any engine!

In an emergency with a greenhouse in the summer, when no generator is available, start removing some of the glazing on the walls to let air go through, add another layer of shade or throw a tarp over a smaller greenhouse, or run sprinklers against the walls inside or outside to help cool the greenhouse down.

Bev Tall had an interesting solution that she added to her attached greenhouse outside of Phoenix, Arizona, where it gets *hot*! She had a sprinkler system installed on the outside over the roof that is run by a switch that opens the water when the power goes off. This is clever because the combination of cooling water and shade cloth can prevent the loss of her collection and she need not be home because it only works *when* the power goes off.

For greenhouses without a generator backup in the middle and northern states and provinces, you can use a radiant heater of the type that screws onto a barbecue propane bottle. In my pregenerator days when I lived in Nova Scotia, where the power company was not overly concerned

about outages, I used to use these. They are available in 15,000 and 25,000 BTU, both with a low, medium and high setting. You need to make sure there is an outside air supply and do not use them in an attached greenhouse for fear of carbon monoxide poisoning in your house! I used to raise the sliding glass panel in the door enough to leave a ½-inch (1.3-cm) gap and place the heater in front of it facing to the inside of the greenhouse. The smaller heater would keep a 16- × 28-foot (4.9- × 8.5-m) greenhouse around 55 F (13 C) when the outside temperature was 20 F (-6.7 C) and ran for a number of hours on a single bottle. I used to keep four around (I had two greenhouses) and used the propane in the summer for the barbecue grill and then refilled the bottles for the fall and winter. Of course, how warm the greenhouse stays depends on how windy it is.

I also used to line the back and part of the side walls 4 feet (1.2 m) high with double bubble — a product that looks like bubble wrap covered with foil to add insulation. The foil also reflected the sunlight and heat back into the greenhouse. I removed it in late spring and stored it until the following fall.

— Jean Allen-Ikeson, AOS Editorial Board Chair (email: jean.ikeson@gmail.com).

September: The Month of Manifestation

By Thomas Miranda

THERE ARE SOME that say you can have anything and everything you might want in life. Others say we should sacrifice and sublimate our personal desires to achieve a greater good. I choose to think that if we focus our attention on positive things, that we can attract beauty and goodness into our lives. That which we dwell upon, positive or negative, becomes our destiny. Our brain is a supercomputer, and it has the capacity to manifest truly great things, if we let it — if we are not afraid to ask the universe to bring it to us.



Thomas Miranda

For decades I have had a great desire to make a difference in the world of orchid conservation. By focusing on this particular goal, and by making myself available to the opportunities around me, I am starting to live that dream. I can visualize a future where the vast community of orchid lovers: scientists, horticulturists, growers, breeders, hobbyists, educators and students young and old, will come together for that greater good. Never before has there been so much interest in creating orchid reserves and gardens around the world. The AOS Conservation Committee is funding several new reserves in this year's funding cycle and wants to encourage more such projects. We now focus on understanding and protecting entire complex ecosystem networks, including interdependence with trees, pollinators and fungi. The more of us that focus on the positive actions we all can take, the more formidable our collective manifestations will become. As we build momentum and collective energy, I am looking forward to being astounded at what the coming year will bring us!

CLIMATE CHANGE A major shift in weather begins this month in most areas. In the northern hemisphere, days are shortening and temperatures are, thankfully, cooling. Roasting temperatures in the summer are often stressful to many plants, and sometimes they succumb to the harsh conditions. But September brings with it some welcome relief. Plants summering outside often get a flush of new growth as nighttime temperatures drop into the 50s and 60s. This temperature shift is also a blooming trigger for many



PIONEER ORCHIDS NZ

orchids, including phalaenopsis, labiate-type cattleyas, cymbidiums and hard-cane dendrobiums. Be on the lookout for spike initiation in these genera and many others.

RIVERS, GORGES AND WATER-FALLS Many orchids live in some of the most beautiful habitats on earth, places that are also worth preserving. All of them generally have a special water source. Even though many are succulent and have some drought tolerance, water is a requirement for all plants. While certain plants are showing the onset signs of dormancy (such as senescing leaves or brown tips), or have produced mature growths that are ready to bloom, it is still a little early to completely stop watering plants such as catasetums, deciduous dendrobiums and habernarias. You must watch the signs carefully and be ready to start watering less in general. Plants that you know require dryer winters should be segregated from winter waterers so that stray splashes from the hose will not

Keep a watchful eye out for the beginning of spikes this fall and winter. This *Cymbidium* Joan's Charisma 'Vanity' is producing five on a single bulb. Talk about floriferous!

reach them.

SHELTER FROM THE STORM Most of your tropical orchids are about ready to return to their winter quarters. If your orchids have been outside for the summer, look them over carefully for hitchhikers. Sometimes undesirable critters might be hiding inside pots, and plant parasites such as scale or mealybug, might be just waiting for a nice warm place to spend the winter as well. It may be time to drench or dip your plants to evict any such freeloaders. Always check the undersides of leaves, particularly discolored ones, for these insidious little creatures. While there may be a place for such things in a natural ecosystem, in an artificial one such as your greenhouse, lightroom or windowsill, it can spell disaster.

NETWORKING This month also

marks the beginning of the academic year, and of resuming work after a fun-filled vacation and travel season. It is always great to reconnect with friends and colleagues this time of year and reassess priorities and initiate new projects. This surge in productivity is also happening in your collection. Your plants are dependent on you for the necessities of "being an orchid," as well as to observe and prevent any problems that might be on the horizon. In your greenhouse or on your windowsill, they do not have the protections of an evolved ecosystem. You supply the substrate, the food, the water, air and light. YOU are their network. Like children, they need your nurturing and love. Their gorgeous winter blooms are their way of returning that love right back to you. Indeed, they are something you manifest with your love and attention to your orchids.

— Tom 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. He recently coauthored *The Book of Orchids: A Life-Size Guide to 600 Species From Around the World* (email: biophiliak@gmail.com).

Webinars-Coming Attractions!



When	September 05, 2019 8:30pm EDT Thursday	September 18, 2019 8:30pm EDT Wednesday	October 03, 2019 8:30pm EDT Thursday	October 07, 2019 8:30pm EDT Monday
Topic	Greenhouse Chat (Orchid Q&A) <i>Send in your Questions!</i>	The Orchid Gardens of Latin America	Greenhouse Chat (Orchid Q&A) <i>Send in your Questions!</i>	Conservation & Ecology of North American Cypripediums
Presenter	Ron McHatton Chief Education and Science Officer	Tom Mirenda AOS Conservation Committee Chair	Ron McHatton Chief Education and Science Officer	Tara Luna Pacific NW Field Botanist & Ecologist

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

Cannot make it on the scheduled date or time? No need to worry. Register anyhow! We digitize the webinars and they are available to view at your leisure from the same webpage.

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Sylvia Strigari

Phalaenopsis mariae

By Franco Pupulin/Watercolor by Sylvia Strigari

Tribe EPIDENDREAE

Sutribe AERIDINAE

Genus PHALAEOPSIS *Blume*

Phalaenopsis mariae Burb. ex Warn. & B.S.Wms., *Orchid Album* 2: t. 80, sub t. 87. 1883. *Polychilos mariae* (Burb. ex Warn. & B.S.Wms.) Shim, *Malayan Nat. Journ.* 36: 25. 1982. TYPE: The Philippines. Sulu Island [actually Jolo], Bunt-Dohan, 600 m, *F. W. Burbidge* s. n. (holotype, W).

A large, monopodial, few-leaved, arcuate to pendent epiphytic herb to about 30 (–40) cm tall. *Roots* numerous, fleshy, flexuous, glabrous, with green apices, 5–6 mm in diameter. *Stem* short to very short, completely enclosed by the imbricating leaf sheaths. *Leaves* 4–7, distichous, deflexed to arching-pendent, thick-coriaceous to fleshy, light green, oblong-ligulate to oblong-obovate, rarely oblong-elliptic, acute or obtuse, sometimes slightly undulate, to 30 (–40) × 7 (–10) cm. *Inflorescence* lateral, produced from the axils of the lower leaves, persistent, a pendent, simple or branched, few- to many-flowered (3–15) raceme or panicle, frequently shorter than the subtending leaves, occasionally surpassing them, to 30–(60) cm long, with 1–3 triangular, acute, green, coriaceous. *Bracts*, tightly clasping along the peduncle. *Floral bracts* small, triangular-ovate, cucullate, acute, up to 4 × 3 mm. *Pedicellate ovary* terete-subclavate, slender, round in section, ca. 2.5 cm long including the pedicel. *Flowers* rather showy and faintly fragrant during the day, spreading, fleshy, with white to cream sepals and petals marked with large and bold, transverse bars of brownish red and amethyst (rarely brownish orange), uncommonly almost solid red, the lip brilliant magenta-carmine to purple, often with white margins, the column white. *Dorsal sepal* lanceolate-elliptic to oblong-elliptic or elliptic-obovate, obtuse, shortly carinate-mucronulate, slightly tapering below, the lateral margins sometimes slightly revolute, 19–22 × 10–11 mm. *Lateral sepals* obliquely oblong-elliptic, obtuse, shortly carinate-mucronulate, the lateral margins more or less revolute, 10–22 × 10–12 mm. *Petals* obliquely oblong-oblancheolate, commonly slightly porrect, sometimes subunguiculate, obtuse, to 16–17 × 9–10 mm. *Lip* fleshy, trilobed, to ca. 15 × 12 mm wide across

the flattened lateral lobes; the lateral lobes erect, triangular-oblong to oblong-ligulate, erose-denticulate at the truncate apex; the midlobe oblong to narrowly obovate, dilated below the apex, obtuse, the lateral margins irregularly erose-dentate near the apex, with a short, fleshy, lamella-like central keel below the middle, in front of which is a subterminal, cushionlike, prominent callus covered with short, soft trichomes; disc between the lateral lobes with a biseriate, superimposed, fleshy, acicular callus; the basal callus bifid, continuous with a minutely tuberculate fleshy base, the distal callus extending the junction of the midlobe and lateral lobes, bifid. *Column* short and stout, fleshy, semiterete from a thick, subrectangular, subancipitous base, slightly arcuate, dilated at apex around the transversely elliptic-rounded stigma, to 7 mm long. *Anther cap* fleshy, ovate, deeply cucullate, crested, bilocular. *Pollinia* two, ovate, cleft, on a narrowly triangular-ligulate stipe and a peltate, hyaline viscidium.

The young Frederick William Burbidge (1847–1905) entered the gardens of the Royal Horticultural Society at Chiswick as a student in 1868, and that same year he proceeded to the Royal Gardens, Kew, where he concluded his studies in 1870. A skilled draughtsman, he was partly employed in drawing herbarium specimens at Kew until 1877. During this time he also splendidly illustrated a monograph on *Narcissus* (Burbidge 1875), to which John Gilbert Baker added a full scientific review of the genus. In 1877 James Veitch hired him as a collector and sent him on a two-year mission to Borneo. He also visited Johore, Brunei, and the Jolo Island, and in 1880 he published diary of his trip under the title of “*The Gardens of the Sun, or a Naturalist’s Journal on the Mountains and in the Forests and Swamps of Borneo and the Sulu Archipelago*,” a book that he dedicated to his wife. Four entire chapters of the book are dedicated to his “Voyage to Sulu” and here Burbidge (1880: 212) mentions the rich orchid flora of the island’s mountains, among which he cited *Cymbidium aloifolium*, *Dendrobium crumenatum* and a new species that he compared to *Dendrobium d’Albertisii* (= *Den. antennatum*), which eventually Reichenbach described in his honor with the name *Dendrobium burbidgei* (today

treated as a synonym of *Dendrobium bicaudatum*).

It was during an excursion to the “Hills of Tears,” host of the Sultan of the Sulus, when he discovered the new *Phalaenopsis* that, four years later, he would describe in honor of his wife Maria. From a letter that Burbidge sent to his employee, we know that he only found two plants, one of which was in full flower with “four flower spikes bearing in all 30 flowers.” In the same letter, Burbidge also provided a full description of the plant (naming it *marie*), that he compared with *Phalaenopsis sumatrana* and, mostly, with *Phalaenopsis lueddemanniana*. As the good illustrator he was, Burbidge also prepared a colored sketch of the apex of an inflorescence with two flowers, and ink details of the lip in several views. Veitch, in turn, sent the letter and the sketch to Reichenbach, who diligently copied them for his herbarium. When, in 1883, Robert Warner and Benjamin Samuel Williams formally described *Phalaenopsis mariae*, having at hand the drawing of a plant bloomed by the Messrs. Veitch in 1882, as well as copy of Burbidge’s description, they erroneously ascribed the name to a manuscript by Reichenbach, adding that “it has been named by Professor Reichenbach in compliment to Mrs. Burbidge” (Warner and Williams 1883a). The German professor replied a few weeks later, clarifying that he was not the author of the name, because “for now-a-days one is frequently worried with prescriptions how some unknown plant must be named provided it be new, and I have always declined to name plants in honour of ladies whom I have never seen, and who do not, so far as I know, stand in any special relation to plants” (Reichenbach in Warner & Williams 1883b). Meanwhile, Burbidge had been appointed curator of the botanical gardens of Trinity College, Dublin, at Glasnevin, and in 1889 Dublin University conferred on him the honorary degree of M.A.

Although *Phalaenopsis mariae* has been previously recorded from the islands of Mindoro and Luzon in Central Philippines, the species is known today to be endemic to Southern Philippines (western Mindanao and Jolo Island in the Sulu Archipelago) and northern Borneo. Populations from Mindanao have white flowers that are said to present green

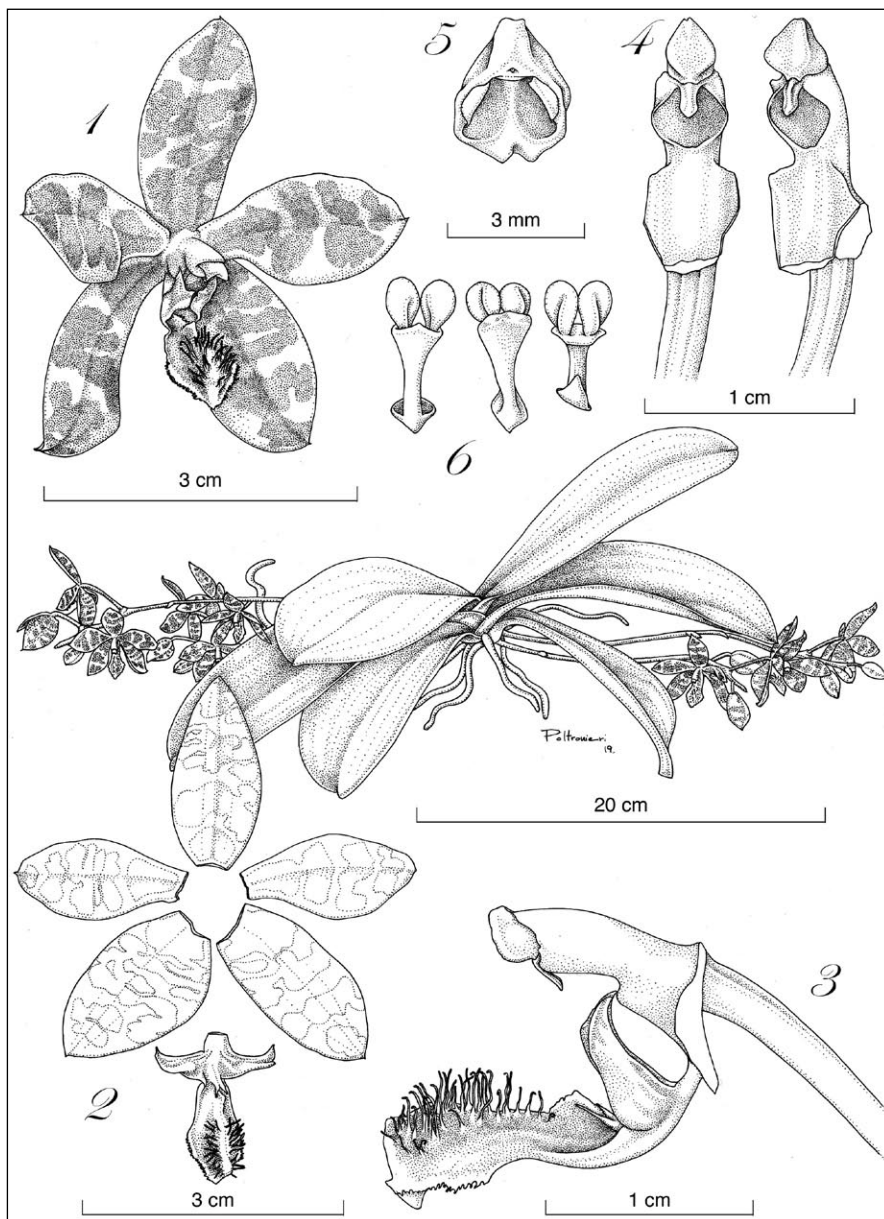
tips of the floral parts, in contrast with the typical form from Jolo having a solid white flower background. In the Sulu archipelago, the species shares its habitat with populations of *Phalaenopsis bastianii* Gruss and Rölke, a different species with which it has been long confused. Gruss and Rölke assigned *Phal. bastianii* to the section *Zebrinae* (*sensu* Sweet 1980), but it lacks the petaloid, fringed clinandrium that is typical of that group. *Phalaenopsis mariae* and *Phal. bastianii* are quite obviously sister species and florally similar, but the latter can be recognized by the erect inflorescences (which are distinctly pendent in *Phal. mariae*), the almost flat, glossy flowers with usually narrower parts (vs. the sepals with mostly recurved margins and the petals subcorrect in *Phal. mariae*), and the much more sparse trichomes on the apex of the lip (dense in *Phal. mariae*).

In the phylogenetic analyses based on the comparison of DNA sequences (i.e., Padolina et al. 2005, Tsai et al. 2003, 2006), *Phalaenopsis mariae* is recovered as the basal species of the *Phal. lueddemanniana* complex, the only group of *Phalaenopsis* sect. *Amboinenses* to be recorded — and virtually restricted — to the Philippines. This placement, and the distribution of *Phalaenopsis mariae* straddling Borneo and the Philippines, suggest that the species of the complex close to *Phal. lueddemanniana* are part of a single lineage descended from *amboinenses* ancestors originally from Borneo (Tsai 2003), a scenario compatible with the geologic history of the region, when the islands of Borneo and Palawan (in the Philippines) were interconnected during glacial times, about 5–10 millions years ago (Hall 1996).

No true anthocyanin-free forms of *Phalaenopsis mariae* are known, and plants labeled as *Phal. mariae* var. *alba* (formally described by Ames and Quisumbing) are invariably referable to *Phalaenopsis pallens* or to the variety *ochracea* of *Phal. lueddemanniana* Rchb.f. Although breeding with the bold, rich red-colored bars and blotches of *Phal. mariae* may result in an improvement of the coloration of other closely related species, the characteristic reflection of the sepals along the margins is also a dominant character transmitted by *Phal. mariae*, which has therefore be only sparingly used in hybridization programs.

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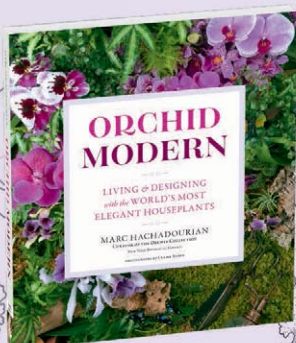
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Phalaenopsis mariae. The plant.

1. Flower
 2. Dissected perianth.
 3. Column and lip, lateral view.
 4. Column, ventral and three quarters views.
 5. Anther cap.
 6. Pollinarium, three views
- Drawn from JBL-21099 (JBL) by Sara Poltronieri.

Volume 2, comprising coloured figures and descriptions of new, rare, and beautiful Orchidaceae Plants: sub pl. 80. London, Victoria and Paradise Nurseries.
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Selected Botanical Terms

abaxial - lower surface of a leaf
 acicular - needle-shaped
 acuminate - tapered to a point
 acute – pointed
 adaxial - upper surface of a leaf
 apiculate - ending abruptly in a small point
 arcuate - curved like a bow
 bifid – divided into two parts by a deep cleft
 bilocular - two chambered
 biseriate - arranged in two rows
 caespitose – clustered or tufted
 carinate - having a keel-like ridge
 caudicle – slender, elastic structure to which the pollen masses are attached (plural = caudicles or caudiculae)
 clavate – club-shaped
 concave – bowl-shaped
 congested – closely spaced
 connate – fused to form a single part
 coriaceous – leathery
 crenellate - having a scalloped margin
 cucullate – hooded
 deflexed - downturned
 denticulate - finely toothed
 distichous - opposite vertical rows
 erose - irregularly notched

falcate - sickle-shaped
 flexuous – flexible, full of bends and curves
 glabrous - smooth
 hyaline - glassy, translucent
 imbricate - overlapping
 lamella - plate of tissue
 lanceolate – a narrow oval tapering to a point at both ends
 ligulate – strap-shaped
 mucronulate - having a small point with a distinct spine
 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
 panicle - loose, branching cluster
 pedicel – a stem carrying a single flower
 peduncle – the lower part of the inflorescence below the first bud
 peltate - shield-shaped
 petiole - the stalk joining a leaf to a stem or pseudobulb
 plicate - folded
 porrect – held forward
 raceme – flowers arranged along a cen-

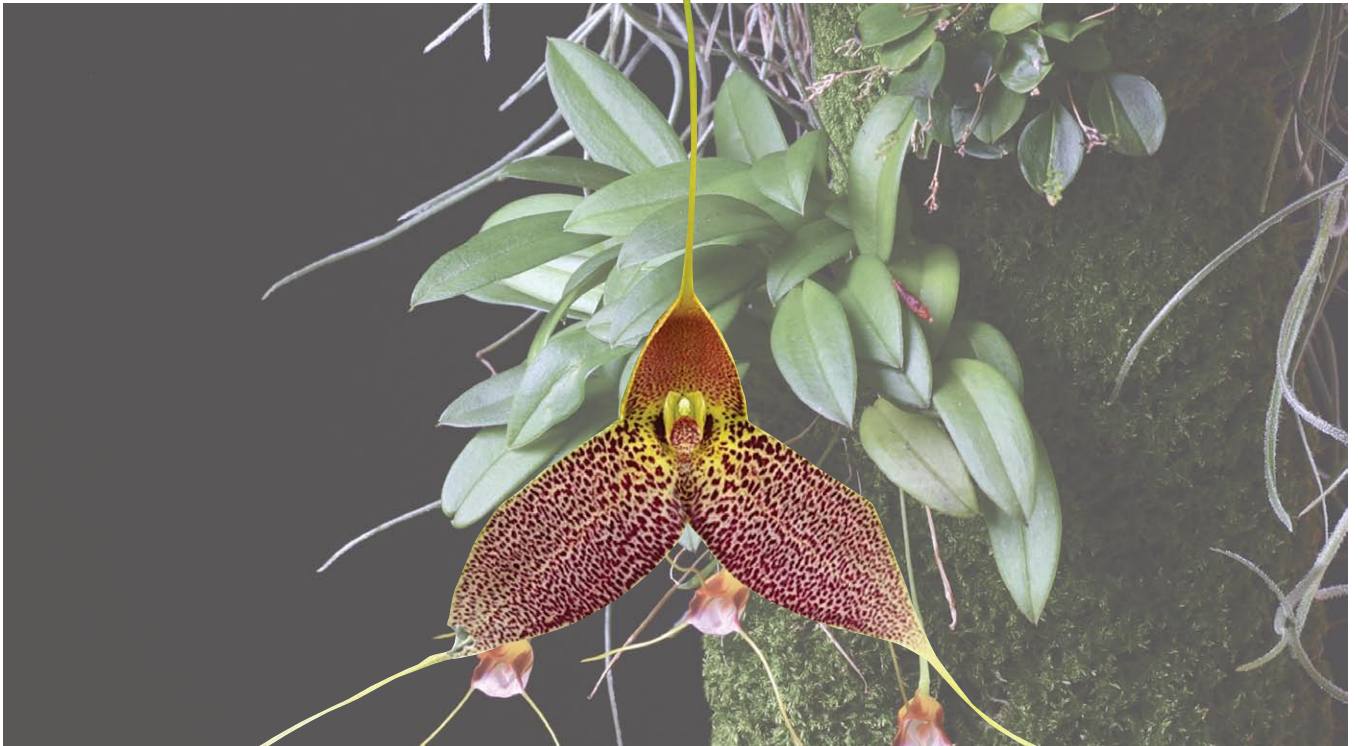
tral stem
 ramicaul - narrow stem
 retrorse - pointing backward
 revolute - curved back
 rugose - wrinkled, corrugated
 sagittate - shaped like an arrowhead
 semiterete - partially terete
 spatulate - spoon-shaped
 stelia - small teeth
 subancipitous - not completely flattened with two edges
 subtending - enclosing, covering
 subclavate - nearly club-shaped
 subrectangular - nearly rectangular
 subterminal - at the end of a stem
 synsepal - completely fused sepals
 terete – pencillike
 trichomes - small glandular hairs
 truncate - ending abruptly as if cut off
 tuberculate - having small warts
 unguiculate - having a narrow, stalk-like base
 verrucose - covered in wartlike bumps
 viscidium – the sticky pad on the caudicle or stipe of the pollinarium that attaches the pollinarium to a pollinator



Masdevallia

by Peggy Alrich and Wesley Higgins

A New World Genus



MASDEVALLIA

Ruiz and Pavón *Fl. Peruv. Prodr.*, 122, t.27 (1794).

ETYMOLOGY In honor of José Masdeval (x-1801), a Spanish physician in the court of King Charles III (1759–1788) of Spain. He was an amateur botanist, who pioneered the hygienic methods used to treat fevers then rampant in the northeastern corner of the Spanish principality of Cataluña.

GENERITYPE *Masdevallia uniflora* Ruiz and Pavón

There are 652 of these unusual epiphytes, uncommon lithophytes or even accidental terrestrial species found in cool, moist, low- to usually upper-elevation, hill scrub and montane forests. Their range extends from southeastern Mexico to Bolivia, the Guianas, Venezuela and eastern Brazil (Minas Gerais, Espírito Santo to Paraná) with the greatest diversity found in Colombia.

These plants have short, erect stems,

subtended by thin, dry, overlapping sheaths, each with a solitary, small to large, fleshy to leathery, oblong to narrow, petiolate leaf. The several usually solitary-flowered inflorescences have flowers varying in size from quite tiny to gigantic, 1 foot (30 cm) tall. These distinctive, triangular or tubular flowers are extraordinary for their amazing range of shapes, as well as the variety and beauty of the colors. The sepals, more or less united at the base, forming a sepaline tube, and narrow toward the tips forming short to long tails (caudae). They usually have small, narrow petals. The small to minute, straight or recurved, simple or trilobed lip is either stalked or shortly clawed. The flowers have a short, erect or curved, sometimes winged column that has a tiny segment tucked away in the sepaline tube. Pollinia 2, ovate to triangular, waxy, laterally compressed, attached to a viscidium by granular, elastic

caudicles.

Molecular work (DNA sequencing) by others has led Luer to propose a division of the complex genus into a new 16-genus complex. Many growers and scientists have not accepted this proposition and maintain the genus approximately as it was circumscribed by Luer in 1986.

CULTURE Some species are difficult in cultivation, while other species are quite easy to grow in a well-drained mix with some sphagnum added. Provide cool to intermediate conditions, high humidity and good air movement.

FURTHER READING

Luer, C.A. 1986. *Icones Pleurothallidarum 2*, Systematics of *Masdevallia* (Orchidaceae). *Monographs in Systematic Botany from the Missouri Botanical Garden*, vol. 16. Missouri Botanical Garden, St. Louis, Missouri.

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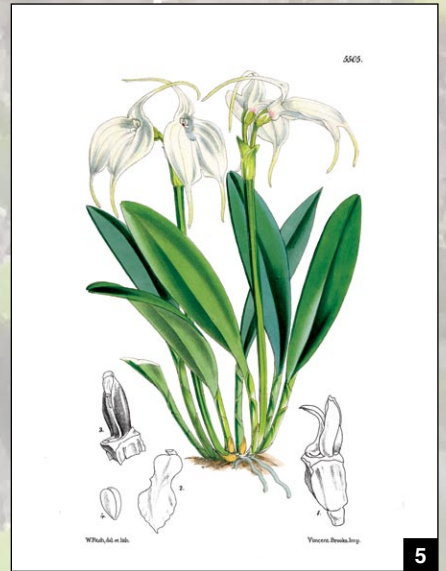




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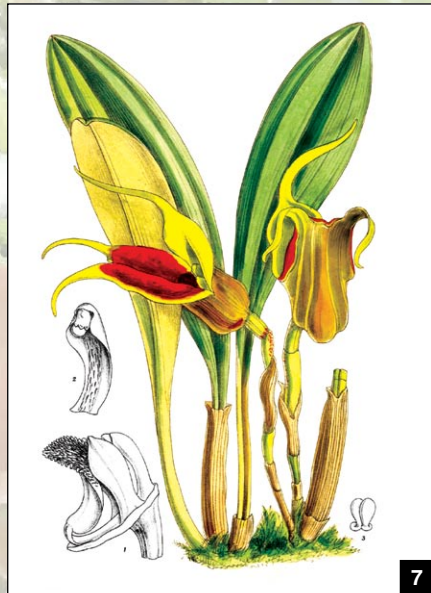
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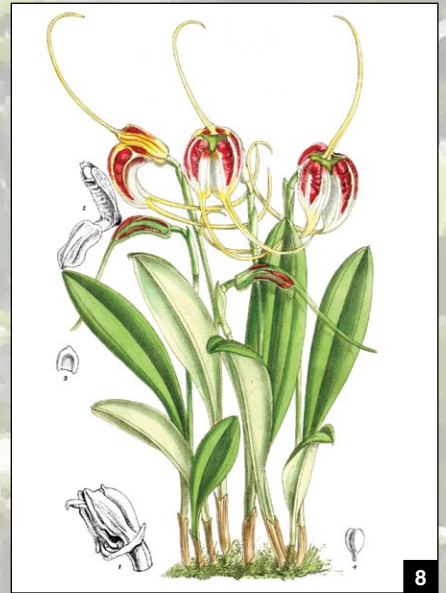
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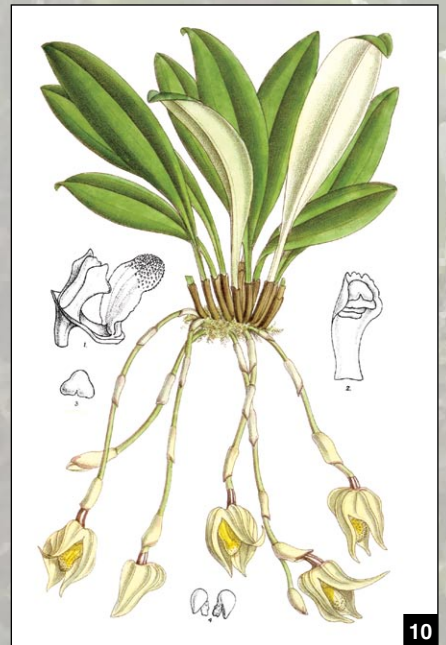
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Antique Plates: *Masdevallia*

- [1] *Masdevallia coccinea* as *Masdevallia haryana* - *Reichenbachia*, 2:t.26 (1892).
- [2] *Masdevallia peristeria* - *Flore des Serres et des Jardin de l'Europe*, 22:t.2346 (1877).
- [3] *Masdevallia macrura* - *Orchid Album*, 9:t.431 (1891).
- [4] *Masdevallia attenuata* - *The Genus Masdevallia*, t.35 (1896).
- [5] *Masdevallia tovarensis* - *Botanical Magazine*, 91:t.5505 (1865).
- [6] *Masdevallia infracta* - *Flore des Serres et des Jardin de l'Europe*, 23:t.2389 (1880).
- [7] *Masdevallia elephanticeps* - *Botanical Magazine*, 128:t.7824 (1902).
- [8] *Masdevallia schroederiana* - *Botanical Magazine*, 128:t.7859 (1902).
- [9] *Masdevallia coccinea* as *Masdevallia lindenii* - *The Garden (London)*, 10:t.36 (1876).
- [10] *Masdevallia platyglossa* - *Botanical Magazine*, 117:t.7185 (1891).



9



10

GENUS OF THE MONTH

Zootrophion — A class Menagerie

Text by Thomas Mirenda and Wolfgang Rysy/Photographs by Wolfgang Rysy unless otherwise credited



THE PARALLEL UNIVERSE of the Pleurothallidinae, practically by definition, introduces us to some seemingly otherworldly creatures. If there were an AOS award for the strangest orchid in a show, it would likely be bestowed on a pleurothallid (or possibly a bulbophyllum). Such flowers have explored alternative pathways of evolution by catering to equally strange pollinators. Well, this is not entirely true, as the minute insects, mostly flies and gnats, associated with them are actually incredibly commonplace, we just do not tend to think about them unless they are pestering us somehow. These pollinators are all around us, and particularly common in wet forests where there is a lot of decaying matter to feed fungi, another parallel universe that we can barely comprehend. Flowers catering to these types of pollinators also engage in deception like many other orchids, and their flowers have evolved and changed to take advantage of their instinctual “hard-wired” behavior. As a result, these types of flowers also challenge our traditional definitions of beauty.

Zootrophion is a fascinating New World genus whose species range from the Caribbean through Central and South America, with a number of species from a fairly diverse set of habitats. Perhaps the most unifying feature, and the feature that probably limits human interest in them, is the fact that the flowers never actually open, their sepals being fused at their tips. Although this frustrates some growers who usually want to see the interior of a bloom where often the most beautiful floral features are exhibited, other growers find this natural proclivity to be extremely interesting and unique to the genus. Most flowers that do not open are actually cleistogamous (self-pollinating), which is an undesirable feature as most such plants are hopelessly inbred, but that is not what is happening in *Zootrophion*. Small windows between the fused sepals allow for entry of small pollinators such as fruit flies and fungus gnats. Although their pollination biology is still somewhat mysterious and not thoroughly studied as yet, fly eggs have been found inside the flowers of *Zootrophion hypodiscus* indicating that they are likely engaging in what is called “brood-site” deception. In other words, the flower resembles an object or place that would be desirable on which a female would lay her eggs, such as a piece of rotting fruit or the fruiting body of a fungus.

With flowers having a superficial likeness to the heads of animals, complete



STEVE MANNING

with eye slits, Luer bestowed this moniker, from the Greek *zōion* and *τροφείο* for zoological and menagerie, on them to celebrate their undeniable resemblance to certain heads, *Zootrophion vulturiceps* being particularly evocative. Most species are low- to midelevation epiphytes of reasonably easy culture — only a few require cooler conditions — will grow well in typical intermediate temperatures. Potted or mounted, but lacking pseudobulbs and only mildly succulent, they need to be watered rather frequently. Like most pleurothallids, excellent quality water will yield the best results. Only a few species have made it into general cultivation and are available from many of the South American species nurseries, as well as some of the well-known nurseries in the United States, Europe and Asia with seed growing capability. Because the plants grow rampantly, they are easily divided and shared among your orchid friends. Indeed, we should all have our own *Zootrophion* menageries.

SOME SELECTED SPECIES

***Zootrophion argus* (Rchb.f. ex Kraenzl.) Luer 2004.**

Synonyms: *Cryptophoranthus argus* Rchb.f. 1921; *Masdevallia argus* Rchb.f. ex Kraenzl. 1921.

Etymology: Named for Argus, the monster with the thousand eyes from the Greek mythology (see remarks below).

This is a unique species in the genus *Zootrophion*, because of its robust, relatively large habit flowers with especially large “windows.” The erect, stout ramicauls are 3.2–4.7 inches (8–12 cm) long. The coriaceous, erect, elliptical-obtuse leaf is 4–6.3 inches (10–16 cm) long including the 0.75-inch (2-cm) long petiole and 2.3–3.5 inches (6–9 cm) in

[1] *Zootrophion vulturiceps*

[2] *Zootrophion argus*

width. The single-flowered inflorescences appear successively from near the apex of the ramicaul. The connate, mostly white sepals are diffusely spotted and suffused with light purple and form a boxlike flower with an acute, decurved apex. The nearly 2.6 inches (6.5 cm) long and 1.2 inches (3 cm) wide (expanded) dorsal sepal is only connate with the 1.75 inches (4.5 cm) long and about 1 inch (2.7 cm) wide lateral sepals at the apex and at the base to form an arched window; the upper part nearly 1.5 inches (4 cm) long and the base about 1 inch (2 cm) wide. Therefore, it is easy to look into the “box,” where the convex synsepal with deep yellow color is easily observed on the transversely rugose-verrucose inner surface. The rather small (0.2 in. [0.5 cm] long) petals, translucent white with purple spots, are also observable. The white, oblong-sagittate lip is also small (0.2 in. long × 0.08 in. wide [0.5 cm × 0.2 cm]).

Distribution: Colombia, at an elevation of about 5,200 feet (1,600 m).

Remarks: The first plants of this species were collected near Ocaña in Colombia by L. Schlim in 1851. On the herbarium sheet at Kew, H.G. Reichenbach (1823–1889) wrote the name *Masdevallia argus* as the pattern reminded him of the monster Argus with many eyes (in respect to the purple spots on the flower’s outside). The formal description was done rather late in 1921 by F.W.L. Kraenzlin (1847–1934) as *Cryptophoranthus argus*. Luer transferred it in 2004 to *Zootrophion*.

***Zootrophion atropurpureum* (Lindl.) Luer 1982.**

Synonyms: *Specklinia atropurpurea*

Lindl. 1836; *Pleurothallis atropurpurea* (Lindl.) Lindl. 1842; *Cryptophoranthus atropurpureus* (Lindl.) Rolfe 1887.

Etymology: From the Latin *atropurpureus* = dark purple, referring to the color of the flower.

This medium-sized species has stout, erect ramicauls 1.4–1.8 inches (3.5–4.5 cm) long enclosed by tubular sheaths. The coriaceous, erect leaf has an elliptical-obovate shape and is up to 3.5 inches (9 cm) long and 1.1–1.2 inches (2.7–3.0 cm) wide. The single-flowered inflorescences appear singly or up to three successively or simultaneously from near the apex of the ramicaul inside of the uppermost sheath and partly covered by it, causing the flower to be oriented more or less upright. The peduncle is only about 0.25 inch (0.6 cm) long. The costate ovary is in a straight line with the peduncle and about 0.3 inch (0.7 cm) long and 0.1 inch (0.3 cm) in diameter. The fleshy sepals are brownish purple, 0.4–0.7 inch (1.1–1.7 cm) long and connate above and below a lateral aperture in an obovoid, more or less arcuate tube. The elliptical, concave, acute dorsal sepal is connate to the synsepal distally for 0.16–0.2 inch (0.4–0.5 cm) and proximally for 0.4–0.5 inch (1.0–1.2 cm), creating on each side a narrow lateral window (0.12 inch × 0.04 inch [0.3 cm × 0.1 cm]) above the middle. The lateral sepals are completely connate forming a concave, arcuate, three-sided synsepal, which has a shallow, triangular cavity at the base to accommodate the small, oblong-sagittate 0.16–0.04 inch (0.4 cm × 0.1 cm) lip. The translucent petals are nearly rectangular, about 0.12 inch long and 0.06 inch wide (0.3 cm × 0.15 cm).

Distribution: Greater Antilles from Cuba and Jamaica to Hispaniola at elevations between 2,160 and 3,275 feet (660–1,000 m).

Remarks: This species was first described by John Lindley (1799–1865) in 1836 as *Specklinia atropurpurea* from a specimen in Hooker's herbarium originating from Jamaica. Six years later in 1842, Lindley transferred it to the genus *Pleurothallis*. In 1887 R.A. Rolfe (1855–1921) transferred it along with some similar looking species of *Pleurothallis* to the genus *Cryptophoranthus* created by J. B. Rodrigues in 1882. The last transfer was performed by Carlyle Luer in 1982 as *Zootrophion atropurpureum*, which is currently the accepted name. This species should not be confused with *Zootrophion fenestratum* (see below).

***Zootrophion dayanum* (Rchb.f.) Luer**



1982

Synonyms: *Masdevallia dayanana* Rchb.f. 1880; *Cryptophoranthus dayanus* (Rchb.f.) Rolfe 1887; *Cryptophoranthus lehmannii* Rolfe 1903

Etymology: Named in honor of John Day of London (see remarks below) and to honor of its collector, Consul F.C. Lehmann.

The plant habit of this species is relatively large. The erect, often superposed ramicauls are 3.1–6 inches (8–15 cm) long. The coriaceous, erect, elliptic leaf is 3.1–5.1 inch (8–13 cm) long and 1.6–2.8 inch (4–7 cm) wide. Older leaves are sometimes flushed purple underneath. The inflorescences arise at the apex of the ramicauls with

single flowers produced successively. The relatively large flowers, with a length of more than 1.6 inches (4 cm), are mostly pendent and have a bright to brown-yellow base color spotted purple-red, sometimes very densely. The sepals are glabrous on their outer surfaces but occasionally minutely pubescent or verruculose. The lateral "window" has a length of up to 1.2 inches (3 cm), large enough to provide a view into the inner chamber formed by the sepals; the purple spotting on the inner surface of the sepals and the other flower parts is visible this way. The small petals, 0.18 inch long × 0.12 inch wide (0.45 × 0.3 cm) are translucent orange with purple spots. The yellow, acuminate lip is 0.18 inch long × 0.06 inch wide (0.45

cm × 0.15).

Distribution: Widespread from Colombia, Venezuela, Ecuador, Peru to Bolivia between 3,275 and 8,190 feet (1,000–2,500 m).

Remarks: The first description was made by H.G. Reichenbach in 1880 as *Masdevallia dayana* on the basis of a watercolor painting made by John Day from a plant in his collection. R.A. Rolfe transferred it in 1887 to *Cryptophoranthus* and Carlyle. Luer in 1982 to *Zootrophion*. In 1903, R.A. Rolfe described a plant as *Cryptophoranthus lehmannii*, but it is the same species dealt with here.

***Zootrophion eburneum* Rysy 2016.**

Etymology: From the Latin *eburneus* = ivory-colored, with regard to the main flower color.

The normally erect ramicauls are 3.1–3.5 inch (8–9 cm) long. The more or less erect, narrow elliptic to lanceolate, acuminate leaf is up to 4.3 inch (11 cm) long and 1.2–1.4 inch (3.0–3.5 cm) wide. The single-flowered inflorescences appear individually near the apex of the ramicaul enclosed in the uppermost sheath. The relatively long peduncle (about 2 in. [5 cm]) is recurved so that the large, about 1.6-inch (4-cm) flower appears to hang from the inflorescence. The pink-suffused, ivory-colored ovary has denticulate longitudinal ribs. The outer surface of the flower is nearly uniform eggshell or ivory, but there is a very narrow dark purple line along the entire sharp bend of the synsepal at the flower's lower edge. This color combination is unique for this species. The "window" between the dorsal and the lateral sepals (synsepal) is slit-like and only 0.35 inch long × 0.06 inch wide (0.9 cm × 0.15 cm) and situated in the proximal half of the flower. At the inner front surface of the synsepal are wave-like clefts. The orange-colored petals are 0.12 inch long × 0.06 inch wide (0.3 cm × 0.15 cm) at their broadest point near the apex, which resembles a trident. The frontal part of the lip border is distinctly toothed.

Distribution: Peru (without exact location).

Remarks: This species was shown in a private orchid collection in Germany to the second author, who identified it as new to science. The first valid description of this species followed 2016 (Rysy 2016). A detailed description of the plant and the flower had already been published in 2015 (Rysy 2015).

***Zootrophion endresianum* (Kraenzl.) Luer 1982.**

Synonym: *Cryptophoranthus endres-*



ianus Kraenzl. 1921.

Etymology: named in honor of A.R. Endrés, who first collected this species in Costa Rica.

The plant is medium-size with erect ramicauls 2.4–4.3 inch (6–11 cm) long. The erect, coriaceous, broadly elliptic leaf, often suffused with purple beneath, is 2.8–5.5 inch (7–14 cm) long and 1.6–2.8 inch (4–7 cm) wide. The inflorescences are usually single-flowered, but may be produced in fascicles of two to four inflorescences. The 0.8–1.2 inch (2–3 cm) long flowers are mostly pendent. The bright yellow sepals bear more or less large purple spots spread over their surface. The "window" typical for *Zootrophion* is mostly closed because all three sepals are completely connate with each other. The nearly square, shortly acuminate petals are inside the chamber formed by the sepals and are 0.18 inch (0.45 cm) long and about 0.12 inch (0.3 cm) wide; translucent yellow or purple. The oblong-sagittate, 0.2 inch × 0.06 inch (0.5 cm × 0.15 cm) lip is yellow suffused with red.

Distribution: Costa Rica, Colombia, Ecuador between 2,000 and 5,900 feet (600–1,800 m).

***Zootrophion erlangense* Roeth et Rysy 2007.**

Etymology: *erlangense* = Latinized name of the town Erlangen in Bavaria, Germany (see remarks below).

This species bears erect ramicauls up to 3.2 inch (8 cm) long. The more or less erect, coriaceous, elliptic-obovate leaf is up to 2.8 inch (7 cm) long and 1.4 inch (3.5 cm) wide. The generally single-flowered inflorescences appear



- [3] *Zootrophion atropurpureum*
- [4] *Zootrophion dayanum*
- [5] *Zootrophion eburneum* plant habit.
- [6] *Zootrophion eburneum* flower.
- [7] *Zootrophion endresianum*
- [8] *Zootrophion erlangense*
- [9] *Zootrophion fenestratum* from the Curtis's Botanical Magazine.

singly and successively from the apex of the ramicaul. The peduncle is about 0.4 inch (1 cm) long and slightly curved. The ovary, up to 0.3 inch (0.7 cm) long, is also curved, so that the flower is more or less presented hanging down. The flower is cream-colored with typically irregularly distributed small carmine red spots. The dorsal sepal, 0.75 inch × 0.3 inch (1.9 cm

× 0.8 cm) is narrowly elliptic and has a short, curved apex. The lateral sepals are connate and form the fleshy synsepal, 0.75 inch long (1.9 cm) long and bent at the apex. The margins of the dorsal sepal and the synsepal form, in the middle of the flower, a distinct 0.24–0.28 inch (0.6–0.7 cm) long and up to 0.1 inch (0.25 cm) wide “window” along the bent margins of the synsepal. The small petals are keeled centrally and widest near the apex; the apex itself a narrowly triangular point. The 0.2 inch (0.5 cm) long lip is whitish, especially medially; the erect and slightly retrose side lobes are carmine red. The 0.12 inch (0.3 cm) long column is whitish to cream-colored and has short stelia on either side of the anther cap.

Distribution: probably Peru.

Remarks: This species has been in cultivation since 1987 in the orchid collection of the Botanical Garden in Erlangen, Germany, where it was discovered by the second author and ascertained to be new to science (Rysy 2009).

***Zootrophion fenestratum* (Lindl. ex Hook.) Rysy 2009.**

Synonyms: *Masdevallia fenestratum* Lindl. ex Hook. 1845; *Cryptophoranthus schenkii* Cogn. 1907; *Zootrophion schenkii* (Cogn.) Luer 1986; non *Cryptophoranthus fenestratus* (Barb. Rodr.) Barb. Rodr., which is today *Acianthera fenestrata* (Barb. Rodr.) Pridgeon and Chase.

Etymology: From the Latin *fenestratus* = with windows, referring to the small openings between the dorsal sepal and the synsepal; named in honor of Mr. Schenk, a Brazilian collector, who discovered this species in the Organ Mountains near Theresópolis.

The species has erect ramicauls 2–3.3 inch (5–8.5 cm) long. The erect, elliptic-ovate leaf is 4–4.7 inch (10–12 cm) long and 0.8–1.1 inch (2.0–2.7 cm) wide. The single-flowered inflorescences appear singly or up to three successively or simultaneously from near the apex of the ramicaul. The 0.6-inch (1.5-cm) peduncle together with the ovary is long enough to distinctly stick out of the uppermost cone-shaped sheath. The costate, 0.14-inch (0.35-cm) ovary forms a right-angle with the peduncle. The fleshy, deep red-purple sepals are about 0.8 inch (2 cm) long but are whitish near the ovary. The sepals are connate except in the frontal area, where they create a narrow, nearly semicircular lateral “window,” 0.16 inch × 0.08 inch (0.4 cm × 0.2 cm). The 0.14-inch (0.35 cm) petals are oval with a long acuminate apex. A distinct characteristic



Table 1. Comparison of *Zootrophion fenestratum* and *Zootrophion atropurpureum*. Dimensions in inches (cm).

	<i>Zootrophion fenestratum</i>	<i>Zootrophion atropurpureum</i>
Plant length	5.9–7.9 (15–20)	4.9–5.5 (12.5–14)
Flower posture	Horizontal to slightly downward	More or less vertical
Flower contour, see [11]	Dorsal sepal curved in the front half, synsepal plain	Dorsal sepal and synsepal steadily curved
Peduncle length	0.6 (1.5)	0.24 (0.6)
Ovary connection	Right angle	In line with ovary
Flower length	Approximately 0.8 (2)	0.4–0.7 (1.1–1.7)
Flower color	Deep red-purple, shiny	Brownish purple, dull
Shape of petals	Oval, apices acuminate	Nearly rectangular, apex shortly acute with two small teeth
Shape of lip at the apex, sidelobes	Slightly rounded, rounded tip slightly curved back	Distinct tip, hornlike elongated tip, strongly curved back

of the 0.2-inch (0.5-cm) lip is the small, slightly retrose side lobes have a rounded apex.

Distribution: Jamaica and Southern Brazil (Rio de Janeiro to Santa Catarina) between sea level and 4,260 feet (0–1,300 m).

Remarks: This species was first described by John Lindley in 1845 as *Masdevallia fenestratum* on the basis of a plant from a Jamaican collection by Purdie in 1843. In 1845 an illustration of this species was published in the *Curtis’s Botanical Magazine*. C.A.Cogniaux (1841–1916), a Belgian botanist, who worked on orchids for the *Flora Brasiliensis*, described a Brazilian orchid in 1907 as *Cryptophoranthus schenkii*. Carlyle Luer transferred this species in 1986 to *Zootrophion schenkii* and in 2004 he considered it — incorrectly — as a synonym of *Zootrophion atropurpureum*.

Rysy explained (2009) in detail that these are two distinct species (Table 1). The other name, *Masdevallia fenestrata*, was transferred to *Zootrophion* in 2009.

***Zootrophion gracilentum* (Rchb.f.) 1982.**

Synonyms: *Masdevallia gracilentum* Rchb.f. 1875; *Cryptophoranthus gracilentus* (Rchb.f.) Rolfe 1887; *Cryptophoranthus lepidotus* L.O. Williams 1942.

Etymology: From the Latin *gracilentus* = small or slender, referring to the plant habit and the Greek *lepidotus* = covered with small scales, referring to the lip.

This relatively small plant has stout, erect ramicauls 1.2–2.8 inch (3–7 cm) long. The erect, coriaceous, elliptic leaf is sometimes suffused with purple beneath on mature growths; 2–4 inch (5–10 cm) long and 0.8–1.4 inch (2–3.5 cm) wide. The single-flowered inflorescences are produced singly or up to four simultaneously near the apex of

the ramicaul. The uniformly deep purple flowers are only 0.6 inch (1.5 cm) long. Along their veins are serrulate-spiculate carinae that are typical for this species. Nearly in the middle of the connate sepals are two small, only 0.12–0.16 inch (0.3–0.4 cm), lateral “windows” on both sides. The nearly rectangular and acuminate petals are 0.14–0.16 inch (0.35–0.4 cm) long and 0.1 inch (0.25 cm) wide. The narrow, acuminate, dark red lip is about 0.16 inch (0.4 cm) long.

Distribution: Costa Rica, Nicaragua, Panama between 2,300 and 3,900 feet (700–1,200 m).

Remarks: This species was first described by H.G. Reichenbach in 1875 as *Masdevallia gracilentia* on the basis of a plant which he got from R.A. Endrés collected in Costa Rica. R. Rolfe transferred it in 1887 to *Cryptophoranthus* and Carlyle Luer in 1982 to *Zootrophion*.

Cryptophoranthus lepidotus, described first by L.O. Williams in 1942, is considered a synonym today.

***Zootrophion hypodiscus* (Rchb.f.) Luer 1982.**

Synonyms: *Masdevallia hypodiscus* Rchb.f.1878; *Cryptophoranthushypodiscus* (Rchb.f.) Rolfe 1887; *Cryptophoranthus moorei* Rolfe 1903; *Cryptophoranthus rolfeanus* Kraenzl. 1925.

Etymology: From the Latin *hypodiscus* = the discus beneath, referring to the disk-like bottom of the flower; named in honor of F.W. Moore, who cultivated the specimen at the Botanical Garden Glasnevin in Ireland; named in honor of R. Rolfe of the Botanic Gardens, Kew in London.

The mostly small plant has stout, erect ramicauls 1.2–2.8 inch (3–7 cm) long. The coriaceous, erect, elliptic leaf is 2–4 inch (5–10 cm) long and 0.8–2 inch (2–5 cm) wide. The single-flowered inflorescences are produced as a fascicle of up to three flowers open simultaneously or successively. The boxlike 0.8–1.2 inch (2–3 cm) flower with an obtuse, decurved apex is heavily spotted and suffused with dark purple and is usually whitish, yellow or orange toward the base. The sepals form, near the middle, a relatively large “window” about 0.4 inch (1 cm) long and 0.12 inch (0.3 cm) wide. The translucent, oblong, shortly acuminate, purple petals are 0.16–0.2 inch (0.4–0.5 cm) long and 0.12–0.16 inch (0.3–0.4 cm) wide. The trilobed, 0.16–0.2 inch long by up to 0.08 inch wide (0.4–0.5 cm × 0.2 cm) lip is oblong-sagittate and purple in coloration.

Distribution: Colombia and Ecuador between 2,000 and 5,700 feet (600–1,750



m).

Remarks: This species is closely related to *Zootrophion lappaceum* from Colombia but instead of being ellipsoid the flower is disc-shaped and obovoid; broader than long. The first description was made by H.G. Reichenbach on the basis of a flowering plant in cultivation by Stuart Low, who received it from F.C. Lehmann presumably from Colombia. In 1887 R. Rolfe transferred it to *Cryptophoranthus* and in 1982 Luer transferred it to *Zootrophion*. *Cryptophoranthus moorei* and *Cryptophoranthus rolfeanus* are today considered synonyms.

***Zootrophion niveum* Luer et Hirtz 2004.**

Etymology: From the Latin *niveus* = snow white, referring to the flower color.

The slender, erect ramicauls are 3.5–4.3 inch (9–11 cm) long. The erect,

[10] *Zootrophion fenestratum*

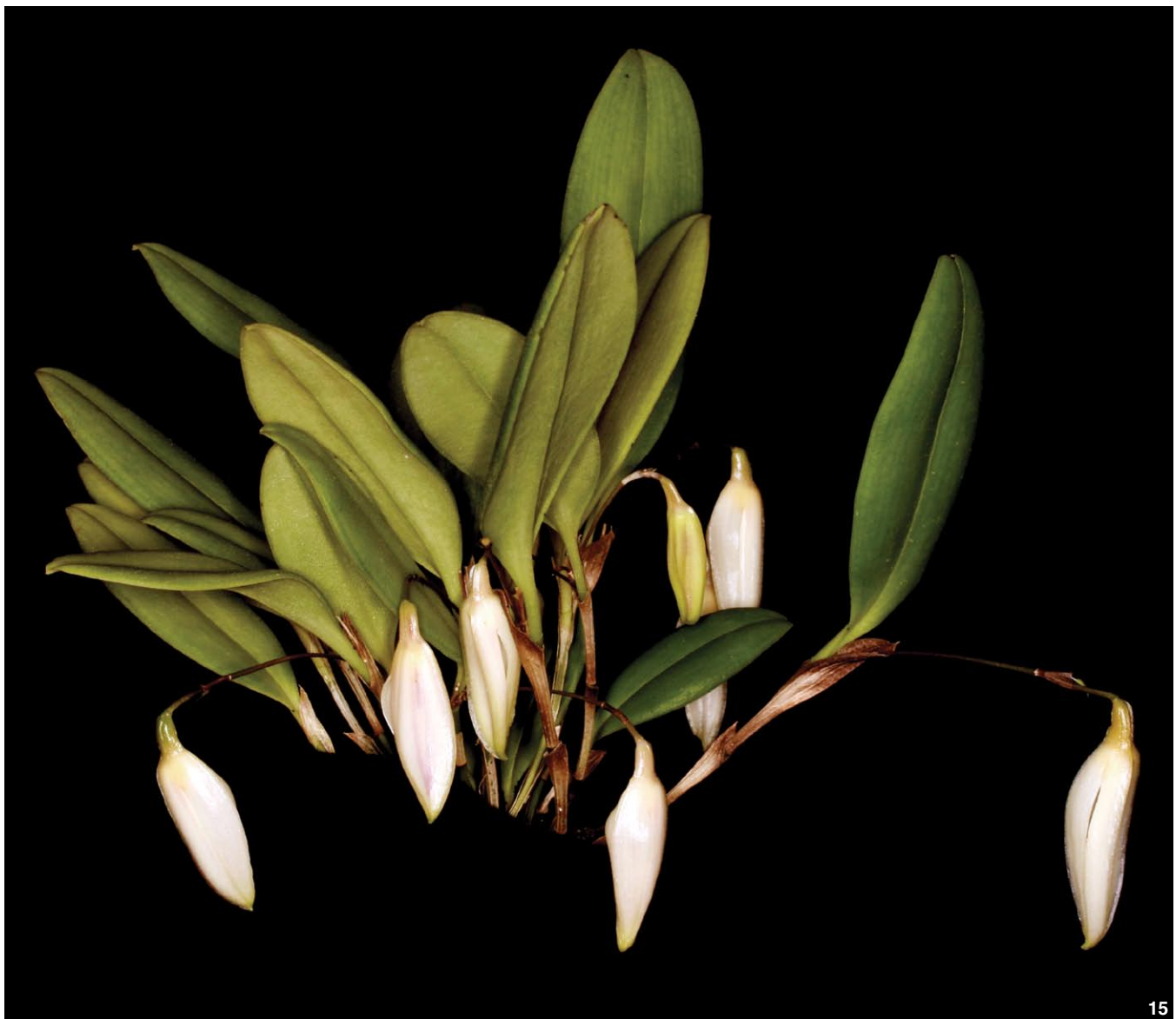
[11] Comparison of the flowers of *Zootrophion atropurpureum* (top) and *Zootrophion fenestratum* (bottom).

[12] *Zootrophion gracilentum*

[13] *Zootrophion hypodiscus*

[14] *Zootrophion hypodiscus*; light-flowered clone.

coriaceous, elliptic leaf is 4.3–5.1 inch (11–13 cm) long and 1.2–1.4 inch (3–3.5 cm) wide. The inflorescences are single-flowered and produced near the apex of the ramicaul. The shiny, pure white flower is nearly 0.8 inch (2 cm) long. The dorsal sepal is nearly elliptic, concave and acute. The lateral sepals form a dorsally compressed synsepal and are closely aligned to the dorsal sepal without forming a characteristic window (sometimes only



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a very narrow slit). The translucent, white petals are nearly quadratic and shortly apiculate. The white, 0.2 inch × 0.06 inch (0.5 cm × 0.15 cm) lip is oblong-sagittate.

Distribution: Ecuador (Cordillera del Cutucu) at about 3,000 feet (900 m).

Zootrophion oblongifolium (Rolfe) Luer 1982.

Synonym: *Cryptophoranthus oblongifolius* Rolfe 1895.

Etymology: From the Latin *oblongifolius* = oblong leaf, referring to the shape of the leaves of the plant.

This medium-sized plant has slender, erect, 1.6–3.5-inch (4–9 cm) ramicauls. The coriaceous, erect, elliptic-oblong leaf is 2.4–4 inch (6–10 cm) long and 0.8–1.4 inch (2–3.5 cm) wide. The inflorescences are either single-flowered with a 0.4 inch (1 cm) peduncle or a loose, successively few-flowered arching raceme of a total length of 1.6–2.8 inches (4–7 cm). The 0.8–1.2 inch (2–3 cm) flower is cream-colored

to dull white with thin longitudinal rose stripes. The small narrow “window” is barely below the middle. The subquadrate, shortly apiculate, transparent petals are 0.14–0.16 inch × 0.12–0.14 inch (0.35–0.4 cm × 0.3–0.35) and have a purple midvein. The white, rose-suffused 0.2–0.24 inch × 0.06–0.8 inch (0.5–0.6 cm × 0.15–0.2 cm) lip is oblong-sagittate.

Distribution: Columbia, Ecuador and Peru between 4,900 and 6,550 feet (1,500–2,000 m).

Zootrophion vulturiceps (Luer) Luer 1982.

Synonym: *Cryptophoranthus vulturiceps* Luer 1979.

Etymology: From the Latin *vulturiceps* = vulture-headed, because of the appearance of the flower.

The medium-sized plant has stout, erect ramicauls, 2–3 inch (5–7.5 cm) long. The coriaceous, erect, elliptic, acute leaf is 2.8–4.7 inch (7–12 cm) long and 0.8–1.2

[15] *Zootrophion niveum*

[16] *Zootrophion oblongifolium*

inch (2–3 cm) wide. The inflorescences are fascicles of single successive flowers with 0.5–0.6 inch (1.2–1.5 cm) peduncles from near the apex of the ramicaul. Their posture is vertical to horizontal. The shiny, snow white flowers are about 1.2 inch (3 cm) long. The small (only 0.12 inch [0.3 cm]) narrow “window” is in the front half of the flower. The oblong-ovate and shortly acuminate, yellow-white petals, 0.2 inch (0.45 cm) long and 0.08 inch (0.2 cm) wide, as well as the oblong-sagittate, yellow-white, 0.2 inch (0.45 cm) lip are enclosed by the three sepals and cannot be seen from outside.

Distribution: endemic in Costa Rica between 980 and 5,600 feet (300–1,700 m).

Remarks: This species was collected in 1972 in Costa Rica by J. Kuhn (locality

unknown) and flowered in cultivation in 1977. The first description was made based on this specimen in 1979 by Luer as *Cryptophoranthus vulturiceps*, but three years later he transferred it to *Zootrophion*.

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Thomas Miranda



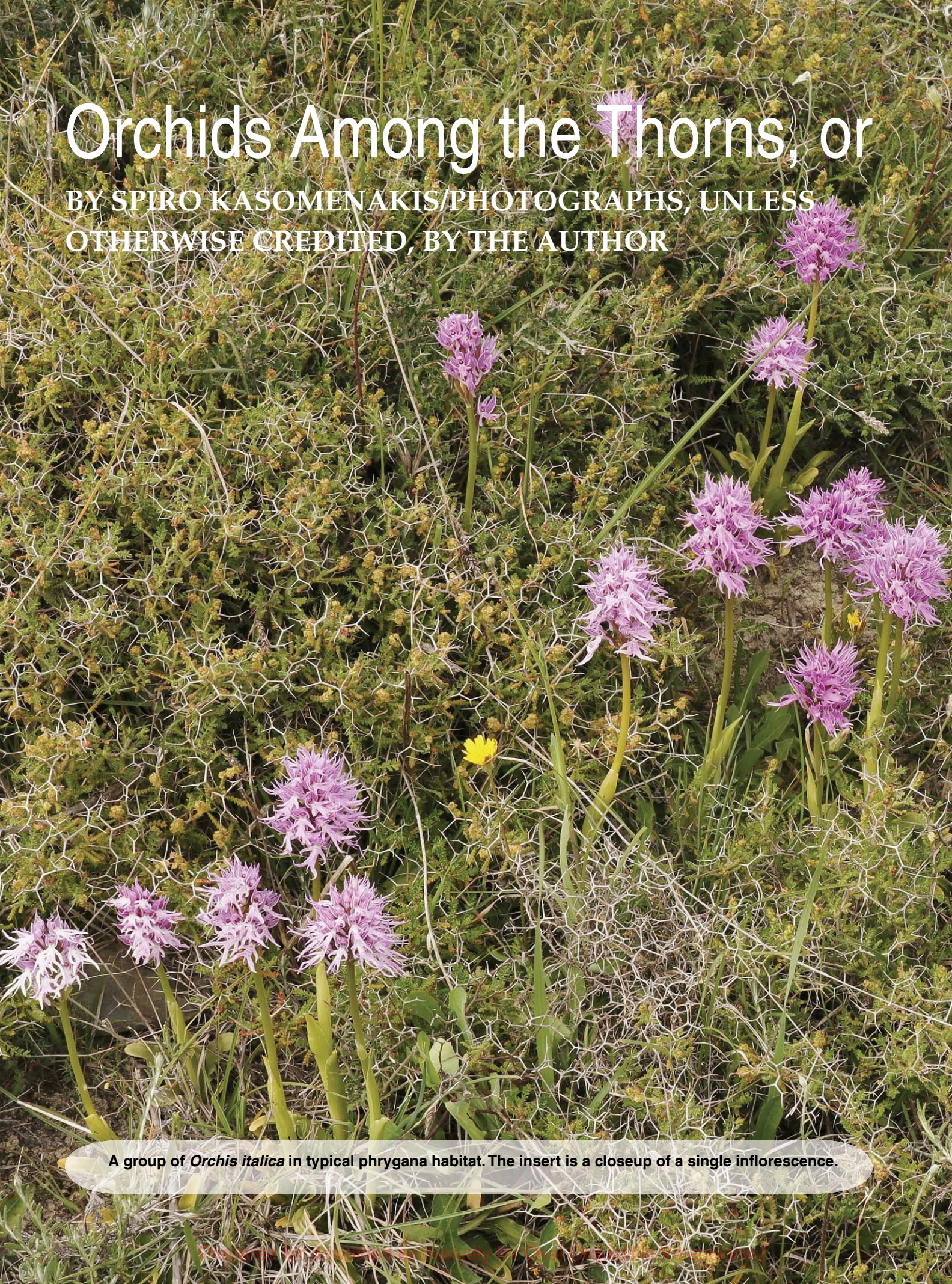
Wolfgang Rysy

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Orchids Among the Thorns, or

BY SPIRO KASOMENAKIS/PHOTOGRAPHS, UNLESS
OTHERWISE CREDITED, BY THE AUTHOR



A group of *Orchis italica* in typical phrygana habitat. The insert is a closeup of a single inflorescence.

Orchids of Crete and Attica

GREECE, A SMALL country on the southeast end of Europe, is well known for its spring flora, especially to orchid lovers, as it harbors about 227 species of orchids, of which 74 are endemic. Granted, for the general public that flocks to Greece and its islands for the wonderful beaches, orchids may not be the first thing that comes to mind, but the devotion these plants (especially the genus *Ophrys*) seem to inspire, in both botanical and hobbyist circles, is worth a closer look. Our trip was organized by the Orchid Conservation Alliance (OCA), a nonprofit conservation organization that regularly takes members on orchid-related trips.



We concentrated on western Crete, beginning our odyssey at Chania, and later moving our base to the seaside village of Plakias, with a few days at the end of the trip on the mainland to see some archaeological sites and more orchids! Crete is a microcosm in itself, being a large and self-sufficient island on the southernmost part of Greece. The landscape is dominated by the snow-capped White Mountains, visible from the city of Chania. Bound by the Aegean Sea on its northern shores, and the Libyan Sea on its southern, its flora shows the influences of both east and west, north and south! Fifteen of the 70 or so species of orchids on the island are found nowhere else. That phenomenon is shared by the rest of its flora, with numbers of endemic tulips, crocus, iris, peonies, cyclamen, etc.

With the help of our two guides, Yianis Christofides and Sotiris Alexiou, we visited semiabandoned olive groves on the outskirts of town, high mountain plateaus at Omalos and rugged, rocky slopes and gorges at Spili and Kourteliatiko. All these locations had their own special combinations of species, with species such as *Orchis italica*, *Ophrys bombyliflora* and some others common to most sites. *Serapias bergonii* and *Serapias lingua* were the first orchids spotted in an olive grove on our first full day, quickly followed by *Ophrys scolopax* subsp. *heldreichii*, a beautiful and variable endemic *Ophrys* species that is showy, with pink, green and brown flowers. We would meet this extraordinary plant again and again throughout the trip.

After lunch, on a short walk across the road in a hilly, rocky site, many more species revealed themselves. There were large populations of the tiny *Oph. bombyliflora*, the green-and-brown-flowered *Ophrys*. Like all *Ophrys* species, it mimics a species of insect, replete with bumps and hairs on its lip. Also seen for the first time on this trip was *Ophrys cretica*, another endemic, with a striking pattern on its lip. We would meet it again, later on the trip. Spikes of pink or white *Orchis italica* were also there, their flowers reminiscent of anatomically correct little men arranged in whorls around the stem. The ground was stony and hard with the plants growing in compacted clay soil. *Ophrys sicula*, a small species with distinctive



yellow flowers with a brown blotch on the lip, was plentiful here, along with a similarly colored but larger-flowered, less-common *Ophrys lutea* subsp. *phryganae*. *Anacamptis pyramidalis* was also here, looking like a compact version of an *Orchis italica*, with similar colors of pinks and white. *Himantoglossum robertianum*, a robust plant with large, sturdy spikes of vaguely anthropomorphic flowers in green, brown, white and pink tones, was an occasional inhabitant here — all this among mounds of spiny shrubs, *Euphorbia* sp., *Asphodelus* sp., thyme, oregano, and many other aromatic plants that scented the air when brushed against. This would become a theme for most of our trip, when we would ramble through the *phrygana* habitats that are characterized by these plants. Most of the orchids' rosettes of leaves were beginning to dry; clearly dormancy was on the way, when the heat and drought of summer finally comes and they will go completely underground. They will be kept alive by reserves in their tubers waiting for the next winter and spring rains. It is these tubers, whose fanciful resemblance to testicles that gave the orchid family its name.

For the next few days, from our beachfront lodgings on the outskirts of Chania, we took day trips to the surrounding hills and mountains to discover, photograph and learn about these intriguing plants. A new *Ophrys* species was soon added to our list: *Ophrys tenthredinifera*, a robust plant with pink, green and brown flowers and a broad lip with a yellow border. More *Anacamptis* species were seen on these peaks. The trip included *Anacamptis papilionacea*, with distinctive flowers and the lip broad and flat like a butterfly's wing. *Anacamptis collina* was another distinctive plant with sturdy, waxy light-pink flowers that stay on the plant long after their prime. *Anacamptis laxiflora* and *Anacamptis boryi*, the latter endemic to south Greece, are two more species from this genus, that often grow sympatrically. *Anacamptis laxiflora* is a tall plant with narrow leaves and folded purple flowers. *Anacamptis boryi* has similar but flat flowers that bloom from the top of the spike down, unlike most other orchids.

On the high Omalos plateau, we caught the tail end of early spring and



- [1] *Ophrys bombyliflora*
- [2] *Serapias bergonii* and *Serapias orientalis* growing sympatrically. Insert photograph is a close-up of *orientalis*.
- [3] Typical *phrygana* habitat with several orchid species in bloom.
- [4] *Ophrys scolopax* subsp. *cornuta* (endemic to Greece). Insert photograph is a close-up of *Ophrys scolopax* subsp. *heldreichii*.
- [5] *Ophrys cretica*
- [6] *Ophrys lutea* subsp. *melena* and subsp. *phryganae* (inset).
- [7] *Anacamptis pyramidalis*
- [8] *Himantoglossum robertianum*

saw *Anemone coronaria*, *Scilla nana* and *Crocus sieberi* among patches of lingering snow. Unfortunately, *Tulipa bakeri* showed itself with only a few stray plants that were out of reach for most of our camera lenses. The area itself is farmed in a nonintensive way that leaves lots of room for wildflowers and open or wooded spaces for grazing herds of sheep. That evening, a well-deserved seafood dinner in one of the harbor-front restaurants ended another wonderful day.

On the third day, we loaded up the minibuses and drove for a few hours to Plakias, a beautiful town on the southern coast of the island with mountains visible to the north, which we would visit in the next few days. On one of these mountaintops, in a location that we were asked not to disclose, was one of the richest orchid sites that we had seen so far in Crete. No species there was growing in abundance, but the variety was amazing. We walked carefully, so that we did not trample the sometimes-tiny orchids that were everywhere. Among species already familiar to us by now were new ones, including *Orchis anthropophora* with its narrow spikes of hooded, yellow-brown “man-bearing” flowers, and *Ophrys fuciflora* subsp. *fuciflora*, a showy species with pink sepals and an intricate lip adorned with horns and hair! Two more *Ophrys* species, *Ophrys sphegodes* subsp. *spruneri*, and *Ophrys omegaifera*, added to our list. *Ophrys sphegodes* subsp. *spruneri* has a large red-brown velvet lip marked with an “H” in metallic blue! *Ophrys omegaifera* is an unmistakable species marked with a lowercase omega (W) on its lip. Two species of *Orchis* grew next to each other: *Orchis pauciflora*, which is a small plant with relatively large yellow flowers reminiscent of snapdragons, and *Orchis quadripunctata*, a pink-flowering species distinguished in the field by the four spots on its lip. We found a single plant of the rare natural hybrid between the two species, *Orchis xpseudoanatolica*, growing in a cavity on a boulder between its two parents and looking intermediate between the two.

Another spectacular site in this part of Crete is the area of Spili. It is a mountainous plateau with small plots on its lower, flatter areas, on which barley is grown, which is the main ingredient in those wonderful rusks so loved by the



[9] *Anacamptis papilionacea*

[10] *Anacamptis collina*

[11] *Ophrys tenthredinifera*

[12] *Orchis anthropophora*

[13] *Ophrys fuciflora* subsp. *fuciflora*

[14] *Ophrys omegaifera*

[15] *Ophrys sphegodes* subsp. *spruneri*.

Inset photographs clockwise from the upper right: subsp. *helenae*, subsp. *mammosa* and subsp. *sphogodes*.

locals. *Tulipa doerfleri*, another endemic, grows on the edges of the barley fields, while among the rocks and thorny shrubs in the wild areas, *Orchis italica* and to a lesser extent *Orchis simia*, the monkey orchid, form huge colonies visible from the road. We were not alone; this is a well-known spot for wildflower lovers. We met an elderly English couple who have been coming to this spot for 28 years! They knew each orchid population intimately and pointed out to us a rare natural hybrid, *Ophrys x sommieri*, a hybrid of *Oph. bombyliflora* and *Oph. tenthredinifera*, looking intermediate between its two parents.

Getting off the road and wandering among the rocks, many more species came into focus: *Neotinea lactea*, a small plant with a dense spike of milky-white flowers spotted with pink; *Orchis quadripunctata*; *Orchis pauciflora*; and *Orchis sitiaca*, another Cretan endemic, being similar to *Ant. laxiflora*, but with greenish stripes on the petals among other differences. *Ophrys* species seen included *Ophrys sicula*, *Ophrys fuciflora* subsp. *fuciflora*, *Oph. bombyliflora* and *Ophrys fusca* subsp. *iricolor*, with its green-and-brown flowers, and metallic blue markings on the lip. After a simple lunch in the open and coffee at a seaside cafe, we started to head back to our base at Plakias for a stroll along the waterfront and dinner — a perfect day!

In the next couple of days we visited two quite different areas. The first was a rocky headland overlooking Plakias Bay. The plants here have to withstand the almost constant breeze from the sea, and included *Euphorbia paralias*; *Aristolochia cretica*, an endemic Dutchman's pipe; and even *Mandragora officinalis*, the feared mandrake! In addition to many orchid species we had seen before, two new species of *Ophrys* made their appearance: *Ophrys sphegodes* subsp. *gortynia*, which is another green and red-brown flowering *Ophrys* with two blue lines running the length of the lip, and *Ophrys phaedra*, similar to *Oph. fusca* subsp. *iricolor*, but with more faded colors. Both of these plants are endemic to Crete. The Armeni Minoan cemetery was the other habitat we visited. It is a late Bronze Age archaeological site, with stone-lined shaft tombs cut into the earth and shaded by magnificent old oaks. Orchids here



included large numbers of *Serapias lingua*, *Srps. bergonii*, *Ophrys scolopax* subsp. *heldreichii*, *Oph. bombyliflora*, and *Orchis italica*, among many other wildflowers (*Iris* sp., *Anemone* sp., *Gladiolus* sp., etc). With the merest mention of Knossos, Sotiris, our guide, offered to take us there on our “free” day, despite the two-hour car ride to get there. Knossos (of the Minotaur and Labyrinth fame) is the most important archaeological site in Crete, and one of the most important in the whole of Greece. It was the palatial center for the first European civilization, the Minoan, which was at its peak in the middle to late Bronze Age, ca. 1900–1300 BC. We had a wonderful time wandering among the labyrinth of rooms and terraces and did not once get lost!

The next day we set out to find two rare and endemic plants, *Paeonia clusii* and *Tulipa cretica*. The former has large frilly white flowers, the latter tiny pink ones close to the ground. We found both, thanks to yet another English couple, who gave us precise instructions. That night, some of us went up to a nearby mountain village to witness the midnight Easter service and celebration. At midnight, the crowd in the churchyard went wild drowning out the church bells with fireworks, firecrackers and bonfires! The day spent walking through the two gorges of Kotsifou and Kourteliatiko was another highlight of the trip. Many more specialized plants grew in the rock faces, including *Petromarula pinnata*, an endemic genus within the Campanulaceae. A new orchid species was added to our list, *Ophrys sphegodes* subsp. *cretensis*, with small, subtly colored flowers of green and brown with a faint “H” on its lip.

As the old saying goes, all good things must come to an end and so did our time in Crete. With a visit to a lakeside habitat, the air fragrant with orange blossoms from nearby groves, we ended our stay in Crete. A short flight later, we were in Athens and on our way to more adventure. Our hotel in Athens was centrally located, and as we met for breakfast the next morning in the rooftop restaurant, we were greeted by a panoramic view of the city. Above the building rooftops and domes of churches, high on its rock, stood the Parthenon!

Sotiris picked us up later that morning for a day exploring the hills



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- [16] *Orchis quadripunctata*. Inset photograph a rare white form.
- [17] *Orchis pauciflora*
- [18] *Orchis* × *pseudoanatolica* (center) between its parents *O. pauciflora* (left) and *O. quadripunctata* (right).
- [19] The natural hybrid *Ophrys* × *sommieri*.
- [20] *Neotinea lactea*
- [21] *Orchis sitiaca*
- [22] *Ophrys oestriera*

around Athens and a little farther up to Mount Hymetus. The city of Athens is surrounded by farms, vineyards and olive groves, and a little farther out, natural areas become more common as the ground is too rocky for farming. Those are the areas we concentrated on with good results. We added several species to our lists, including *Ophrys scolopax* subsp. *cornuta*, another endemic to the area. Its small flowers are pretty, with pink sepals and a bulbous, highly patterned lip with the patterning covering only the basal part. Another similar plant is *Ophrys oestrifera*, which is lighter in color with the patterning covering the lip entirely. The most characteristic and plentiful *Ophrys* species in the area is *Ophrys umbilicata* subsp. *attica*, mostly green and brown with the dorsal sepal arched over the lip like a hood. *Ophrys ferrum-equinum*, a beautiful *Ophrys*, was also seen here for the first time; it has dark-pink sepals, and a red-brown velvet lip adorned with an upturned horseshoe-shaped design in metallic blue! Mount Hymetus is a bit wilder and higher in elevation, with tortoises bustling among the fragrant shrubs and more orchids. Among them were by-now-familiar types and more new ones for our list: *Ophrys fusca* subsp. *calocaerina*, another endemic to central Greece, similar to *Oph. fusca* subsp. *iricolor*, but holding its lip vertically and blooming later; hence the name, which means “of the summer.” *Anacamptis coriophora*, with small fragrant spikes of pink-spotted flowers, was just coming into bloom. This part of Athens would make a wonderful day trip, if you find yourself in the city in springtime with a spare day between flights.

The next day we were on our way to Delphi, ancient home of the oracle of Apollo, northwest of Athens. The ancient site is built on the terraced slopes of a mountain with spectacular views to the sea. It was wonderful seeing the remains of temples, treasuries and a theater among fields of daisies, poppies and other wildflowers. What a relief to see that they do not use herbicides to “clear” the area! We did not find any orchids on the site itself, but just a little out of town we found more new species to add to our list. Among the many species we had already seen, *Ophrys xdelphinensis*, another endemic to the area, was spotted. It is



thought to be a hybrid of *Ophrys argolica* × *Oph. scolopax* subsp. *cornuta*. The usual combination of pink and brown this time has a “smiley face” marking on the lip. *Ophrys sphegodes* subsp. *helenae*, considered by some authors to be the most beautiful *Ophrys*, is limited to central Greece, and was growing in the same grassy habitat. It has large flowers with yellow-green sepals, and an unmarked, dark-red lip that glows in the sun.

On our last three days, between visits to museums and the Acropolis, we managed to fit in another orchid outing. This time it was tropical orchids, and they were expertly grown on a large, sunny balcony in the middle of the city. My friends Chris and Joanna, whom I have known from the Greek Orchid Society website, grow a varied collection of tropical orchids. Species as diverse as *Paraphalaenopsis labukensis* and *Lepanthes calodyction* are among the variety of species expertly grown by Chris. He has devised a system of humidifying the air by circulating water (with an aquarium pump) over trays where the plants grow, thereby compensating for the low summer humidity of Athens. In the winter, he encloses the balcony in plastic sheeting and heats the water (again with an aquarium heater) to keep nighttime temperatures above 50 F (10 C). The results speak for themselves as the plants are well grown and flower regularly.

Overall it was a wonderful trip with memorable plants, places, and most importantly, wonderful people. It was a first for most of us, myself included. Even though I was born in Greece, my family emigrated to the United States when I was young so I did not get an opportunity to experience the flora of this country. Mediterranean orchids are fascinating creatures; and as my friend Sotiris said, “I have been studying and photographing these plants for 20 years, and I am still doing it!”

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Spiro Kasomenakis

— *Spiro Kasomenakis* has been growing orchids, and has been an AOS member, since the 1980s. His first orchid was *Paphiopedilum callosum*, and he wishes he still had it in his light garden. Travel always includes orchids, especially in their native habitats or at least in collections. The allure of these plants is undeniable, and once you commit to entering the “rabbit hole,” you may never be the same again (email: kasomenakis@aol.com).



[23] *Ophrys fusca* subsp. *iricolor*. Inset photographs subsp. *calocaerina*, a Greek endemic (left) and subsp. *fusca* (right).
 [24] *Ophrys umbilicata* subsp. *attica*
 [25] *Ophrys ferrum-equinum*
 [26] The habitat of Greek native orchids is,



at first glance, appears quite harsh and dry.
 [27] The endemic natural hybrid *Ophrys* × *delphinensis* (*argolica* × *scolopax* subsp. *cornuta*).
 [28] *Anacamptis coriophora*.

Orchids in Watercolor

Lycaste Walnut Valley

Marcia Whitmore

LYCASTES ARE GORGEOUS plants if care is given to their culture. *Lycaste* Walnut Valley (Leo 'Riopelle' AM/AOS x Hamana Jason) grows in my greenhouse in bright light and is allowed to go dormant and dry when the leaves yellow and fall. Watering should not be commenced until the new growth is several inches high and care must be taken to not get water in the new growth. If water accumulates in the new growth it may rot. This is a painting I did several years ago. At that time I did not have my upstairs studio and did all my work at the kitchen table with light from a south window. I have grown artistically since then. This painting was done by carefully drawing directly on 300 lb. Arches paper...I do not do that now! I worked with the painting on an old cutting board propped up by two drinking glasses....I now have a lovely upstairs studio converted from an unused spare bedroom. I have a dedicated work area with a large central north window and two large windows on each side of the larger window...perfect!

Marcia Whitmore began growing orchids in a basement room under fluorescent lights in 1972 and moved into a 14-ft x 18-ft (4.3 m x 5.5 m) greenhouse in 1984. Marcia is a retired teacher and fine arts coordinator and taught in public schools for 35 years. She has earned many AOS awards and is a member of the Illowa Orchid Society, Eastern Iowa Orchid Society, American Society of Botanical Artists and the Great River Chapter of Botanical Artists (whitbrits@gmail.com, <https://asba-art.rog/member-gallery/marcia-whitmore>, www.marciawhitmore.com).



M. Whitmore '05

Lyc. Leo 'Riopelle' AM/AOS x (Jason x macrobulbon)

Who Were These Guys, Part 9?

Charles Robert Darwin (1809–1882)

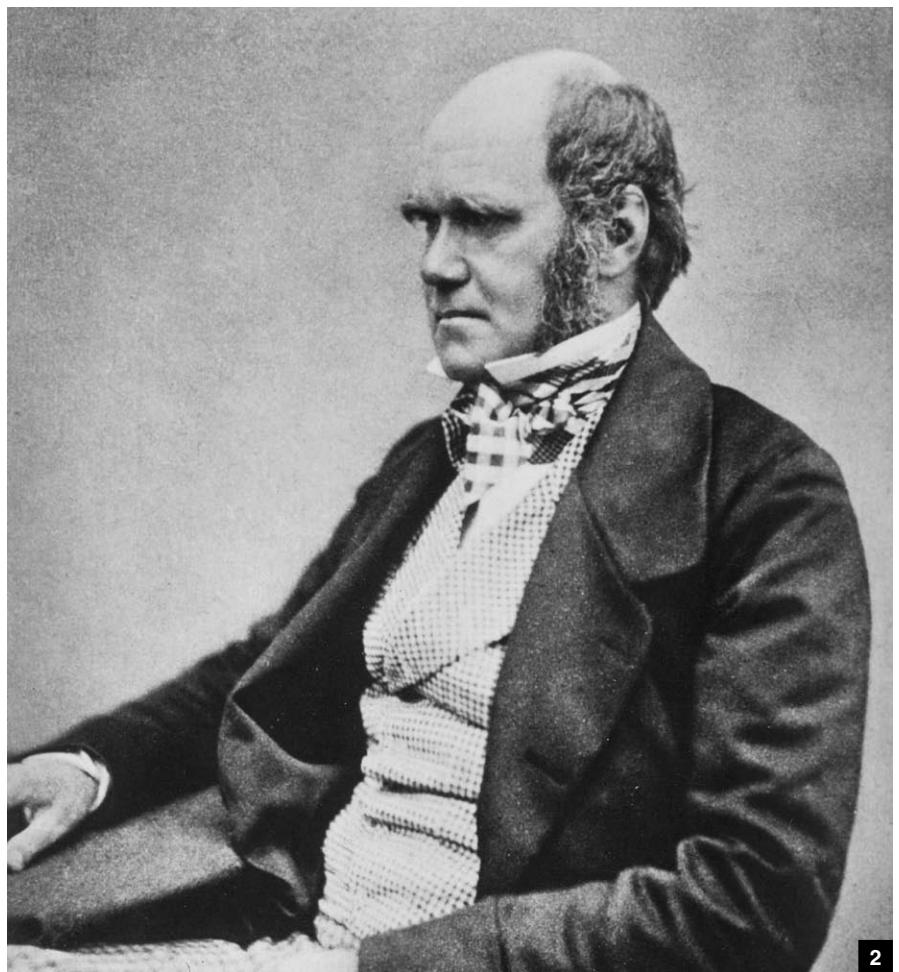
BY DAVID ROSENFELD, MD



WHY WRITE AN article in *Orchids* on Charles Darwin? Certainly everyone knows his name in association with his groundbreaking studies of evolution. What is much less well known is his study of the intricacies of orchid pollination. There is a wonderful true story that illustrates Darwin's intuitive sense of deduction of the natural world. In 1862, three years after the publication of his monumental *On the Origin of Species* he received from John Bateman (Rosenfeld 2018) a shipment of orchids from Madagascar that included *Angraecum sesquipedale*. Upon inspection of this large and beautiful orchid he observed a distinctive feature. He wrote to a friend at Kew Gardens "I have just received such a box full from Mr. Bateman with the astounding *Angraecum sesquipedalia*... with a nectary foot [30 cm] long. Good Heavens what insect can suck it" Several days later in another letter Darwin proposed "in Madagascar there must be moths with proboscis capable of extension to a length of between ten and eleven inches [25.4–27.9 cm]." Fifty years later a gigantic moth was identified supporting Darwin's suspicion. It was appropriately named *Xanthopan morganii praedicta*. The moth has a proboscis of enormous length that formed a huge coil in front of the head when not in use. Interestingly, visual confirmation of the moth gathering nectar and transferring pollen did not occur until 1992.

Before discussing Darwin's contributions of orchid pollination, a short biography is in order. Darwin was born in 1809 in Shrewsbury, England, to Dr. Charles Waring Darwin and Susannah Wedgwood. His paternal grandfather was the notable late 18th century naturalist Dr. Erasmus Darwin, whose writings, especially *Zoonomia*, discussed early theories of evolution. Darwin's maternal grandfather, Josiah Wedgwood, founded the famous pottery works. These men were members of the emerging intellectual class of late Georgian England. At age 15 Darwin enrolled at Edinburgh to study medicine. Charles realized quickly that the medical profession was not for him and he matriculated to Cambridge, graduating in 1831. There he became entranced with natural history, collecting plants and, interestingly, beetles. His fascination with beetles continued throughout his life: "No pursuit...gave me such pleasure as collecting beetles."

During his time at Cambridge he was mentored by John Steven Henslow, a noted geologist and naturalist. It was through



Henslow that Darwin got the appointment as the naturalist on the *H.M.S. Beagle*. The famous round-the-world voyage of the *Beagle* would last for five years (1831–1836). The commission of the *Beagle* was to map the coast of South America. Darwin suffered severely from sea sickness but luckily, while Captain Robert Fitzroy was charting the coast, Darwin went on many land excursions including the three-week crucial visit to the Galapagos Islands. It was on this voyage that he honed his skills as a naturalist. He sent home extensive collections of flora and fauna and became a skilled, meticulous and imaginative observer, filling detailed voluminous diaries. Darwin referred to this voyage as "by far the most important event of my life." Although he may not have known it at the time, this voyage planted the seeds of his evolutionary theory.

Most people do not realize that the monumental *On the Origin of Species* was not published until 1859, 24 years after Darwin's return to England. A detailed discussion of these years is beyond the scope of this article, but a short summary is in order. Within a few years after his return he married his cousin Emma

- [1] *Xanthopan morganii praedicta* pollinating *Angraecum sesquipedale* (Wasserthal, L.T. 1997). This photograph appeared on the cover of *Botanica Acta* (successor to the *International Journal of the German Botanical Society*) volume 110, number 5, 343-359. The pollinators of the Malagasy star orchids *Angraecum sesquipedale*, *sororium* and *compactum*. The inset photograph is the lateral view of head with coiled proboscis and spiny labial palps of a male *Xanthopan morganii praedicta*. Photograph by L.T. Wasserthal, from Arditti, J. Elliott, J. Kitching I. J. and L.T. Wasserthal - Good Heavens what insect can suck it' - Charles Darwin, *Angraecum sesquipedale* and *Xanthopan morganii praedicta*. *Botanical Journal of the Linnean Society*. 2012, 169, 403-432.
- [2] Photograph of Charles Darwin from the University College London Digital Collection.

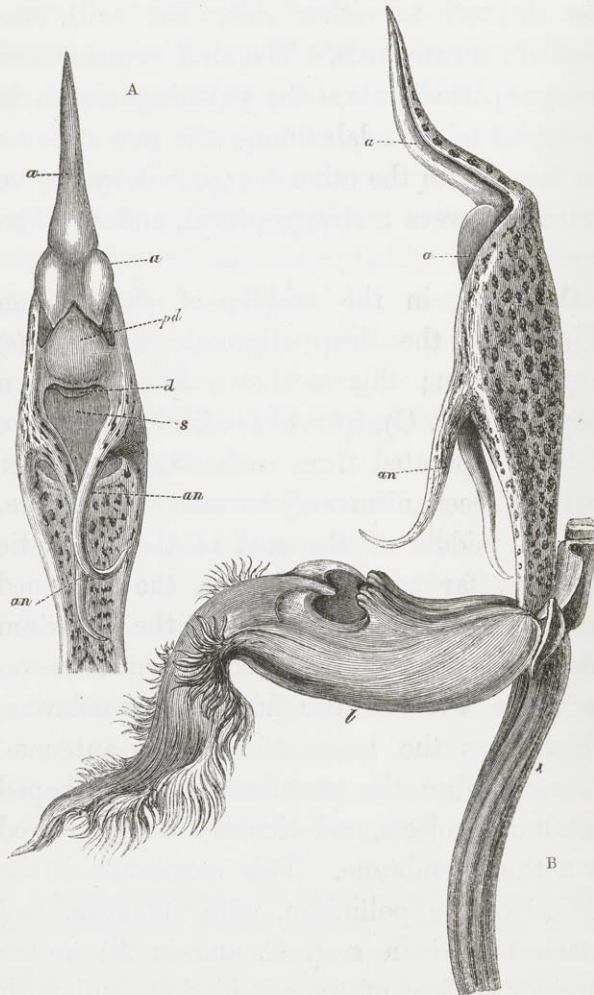
Wedgwood. With this marriage Darwin would never have any financial worries and could spend the rest of his life in intellectual pursuits. During the same time period Darwin formulated the main

tenant of this theory of evolution. Aided by reading Thomas Malthus's *An Essay on the Principle of Population* Darwin theorized "...it at once struck me that under these circumstances favorable variations would tend to be preserved, and unfavorable ones to be destroyed. The result of this would be the formation of new species. Here, then, I had at last got a theory by which to work...."

For almost the next 20 years Darwin did not publish his theory. Even as late as 1856 only a portion of the treatise had been written. Why was he reluctant? There are many theories but most pertain to how the religion-based 19th-century Victorian society would react, and especially Emma, a faithful Unitarian. The stimulant that accelerated the publication occurred in 1858 when Darwin received a letter from another naturalist living in Indonesia, Alfred Russell Wallace, asking Darwin's opinion of Wallace's very similar theory of natural selection. The "Origin" was published in November 1859. Darwin's name eventually became universally associated with evolution and Wallace's name unfortunately was mostly lost to history.

Now we can return to Darwin's fascination with orchids, which culminated in the publication in 1862 of *On the Various Contrivances by Which British and Foreign Orchids are Fertilized by Insects*. In the spring of 1860 Darwin needed a diversion from the controversy that enveloped him after the publication of the "Origin." He found that relief in the study of the anatomy and pollination of native terrestrial orchids. He would eventually use this book to support his contention in the "Origin" that cross-fertilization was essential to the survival of a species. Darwin spent endless hours closely observing insects pollinating native orchids and later doing anatomic dissections of orchid flowers. He took copious notes on the bee and moth pollinators and the pollen masses that adhered to their heads and bodies. He described how the lip color and appearance was an attraction for the pollinator. In his book he strongly emphasized the importance of cross-fertilization as opposed to self-fertilization and the important complex symbiosis of flowers and insects. In more recent times, "coevolution" has been the term used to describe these important interactions. Darwin's infatuation with orchids was evident in a correspondence with Sir Joseph Hooker in 1861: "I never was more interested in any subject in my life than this of Orchids."

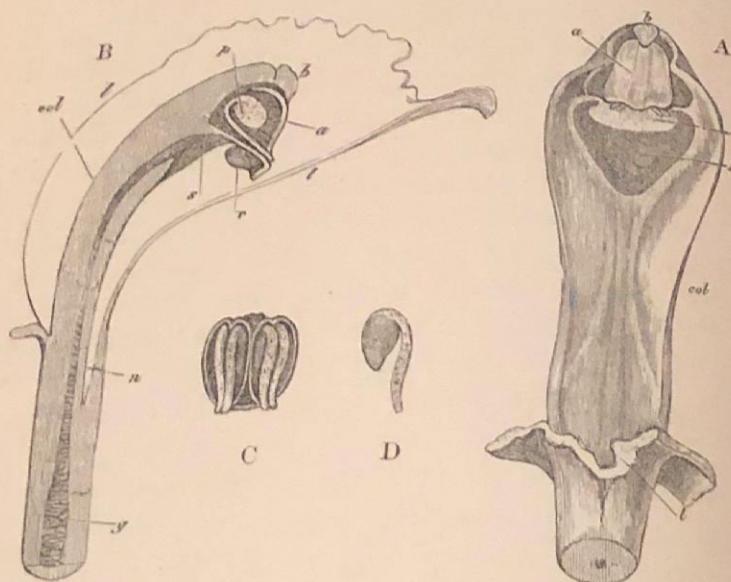
Fig. XXV.



CATASETUM SACCATUM.

3

Fig. 22.



4

Toward the end of the book, Darwin does discuss in detail the pollinating devices of tropical orchids including vandas, epidendrums, cattleyas and several others genera, with anatomic dissections and drawings. Darwin's most detailed discussion of orchid pollination was reserved for the genus *Catasetum*. He was fascinated by the unique trigger mechanisms of several of the species. Again, he conducted anatomic dissections and sketched meticulous drawings. What is most amazing to me is Darwin's power of observation and his ability to translate it into readable prose. There are many pages describing the trigger mechanism. Below is an example of the beginning of his discussion on the trigger of *Catasetum saccatum*. "When the left-hand antenna of this species...is touched, the edges of the upper membrane of the disc, which are continuously united to the surrounding surface, instantaneously rupture, and the disc is set free. The highly elastic pedicel then instantly flits the heavy disc out of the stigmatic chamber with such force that the whole pollinarium is ejected, bringing away with it the two balls of pollen, and tearing the loosely attached spikelike anther from the top of the column."

In the concluding paragraph of the book he again marveled that self-fertilization among orchid genera is so uncommon, noting that "...self-fertilization would have been an incomparably safer process than the transportal of pollen from flower to flower." He then concludes with a statement that is of monumental importance to the successful perpetuation of our natural world. "Nature thus tells us she abhors perpetual self-fertilization... that some unknown great good is derived from the union of individuals which have been kept distinct for many generations."

The last 20 years of Darwin's life were productive, with important contributions to various scientific fields including the structure of coral reefs, geology of South America, vegetable plant fertilization and motion and movement of plants. His most controversial work during this era was *The Descent of Man*. The first edition of his autobiography was published in 1876. Darwin died at the age of 73 on April 19, 1882. Darwin's intellect was monumental, especially when you realize that all the conclusions he reached regarding evolutionary theory were accomplished without any knowledge of modern-day genetics. All his assertions were based on deductive reasoning after the meticulous study of our earthly environment. It is my opinion just as Albert Einstein was *Time*



magazine's Man of the 20th Century, Charles Robert Darwin would have been *Time* magazine's Man of the 19th century.

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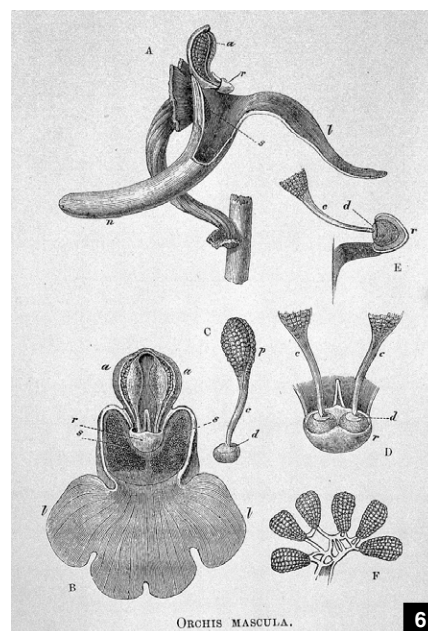
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David Rosenfeld, MD — David Rosenfeld, MD, has been growing orchids with his wife Joan for 40 years. David is a retired professor of pediatric radiology at the Rutgers Medical School. They have a 700-square foot (about 65-sq m) greenhouse with both warm and cool sections where they grow a mixed collection of species and hybrids. Their skill as growers is illustrated by their 95 flower quality and 28 cultural awards. David wrote about James Bateman (his 15th article) in the May 2019 issue of *Orchids* magazine (88[5]:368–371) (email: orchid-doc@comcast.net).



[3] Charles Darwin's detailed drawing of the column of *Catasetum saccatum* from *The Various Contrivances by Which Orchids are Fertilised by Insects*.

[4] The column of a cattleya as drawn by Charles Darwin in *The Various Contrivances by Which Orchids are Fertilised by Insects*.

[5] Only five orchid hybrids have ever been named after Charles Darwin. *Cymbidium* Charles Darwin, registered in 1962 by Stewarts Orchids, is the only one of the five to have been recognized with an AOS award. Pictured here is 'Janet' HCC/AOS. Photograph from the AOS award archives.

[6] Charles Darwin's drawing of *Orchis mascula*.

Orchids in Bhutan

The Genus *Diplomeris*

Stig Dalström, Choki Gyeltshen, Nima Gyeltshen, Kezang Tobgay,
Ngawang Gyeltshen, Bhakta Bdr. Ghalley, and Kinley Rabgay

THE GENUS *DIPLOMERIS* D. Don is a small genus of terrestrial orchids consisting of three species accepted by the World Checklist of Selected Plant Families (WCSP 2019), distributed in the subtropical regions of the Himalayas from Nepal in the west through Bhutan, India, Myanmar, Thailand and Vietnam to China. The genus was described in *Prodromus Florae Nepalensis* by David Don (1825). The name *Diplomeris* refers to the “*Appendix duplex*,” a somewhat simplified description of the reproduction apparatus, which John Lindley later described as “a horizontal anther, the bases of which are exceedingly divaricated, and connected by a broad erect membrane, opposite which is an erect fleshy body proceeding from the mouth of the spur” (Lindley 1832). It is also described as “descriptive of the two arms to the column” (Cribb 2001). From here on things get a little complicated, which seems to be more of a rule than an exception when it comes to taxonomic history for orchids.

The genus was based on *Diplomeris pulchella* D. Don, a plant described as coming from Nepal, apparently collected by Nathaniel Wallich, who was permanently stationed at the Calcutta Botanical Garden between 1817 and 1846, after which he returned to England (Wikipedia 2019) or by one of his collectors. David Don, on the other hand, worked as a professor of botany at the King’s College London from 1836 to his untimely death in 1841. He also worked as a librarian for the Linnean Society from 1822 to 1841, where he compiled the *Prodromus* publication for the botanist Aylmer Bourke Lambert, based on herbarium specimens made by Francis Hamilton and Nathaniel Wallich. These particular specimens were apparently duplicates from Wallich’s large herbarium and shipped from India to the East India Company facilities in England in 1825. The bulk of Wallich’s impressive collection was shipped from the Calcutta Botanical Garden to the Linnean Society in London in 1832, and later transferred



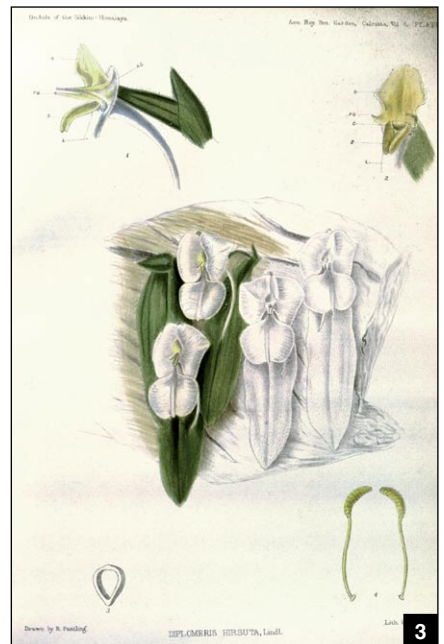
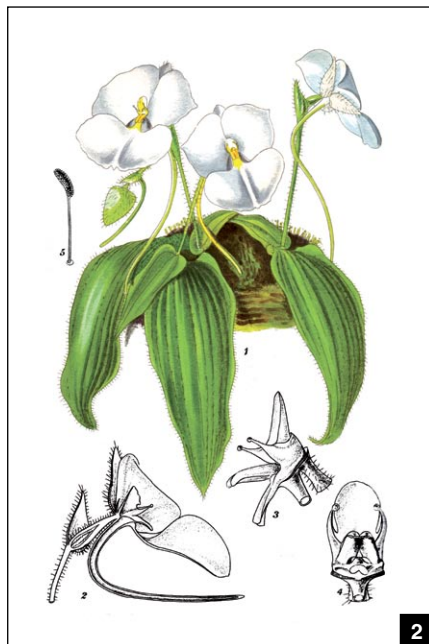
1 KEZANG TOBGAY

to Kew in 1913 (Stearn 1999). Although Don was the first botanist to examine Wallich’s “duplicates” in 1825, he most certainly did not see any live plants of his *Dms. pulchella*, and he probably could not recognize any particular colors in the dried flowers either, and yet he described it as being “*roseo-purpureus*.” How come? Don also did not refer to any of Wallich’s collection numbers in *Prodromus* so the only “fact” that we can “take to the bank” here is that the specimen came from Nepal. But this is also uncertain and has been rejected by subsequent authors. The reason we want to sort this out is that John Lindley used Wallich’s specimen #7064 to describe *Diplochilos longifolium* Lindl., which came from “Mt. Silhet” in eastern India, and he used Wallich’s #7065 to describe *Diplochilos hirsutum* Lindl., which came from Gossain Than in Nepal (Lindley 1832). Lindley then transferred both species into Don’s previously

described genus *Diplomeris* and treated his *Dplch. longifolium* as a synonym of Don’s *Dms. pulchella* (Lindley 1835).

Nathaniel Wallich visited England in 1828 on a leave from his position in Calcutta and began the task of arranging for the distribution of the dried specimens of plants in the East India Company’s museum, collected under his own superintendence (XLIII—The Wallichian... 1913). During this work, Wallich assembled a list of the species represented in the collection and that were to be distributed by him to various botanical institutions. The title of this list, which constitutes the well-known “Wallichian Catalogue,” cited as “Wall Cat.” Or “Wall. Cat. Lith.,” is as follows: “A numerical list of dried specimens of plants in the East India Company’s Museum, collected under the superintendence of Dr. Wallich of the Company’s Botanic Garden at Calcutta.” (XLIII—The Wallichian... 1913). The

purpose of this list was described by Wallich as “The principal object of the following list is to supersede the necessity of writing the numerous copies of labels, which will be required on the occasion of the distribution of the duplicates in the Company’s collection” (from Wallich’s list 1828). The actual collection consisted of specimens collected not only by Wallich himself, but by many others as well that had in one way or another been in the employment of the Honourable East India Company through the years. Producing a list of these herbarium specimens was a humongous task and took several years to complete, and it was unfinished when Wallich returned to Calcutta in 1832. Fortunately, Wallich had help from several friends, and John Lindley was one of them. This means that Lindley must have had access to the collection as early as 1828 and probably also to the duplicates that were sent in 1825. When Wallich returned to India in 1832 the remainder of the collection still held at the East India Company was sent as a “free gift” to the Linnean Society. This may explain why Don, who was working for the Linnean Society, used an earlier “duplicate” specimen to describe his *Dms. pulchella* and not one of the Wallich specimens that Lindley used for his *Diplochilos* species. Don simply did not have access to them. So the question remains what Don actually based his description on. Where is this type specimen today? It turns out that not all of Wallich’s specimens were transferred to Kew in 1913. There is a dried specimen at the Natural History Museum in London (barcode number 000042056) that meets the criteria of being the specimen from which Don described his *Dms. pulchella*. But how and when did it get there? Was it sent there after the bulk of Wallich’s specimens arrived at Kew, was it distributed by Wallich himself to the Natural History Museum during his work between 1828 and 1832, or by somebody else after Wallich’s return to India? In any case, this particular specimen has two dried plants mounted on the sheet, together with a small label that looks like it says “Nepaul, Wallich,” where the first questionably spelled word has been inconveniently dashed over and “Silhet” added above. Unfortunately, the resolution on specimens available online is frequently so poor that it renders them almost useless. But these specimens may actually represent Don’s holotype of *Dms. pulchella*, except for the fact that Don described his species as having three leaves, and none of the mounted



KINLEY FRAGAY

specimens have more than two leaves. But at least this is as close as we have been able to get to solving this riddle. The fact that Don did not designate specific specimens (collection numbers) for any of the descriptions in *Prodromus* has created a problem with revealing the true identity of *Dms. pulchella* and possibly of other species as well. Don described *Dms. pulchella* as having “roseo-purpureus” colored flowers. This does not seem to fit any of the three species accepted in the genus today by the WCSP (April 2019). They are all described as having white flowers. Joseph Dalton Hooker includes *Dms. pulchella* in his *Flora of British India* and states in the text that “Wallich’s specimens are from Silhet Mts. (Khasia hills). Don’s generic description is unintelligible, and he erroneously describes

- [1] The magnificent flower of *Diplomeris hirsuta* from Samdrup-Jongkhar.
- [2] *Diplomeris hirsuta*. *Curtis’s Botanical Magazine* 151:tab. 9113 (Stapf 1925).
- [3] *Diplomeris hirsuta*. *Annals of the Royal Botanic Garden, Calcutta* 8(4):tab. 443 (King and Pantling 1898).
- [4] The natural habitat of *Diplomeris hirsuta* in the Trashigang district.

the flowers as rose purple” (Hooker 1894). What evidence Hooker based this statement on and what he refers to as “Wallich’s specimens” (plural) 70 years after Don’s description and 53 years after his death is unknown to us. It is a befuddling statement because Hooker (1894) lists *Diplomeris hirsuta* (Lindl.)

Lindl., immediately after *Dms. pulchella*, and this time he clearly cites Wallich # 7065, which comes from Gossain Than, north of Kathmandu in Nepal (Fig. 2; Stapf 1925). Many of Wallich's specimens are listed as coming from Nepal so we know he assembled specimens from that region and the *Prodromus Florae Nepalensis* obviously featured plants from Nepal, so Hooker's statement about Don's description of *Dms. pulchella* seems a bit off. Hooker's decision appears to be based on Lindley's treatment in *Genera and Species of Orchidaceous Plants*, where he transferred his *Dplch. hirsutum* and *Dplch. longifolium* into Don's previously published *Diplomeris* (Lindley 1835). The plot thickens when we read that "Don's description of the latter, [*Dms. pulchella*; authors' note] would, in the absence of specimens, be unintelligible" (Stapf 1925). Fortunately, Don's description of *Dms. pulchella* is pretty clear with regard to the shape of the plant with leaves "*linearilanceolata acuta*," which distinguishes it from *Dms. hirsuta* that has broadly ovate leaves.

What supports Hooker's opinion about where the type of *Dms. pulchella* must have come from is that only *Dms. hirsuta* is recorded from Nepal by Bhakta Bahadur Raskoti (2009); *Dms. pulchella* is not. George King and Robert Pantling (1898) included a plate of *Dms. hirsuta* in their *Orchids of Sikkim* (Fig. 3) but not of *Dms. pulchella*. *Diplomeris pulchella* has not yet been reported from Bhutan either. *Diplomeris hirsuta*, on the other hand, was found in Bhutan by the British naturalist Joseph Jackson Lister, 1857–1927 (Rolfe 1916), and by James Alexander Gammie, 1839–1924 (Hooker 1894, Rolfe 1916). Gammie mentioned in his communication with W. Hemsley in July 1884 that *Dms. hirsuta* was "Found on rocks in Bhutan about 1,500'; — appears to be rare and not to be found in Sikkim" (U. Pradhan 1974). Since then plants of this exquisite orchid seem to have gone undetected in Bhutan until August of 2018 when author Kinley Rabgay discovered a small population in flower at about 4,500 feet (1,500 m) near Changmey in the Trashigang district. The plants grew on a steep slope of eroded sandstone and clay in moist broadleaved forest. A couple of weeks later authors Nima Gyeltshen and Kezang Tobgay independently found a small population of blooming plants in the Samdrup-Jongkhar district in the southeastern part of the country. These plants also grew on a shaded, steep slope and in a loam with sandy soil along the roadside but at an



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elevation of only 840 feet (280 m), which is about as close to the sea level you can get in Bhutan.

Aside from the unresolved enigma about what David Don actually described back in 1825, the three currently accepted taxa seem to blend in with each other. Lindley (1832) described the differences between his "*Diplochilos hirsutum*" and "*Diplochilos longifolium*" as "*caule monophyllo, folie oblong hirsuto, calcare incurvato*" (stem unifoliate, leaf oblong and hairy, spur curved; authors' translation) vs. "*caule 2-3-phylo subuniflora, foliis ensiformibus glabris, calcare recto*" (stem 2–3 leaved, generally one-flowered, leaves "sword-shaped," or more correctly "narrowly lanceolate," glabrous [no hairs], spur straight; authors' translation). After having studied photos and illustrations in various publications, it becomes obvious that both *Dms. hirsuta* and *Dms. pulchella* can have more than one leaf, and one or two flowers per inflorescence (U. Pradhan 1974, Chowdhary 1998) and with more or less curved spurs. The flowers are strikingly similar in appearance so the most easily recognized differences, based on the original descriptions, are the shapes and structures of the leaves, and if they have hairs or not. The third species in the genus, *Diplomeris josephii* A.N. Rao and Swamin., appears most similar to *Dms. pulchella* but is distinguished from the other two species by carrying several flowers per inflorescence (Rao and Swaminathan 1987). This may be a rather questionable difference though, because both *Dms. hirsuta* and *Dms. pulchella* are illustrated with a second bud on the

inflorescence in *Orchid Flora of Arunachal Pradesh* (Chowdhary 1998), and *Dms. hirsuta* rather frequently produces two flowers per inflorescence (U. Pradhan 1974).

It is unknown to us whether plants of any *Diplomeris* species exist in successful cultivation outside of India. Some advice is offered by Ganesh Mani Pradhan and Udai Ch. Pradhan in their independent articles in the *AOS Bulletin* of June 1974. Their experiences can be summarized briefly as keeping the plants in a warmer spot, protected from direct sun, well watered and fertilized during the growing season from June to September and then letting the medium dry out during the winter season. Watering should be initiated again, carefully, in late spring and, once the new growth appears well above the medium, regular watering begins again. The medium should be a terrestrial mix with some additional coarse sand mixed in. We offer no guarantees of success, though, should anybody be lucky enough to find artificially propagated plants for sale.

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and Forests, Serbithang, Thimphu, Royal Government of Bhutan; Kezang Tobgay Biodiversity Officer, Royal Botanic Garden, National Biodiversity Centre, Serbithang, Thimphu, Royal Government of Bhutan; Ngawang Gyeltshen Biodiversity Inventory Pro-gram, Wildlife Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Royal Government of Bhutan; Bhakta Bdr. Ghalley, Forest Ranger, Jigme Khesar Strict Nature Reserve, Haa Ministry of Agriculture and Forests, Royal Government

- [5] Close-up of the plant habit of *Diplomeris hirsuta* in the Trashigang district.
- [6] Natural habitat of *Diplomeris hirsuta* in the Samdrup-Jongkhar district of Bhutan.
- [7] The population of *Diplomeris hirsuta* in the Samdrup-Jongkhar district of Bhutan.

of Bhutan; and Kinley Rabgay, Senior Forest Ranger, Trashigang Forest Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Royal Government of Bhutan.

Iceland's Hidden Treasures

Dactylorhiza maculata subsp. *islandica*

TEXT AND PHOTOGRAPHS BY SERGEY AND ELENA SKOROPAD

ICELAND HAS ALWAYS been a dream destination for us. Finally, after a few years of planning we decided to visit in 2018. We were able to go in the beginning of July because all of the travel guides said that is the best time to visit Iceland. Unfortunately, the summer of 2018 was one of the coldest and wettest summers in Iceland in the last 100 years!

We both were inspired by the wonderful article written by David Rosenfeld “Orchids in Iceland?” published in *Orchids* in January 2017 (Rosenfeld 2017). In that article, he talked about three of seven orchid species native to Iceland. He and his wife Joan spent 10 days in Iceland but we had only four days there and only two planned day trips outside of Reykjavik. Thus, we did not have much time to look for orchids in their natural habitat.

During our first trip to the Golden Circle a miracle happened — we found our first Icelandic orchid in a geothermal area surrounded by many hot springs and active geysers. There were many wonderful plants growing peacefully near pools of hot water. One of them was AN ORCHID! Immediately we started looking for more orchids — but this was the only one in that area.

The next day we went on another excursion to southern Iceland to see the many famous waterfalls and black sand beaches. There we found another orchid — in a grassy field close to a small creek and a big waterfall. Then we saw many others and realized how many of them grow in thick grass. We were stunned and tried to take as many pictures as possible.

The next step was to identify these orchids. We looked at Rosenfeld’s article and did not find anything similar. Then we checked a bookstore in Reykjavik and found that it was one of the species of a genus native to Iceland called *Dactylorhiza*, but we were not sure which one. All the orchids that we saw in southern Iceland were different in size and color but some of them were close to pictures from that book. *Dactylorhiza* species, commonly called marsh orchids or spotted orchids, are hardy terrestrials with two palmate tuberoids and cauline leaves. The genus is widespread in mountainous regions across much of Europe, from Portugal in the west to Iceland in the north and even east toward Russia (including the harsh climates of Siberia), and can even be found in the northern portions of North America. *Dactylorhiza* prefers sunny places on lowlands or hills and can be found in slightly damp meadows and at



the edges of streams.

The genus was established by Hecker (ex Nevski) in 1937 (in the former Soviet Union). At the present time, the World Checklist of Selected Plant Families recognizes 45 species and numerous botanical varieties as well as 81 natural hybrids. Because of their spectacular and colorful inflorescence and their relative ease of cultivation, dactylorhizas are intensively used in hybrid production. Unfortunately, dactylorhizas are not yet popular in the United States and only one fairly nondescript species grows here, explaining why they are so rarely seen

- [1] The lavender form of *Dactylorhiza maculata* subsp. *islandica* in situ.
- [2] The Kvernufoss Waterfall habitat.
- [3] Close-up of the flowers of the tall plant found in the vicinity of the geysers.
- [4] The plants found in the Kvernufoss Waterfall habitat were distinctly smaller — no more than 10 inches (25 cm) tall. Note the first author’s hand for perspective.





at orchid shows or judging events, even though there are five AOS awards, four of them Certificates of Botanical Recognition or Certificates of Horticultural Merit.

Dactylorhizas are quite popular as garden plants in Great Britain as many of them grow naturally there. Information about dactylorhizas has been published many times in the *Orchid Review* from the Royal Horticultural Society. Also, the Hardy Orchid Society of Great Britain promotes interest in these native European orchids. With help from the *Orchid Review* team and Richard Laurence of the Hardy Orchid Society of Great Britain, we were able to identify the orchid we saw in Iceland as *Dactylorhiza maculata* subsp. *islandica*, endemic to Iceland.

We were extremely lucky to find plants with a wide range of color, from dark pink to pale rose, and almost white to white-veined or spotted rose. We found most of the plants in one location near the Kvernufoss waterfall — the less-visited neighbor of Skógafoss waterfall in the Southern Region (like a state or county) of Iceland. In Iceland, *Dactylorhiza maculata* subsp. *islandica* (the heath spotted orchid, or in Icelandic, “brönugrös”) is rather common in that area, but its range is not

too extensive. It is found in some coastal areas but not in the central highlands; keep in mind that the entire island nation only covers an area about the same size as New York state.

Plants in the area near the Kvernufoss waterfall were short, about 10 inches (25 cm) tall, and had spotted leaves, but the plant that we found in the geyser area was about 20 inches (50 cm) tall or more and did not have spotted leaves! Flower size was almost the same for all of them — about $\frac{3}{4}$ inch (to 2 cm). Pictures available on the Internet show a wide variation in this species. We also learned that Iceland has another *Dactylorhiza* species, *Dactylorhiza viridis* (frog orchid), but this species is totally different from the plant that we saw; it is an extremely widespread species found throughout subalpine and subarctic regions of the Northern Hemisphere (and, until recently called *Coeloglossum viride*).

Despite the rainy and cold weather, our trip to Iceland was fantastic and we are looking forward to visiting Iceland again and finding more orchids there!

From Iceland with love.

Acknowledgment

Special thanks to our daughter Olga.

[5] The much lighter flowered form of the species.

[6] Plants of both color forms can be found growing sympatrically. Here the author poses near a white form and a lavender form can be seen in the lower left of the photograph.

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— *Sergey and Elena Skoropad have been growing a wide variety of orchids without a greenhouse for over 15 years. Their skills as cultivators are exemplified by 40 culture and flower quality awards, including the prestigious 2015 Carlyle A. Luer Award. They actively participate at many AOS member regional meetings, write articles for Orchids magazine, have visited World Orchid Conferences and have traveled around the world to find orchids growing in their natural environment. They both enrolled in the AOS judging program in the Mid-Atlantic Judging Center (email: sergeskrpd@yahoo.com, elenaskoropad@yahoo.com).*



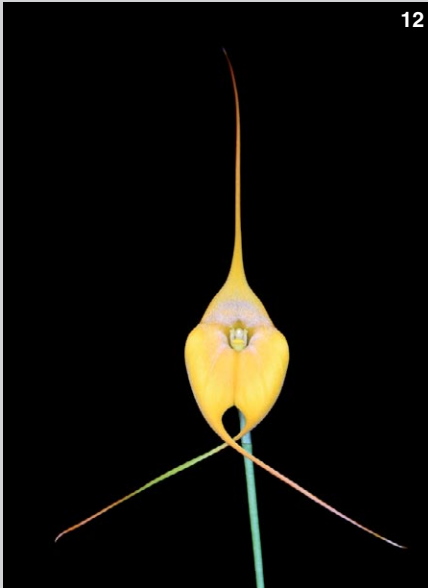


- [1] *Paphiopedilum hookerae* var. *volonteanum* 'Spatburgunder' AM/AOS 83 pts. Exhibitor: Dave Sorokowsky; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [2] *Laelia anceps* 'Anastasia' HCC/AOS 77 pts. Exhibitor: Lynne Murrell; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [3] *Oberonia rufilabris* 'Gilbert' CCM/AOS 84 pts. Exhibitor: Carol Zoltowski; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [4] *Paphiopedilum* Shin-Yi's Pride 'Melencia' AM/AOS (Michael Koopowitz x *rothschildianum*) 84 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [5] *Sarcochilus* Magic 'Neville Roper' HCC/AOS (Duno Nickys Twin x Zoe) 77 pts. Exhibitor: James G. Morris; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [6] *Sarcochilus* Kulnura Kaleidescope 'Jocelyn' HCC/AOS (Kurumba x Bunyip) 76 pts. Exhibitor: James G. Morris; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [7] *Paphiopedilum* Oriental Aura 'Bacchus' AM/AOS (Oriental Jewel x Fred's Aura) 84 pts. Exhibitor: Dave Sorokowsky; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [8] *Paphiopedilum rothschildianum* 'Sierra de Oro' AM/AOS 80 pts. Exhibitor: Curtis Gean; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [9] *Phalaenopsis bastianii* f. *melenciana* 'Melencia' CHM/AOS 80 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [10] *Paphiopedilum* Pinocchio's Toot 'Belle' HCC/AOS (Doctor Toot x Pinocchio) 79 pts. Exhibitor: Joanne Gerow; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [11] *Coelogyne pulchella* 'Chen Hao' CHM/AOS 83 pts. Exhibitor: Chen-Hao Hsu; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [12] *Cattleya* Big Dipper 'Mizar' HCC/AOS (Little Dipper x *sincorana*) 76 pts. Exhibitor: James G. Morris; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [13] *Promenaea stapelioides* 'Vistamont' CCM-AM/AOS 88-81 pts. Exhibitor: Cynthia Hill; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [14] *Oncidium* La Hougue Bie 'Melencia' AM/AOS (Panise x Eric Young) 80 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [15] *Cattleya bradei* 'Julie Anne' AM/AOS 81 pts. Exhibitor: James G. Morris; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [16] *Cattleya* Lake Tahoe 'High Sky' AM/AOS (Floralia's Azul x *sincorana*) 80 pts. Exhibitor: Ted McClellan; photographer: Ramon de los Santos. California Sierra Nevada Judging Center

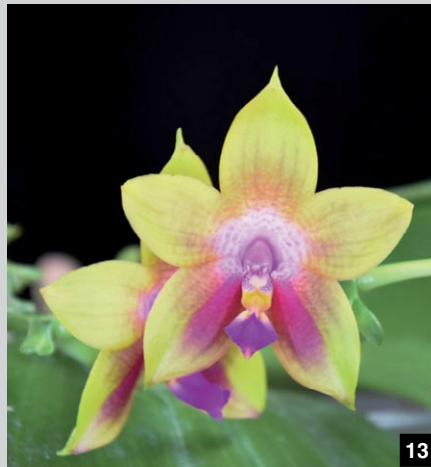




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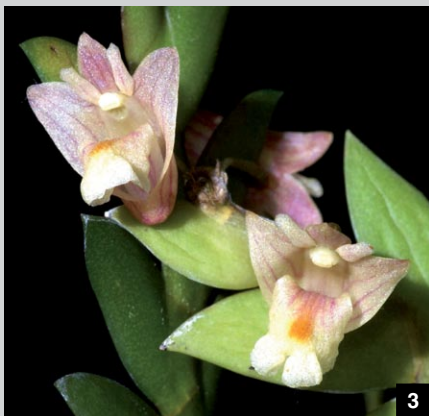


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- [1] *Oncidium* × *andreeteanum* 'Pacifica' HCC/AOS (*harryanum* × *praestanoides*) 75 pts. Exhibitor: William Jeff Trimble; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [2] *Phalaenopsis cornu-cervi* f. *chattaladae* 'Raise The Red Lantern' HCC/AOS 79 pts. Exhibitor: Jeff Tyler; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [3] *Pabstiella tripterantha* 'Gilbert' CCE/AOS 92 pts. Exhibitor: Carol Zoltowski; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [4] *Epidendrum cylindrostachys* 'Orkid-doc' CBR/AOS. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [5] *Stelis benzingii* 'Cheryl's Joy' CBR/AOS. Exhibitor: Cheryl Erins; photographer: Nile Dusdieker. Chicago Judging Center
- [6] *Paphiopedilum* Prince Edward of York 'Looking Glass Orchids' AM/AOS (*rothschildianum* × *sanderianum*) 83 pts. Exhibitor: Looking Glass Orchids; photographer: James Curtis. Carolinas Judging Center
- [7] *Dendrobium* Hibiki 'Tiny Bubbles' CCE/AOS (*bracteosum* × *laevifolium*) 92 pts. Exhibitor: Jeff Tyler; photographer: Ramon de los Santos. California Sierra Nevada Judging Center
- [8] *Vanda falcata* 'DVDA' CCM/AOS 83 pts. Exhibitor: Jeremy Losaw; photographer: James Harris. Carolinas Judging Center
- [9] *Rhyncholaeliocattleya* Melania Trump 'First Lady' HCC/AOS (*Cattleya* Bold Swan × Chia Lin) 79 pts. Exhibitor: Chadwick and Son Orchids; photographer: James Curtis. Carolinas Judging Center
- [10] *Grammatophyllum stapeliiflorum* 'Biltmore's Dark Night' AM/AOS 83 pts. Exhibitor: Marc Burchette; photographer: James Curtis. Carolinas Judging Center
- [11] *Masdevallia* O'Brien's Passion 'Looking Glass' AM/AOS (Annette Hall × *coccinea*) 84 pts. Exhibitor: Looking Glass Orchids; photographer: James Curtis. Carolinas Judging Center
- [12] *Masdevallia* Golden Monarch 'Looking Glass' AM/AOS (Golden Angel × Monarch) 80 pts. Exhibitor: Looking Glass Orchids; photographer: James Curtis. Carolinas Judging Center
- [13] *Phalaenopsis* Kingfisher's Dragon Wing 'Joy' AM/AOS (John Ewing × Dragon Tree Eagle) 81 pts. Exhibitor: Robert Hydzik; photographer: James Curtis. Carolinas Judging Center
- [14] *Cattleya schilleriana* 'Michael' AM/AOS 85 pts. Exhibitor: William Rogerson; photographer: Nile Dusdieker. Chicago Judging Center
- [15] *Platystele beatricis* 'Missy' CCM/AOS 83 pts. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [16] *Paphiopedilum* Julius 'Pisgah' AM/AOS (*lowii* × *rothschildianum*) 84 pts. Exhibitor: Looking Glass Orchids; photographer: James Harris. Carolinas Judging Center





- [1] *Ornithocephalus bonitensis* 'Orkiddoc' CBR/AOS. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [2] *Maxillaria acuminata* 'Orkiddoc' CBR/AOS. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [3] *Dendrobium bilobulatum* 'Orkiddoc' CBR/AOS. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [4] *Paphiopedilum* Toni Semple 'Sunprarie' HCC/AOS (*haynaldianum* x *lowii*) 78 pts. Exhibitor: Bil Nelson; photographer: Nile Dusdieker. Chicago Judging Center
- [5] *Platystele beatricis* 'Missy' CCE/AOS 91 pts. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [6] *Phragmipedium* Mont Fallu 'Itsa Miracle' AM/AOS (*longifolium* x Grande) 81 pts. Exhibitor: Sherry Maloney; photographer: Nile Dusdieker. Chicago Judging Center
- [7] *Pleurothallis wielii* 'Sophie' CBR/AOS. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [8] *Maxillaria paranaensis* 'Orkiddoc' CBR/AOS. Exhibitor: Larry Sexton; photographer: Nile Dusdieker. Chicago Judging Center
- [9] *Paphiopedilum sukhakulii* 'Brier Hill' CCM/AOS 87 pts. Exhibitor: Arnold Klehm; photographer: Nile Dusdieker. Chicago Judging Center
- [10] *Phalaenopsis* Pylo's Joey 'Coral Beauty' HCC/AOS (Pylo's Ruby Joey x LD's Bear Queen) 75 pts. Exhibitor: Big Leaf Orchids; photographer: Judy Cook. Dallas Judging Center
- [11] *Enanthleya* Golden Sunburst 'Madame President' CCE/AOS (*Encyclia rufa* x *Cattlianthe* Gold Digger) 93 pts. Exhibitor: Chris Houk; photographer: Brian Monk. Florida-Caribbean Judging Center
- [12] *Paphiopedilum* Ghostly Contrasts 'Sunprarie' AM/AOS (Magical Contrasts x Macabre Contrasts) 81 pts. Exhibitor: Bil Nelson; photographer: Nile Dusdieker. Chicago Judging Center
- [13] *Phalaenopsis* Pylo's Magician 'Big Leaf Orchid' AM/AOS (Dragon Tree Eagle x Paifang's Ambotratea) 86 pts. Exhibitor: Big Leaf Orchids; photographer: Judy Cook. Dallas Judging Center
- [14] *Cattleya* Triumphans 'Summer Sunrise' HCC/AOS (*dowiana* x *rex*) 76 pts. Exhibitor: David Gould; photographer: Cecil Coale. Dallas Judging Center
- [15] *Paphiopedilum* Harold Koopowitz 'Jim Krull' FCC/AOS (*malipoense* x *rothschildianum*) 94 pts. Exhibitor: Krull-Smith; photographer: Brian Monk. Florida-Caribbean Judging Center
- [16] *Phragmipedium* Rouge Bouillon 'George's Choice' HCC/AOS (*dalesandroi* x Memoria Dick Clements) 79 pts. Exhibitor: George A. Bogard; photographer: Judy Cook. Dallas Judging Center





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- [1] *Paphiopedilum* Krull's Prometheus 'Crystelle' FCC/AOS (Jan Ragan x *rothschildianum*) 91 pts. Exhibitor: Krull-Smith; photographer: Brian Monk. Florida-Caribbean Judging Center
- [2] *Vanda* Fuchs Gold 'Tony's Platinum' AM/AOS (Kultana Gold x Viroonchan Gold) 81 pts. Exhibitor: R and R Orchids; photographer: Brian Monk. Florida-Caribbean Judging Center
- [3] *Rhynchomyrmeleya* SunCoast Love 'Florida SunCoast' AM/AOS (*Rhyncholaeliocattleya* Waianae Leopard x *Myrmecophila christinae*) 83 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Kay Clark. Florida North-Central Judging Center
- [4] *Lesueurara* Dick Phippen's SunCoast 'Myakka' AM/AOS (*Brassocatanthe* Little Mermaid x *Encyclia* Lorraine Smith) 83 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Kay Clark. Florida North-Central Judging Center
- [5] *Cattleya* Quest Picante 'Quest 2' HCC/AOS (Pradit Spot x Nestor (1914)) 77 pts. Exhibitor: Quest Orchids, Inc.; photographer: Brian Monk. Florida-Caribbean Judging Center
- [6] *Clowesetum* Sandy Kasner 'Caroline's Banquet' AM/AOS (*Clowesia dodsoniana* x *Catsetum* Alexis Pardo) 83 pts. Exhibitor: Mark Margolis; photographer: Brian Monk. Florida-Caribbean Judging Center
- [7] *Paphiopedilum* Wössner Black Wings 'Pamela's Lestat' AM/AOS (*rothschildianum* x *anitum*) 86 pts. Exhibitor: Mid-Pacific Orchids; photographer: Alyn Nishioka. Hawaii Judging Center
- [8] *Paphiopedilum* Hung Sheng Eagle 'Crystelle' FCC/AOS (*gigantifolium* x *rothschildianum*) 90 pts. Exhibitor: Krull-Smith; photographer: Brian Monk. Florida-Caribbean Judging Center
- [9] *Cattleya* Brabantiae 'Crystelle' AM/AOS (*aclandiae* x *loddigesii*) 80 pts. Exhibitor: Krull-Smith; photographer: Brian Monk. Florida-Caribbean Judging Center
- [10] *Cattleya violacea* (Flamea) 'Springwater Delightful' AM/AOS 87 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Kay Clark. Florida North-Central Judging Center
- [11] *Bulbophyllum* Laura Newton 'Dorie's Delight' CCM/AOS (*agastor* x *macrobulbum*) 80 pts. Exhibitor: Bill Thoms and Doris Dukes; photographer: Kay Clark. Florida North-Central Judging Center
- [12] *Encyclia howardii* 'Bredren's Hot Lips' AM/AOS 82 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; photographer: Kay Clark. Florida North-Central Judging Center
- [13] *Sobralia decora* 'Jaxon' AM/AOS 80 pts. Exhibitor: Glen Gary; photographer: Kay Clark. Florida North-Central Judging Center
- [14] *Cattleya* Kimberly Federighi 'Jade's Goliath Joy' AM/AOS (*purpurata* x Dorothy Warne) 81 pts. Exhibitor: David Moore, David's Goliath Orchids; photographer: Kay Clark. Florida North-Central Judging Center
- [15] *Cattleya violacea* 'Kamarata' HCC/AOS 76 ptd. Exhibitor: Orquiverde; photographer: Brian Monk. Florida-Caribbean Judging Center
- [16] *Encyclia* Fandango 'Bill's Weed' AM/AOS (Orchid Jungle x *phoenicea*) 83 pts. Exhibitor: Bill Nunez; photographer: Kay Clark. Florida North-Central Judging Center
- [17] *Brassocattleya* Yellow Bird 'Bredren' AM/AOS (*Brassavola nodosa* x Richard Mueller) 83 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; photographer: Kay Clark. Florida North-Central Judging Center





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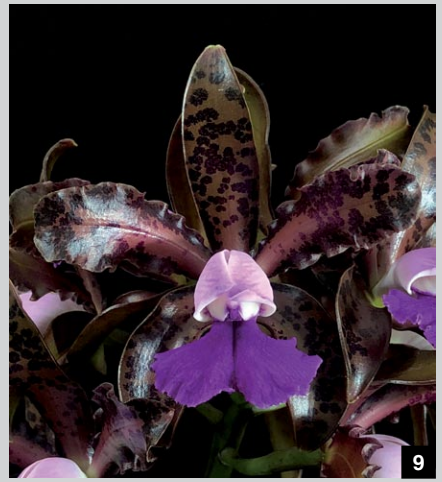


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- [1] *Schoenorchis scolopendria* 'Springwater' CBR/AOS. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Lorna Mazza. Florida North-Central Judging Center
- [2] *Coelogyne* South Carolina 'Smiley Love PK' AM/AOS (*Burfordiense* x *pandurata*) 83 pts. Exhibitor: Smiley Orchids; photographer: Lorna Mazza. Florida North-Central Judging Center
- [3] *Cattleya* C. G. Roebling (1895) 'Claudia Young XOXO' AM/AOS (*gaskelliana* x *purpurata*) 85 pts. Exhibitor: Jamie and Jackie Lawson; photographer: Lorna Mazza. Florida North-Central Judging Center
- [4] *Paraphalaenopsis labukensis* 'Fajen's Starburst' AM/AOS 84 pts. Exhibitor: Fajen's Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [5] *Dendrobium trigonopus* 'Red Hawk' AM/AOS 80 pts. Exhibitor: Sheri Liggett-Macchia and Red Hawk Nursery; photographer: Lorna Mazza. Florida North-Central Judging Center
- [6] *Paphiopedilum* Transdöll 'Debbie G.' AM/AOS (*liemianum* x *rothschildianum*) 82 pts. Exhibitor: Eric Cavin; photographer: Lorna Mazza. Florida North-Central Judging Center
- [7] *Vanda tricolor* var. *suavis* (Albescens) 'Timbucktoo' JC/AOS. Exhibitor: Sarah Pratt; photographer: Bryon Rinke. Great Plains Judging Center
- [8] *Rhyncholaeliocattleya* Raingreen's SunCoast 'Florida SunCoast' HCC/AOS (Memoria Shirley Moore x *Cattleya guttata*) 79 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [9] *Cattleya Kerchoveana* 'Sparky' AM/AOS (*schofieldiana* x *schilleriana*) 84 pts. Exhibitor: David Genovese; photographer: Wes Newton. Florida North-Central Judging Center
- [10] *Paphiopedilum* Petula's Dandy 'Whisper Lick My Pouch' HCC/AOS (Fred's Ghost x Petula's Song) 76 pts. Exhibitor: Laura and Wes Newton; photographer: Wes Newton. Florida North-Central Judging Center
- [11] *Paphiopedilum* Gloria Naugle 'Krull's Sparkling Gloria' AM/AOS (*rothschildianum* x *micranthum*) 82 pts. Exhibitor: Krull-Smith; photographer: Wes Newton. Florida North-Central Judging Center
- [12] *Paphiopedilum philippinense* var. *roebelenii* 'Stonewall' CCE-AM/AOS 95-82 pts. Exhibitor: Watson and Reynolds; photographer: Lorna Mazza. Florida North-Central Judging Center
- [13] *Paphiopedilum* Krull's Lady 'Krull's Perfection' FCC/AOS (Lady Isabel x Booth's Stone-Lady) 91 pts. Exhibitor: Krull-Smith; photographer: Wes Newton. Florida North-Central Judging Center
- [14] *Encyclia cordigera* var. *rosea* 'Liz Hamilton' FCC/AOS 90 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; photographer: Lorna Mazza. Florida North-Central Judging Center
- [15] *Rhyncattleanthe* Eclectic Orange 'Neon Haven' AM/AOS (Orange Neon x Love Passion) 83 pts. Exhibitor: Keith and Dina Emig - Winter Haven Orchid Nursery; photographer: Wes Newton. Florida North-Central Judging Center
- [16] *Dendrobium* Kirkland Nixon 'Bredren' FCC/AOS (Hamlyn Double Helix x Colleen Hopkinson) 93 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; photographer: Wes Newton. Florida North-Central Judging Center





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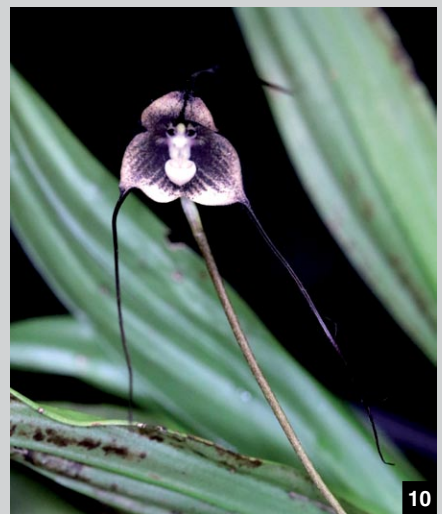


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- [1] *Encyclia howardii* 'Bredren' AM/AOS 80 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; photographer: Wes Newton. Florida North-Central Judging Center
- [2] *Bulbophyllum roxburghii* 'MV Just in Time' CCM/AOS 86 pts. Exhibitor: Stuart Henderson; photographer: Wes Newton. Florida North-Central Judging Center
- [3] *Bulbophyllum* Dolores Smith 'Whisper She's Bloody Proper' HCC/AOS (Crown-point x bicolor) 77 pts. Exhibitor: Laura Newton and Dolores Smith; photographer: Wes Newton. Florida North-Central Judging Center
- [4] *Cattleya* Lacey Michelle Matherne 'MV Andromeda' AM/AOS (*Cattleya aclandiae* x *Cattleya tigrina*) 83 pts. Exhibitor: Stuart Henderson; photographer: Wes Newton. Florida North-Central Judging Center
- [5] *Aerides* Bangkok 'MV Aroma' HCC/AOS (*multiflora* x *falcata*) 77 pts. Exhibitor: Stuart Henderson; photographer: Wes Newton. Florida North-Central Judging Center
- [6] *Brassocattleya* Alison Gaglioti 'XOXO' AM/AOS (*Brassavola cucullata* x *Cattleya* Landate) 83 pts. Exhibitor: Jamie and Jackie Lawson; photographer: Wes Newton. Florida North-Central Judging Center
- [7] *Encyclia* Guadatum 'Glen Gary - Cottage Orchids' AM/AOS (*guadalupeae* x *tampensis*) 80 pts. Exhibitor: Glen Gary; photographer: Wes Newton. Florida North-Central Judging Center
- [8] *Bromecanthe* Jamaica Fire 'Bredren' CCM/AOS (*Guaritionia* Why Not x *Myrmecophila brysiانا*) 82 pts. Exhibitor: Bredren Orchids and Phillip Hamilton; photographer: Wes Newton. Florida North-Central Judging Center
- [9] *Cattleya* Mareeba Tiger 'Crystelle' AM/AOS (*tigrina* x *schilleriana*) 84 pts. Exhibitor: Krull-Smith; photographer: Wes Newton. Florida North-Central Judging Center
- [10] *Cattleya tigrina* (Lilacina) 'Forte Sublime' HCC/AOS 77 pts. Exhibitor: Luiz Hamilton Lima; photographer: Wes Newton. Florida North-Central Judging Center
- [11] *Encyclia* Orchid Jungle 'SunCoast's Kerygma' AM/AOS (*alata* x *phoenicea*) 85 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [12] *Cattlianthe* Bactia 'Rick Helmuth's SunCoast' CCM/AOS (*Guarionthe bowringiana* x *Cattleya guttata*) 85 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [13] *Paphiopedilum* Jennifer Reinoso 'Doris Dukes' CCM/AOS (Memoria Hirohisa Kawai x *godefroyae*) 88 pts. Exhibitor: Bill Thoms and Doris Dukes; photographer: Wes Newton. Florida North-Central Judging Center
- [14] *Encyclia* Crownfox Chocolate Star 'Tracy Bailey' AM/AOS (*guatemalensis* x Judy Russ) 81 pts. Exhibitor: David Genovese; photographer: Wes Newton. Florida North-Central Judging Center
- [15] *Paphiopedilum leucochilum* 'Fajen's Orchids' AM/AOS 82 pts. Exhibitor: Fajen's Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [16] *Rhyncholaelia digbyana* 'Quinnelly's Joy' CCE-AM/AOS 93-84 pts. Exhibitor: Patti Quinnelly; photographer: Wes Newton. Florida North-Central Judging Center





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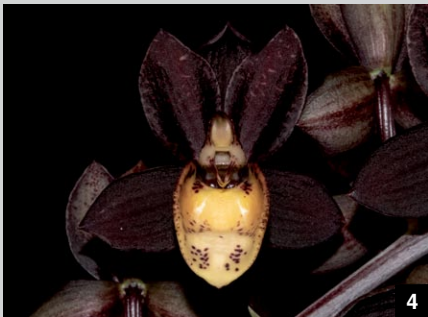


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- [1] *Encyclia* Orchid Jungle 'SunCoast Higher Standard' CCM/AOS (*alata* x *phoenicea*) 80 pts. Exhibitor: Jim Roberts Florida SunCoast Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [2] *Cattleya tigrina* f. *alba* 'Too Good' AM/AOS 82 pts. Exhibitor: Orchid Eros; photographer: Glen Barfield. Hawaii Judging Center
- [3] *Paphiopedilum hookerae* 'Fajen's Orchids' AM/AOS 85 pts. Exhibitor: Fajen's Orchids; photographer: Wes Newton. Florida North-Central Judging Center
- [4] *Gongora* Canary 'Samantha's Solo' HCC/AOS (*flaveola* x *galeata*) 75 pts. Exhibitor: Dennis Seffernick; photographer: Katie Payeur. Great Lakes Judging Center
- [5] *Encyclia angustiloba* 'Whisper Boon' AM/AOS 82 pts. Exhibitor: Laura and Wes Newton; photographer: Wes Newton. Florida North-Central Judging Center
- [6] *Phragmipedium* QF Kolea 'Duck Creek' HCC/AOS (*pearcei* x *fischeri*) 79 pts. Exhibitor: Dave Miller; photographer: Ed Cott. Great Lakes Judging Center
- [7] *Bulbophyllum ocellatum* (cf.) 'Windswept's Golden Pearl' CCE-AM/AOS 90-85 pts. Exhibitor: Windswept in Time Orchids; photographer: Ed Cott. Great Lakes Judging Center
- [8] *Bulbophyllum* Dolores Smith 'Whisper Pretty in Pink' AM/AOS (Crownpoint x *bicolor*) 87 pts. Exhibitor: Laura Newton and Dolores Smith; photographer: Wes Newton. Florida North-Central Judging Center
- [9] *Stanhopea* Assidensis 'Alex's Adventure' AM/AOS (*tigrina* x *wardii*) 85 pts. Exhibitor: Dennis Seffernick; photographer: Katie Payeur. Great Lakes Judging Center
- [10] *Dracula tsubotae* 'NWO Chocolate Monkey' CBR/AOS. Exhibitor: New World Orchids; photographer: Ed Cott. Great Lakes Judging Center
- [11] *Eulophia petersii* 'Matthews's Baxter' AM/AOS 81 pts. Exhibitor: Dennis Seffernick; photographer: Katie Payeur. Great Lakes Judging Center
- [12] *Stanhopea* Assidensis 'Stephanie's Max' AM/AOS (*tigrina* x *wardii*) 80 pts. Exhibitor: Dennis Seffernick; photographer: Katie Payeur. Great Lakes Judging Center
- [13] *Paphiopedilum* Rollie Wilson 'Mid-Michigan' AM/AOS (Hung Sheng Eagle x *rothschildianum*) 80 pts. Exhibitor: Jack Shumaker; photographer: Katie Payeur. Great Lakes Judging Center
- [14] *Paphiopedilum* Luna Pleasure 'Makakai' AM/AOS (Luna Shadow x Jewel Green) 81 pts. Exhibitor: Sandra Dixon; photographer: Katie Payeur. Great Lakes Judging Center
- [15] *Cypripedium kentuckiense* 'Roberts' AM/AOS 82 pts. Exhibitor: Roberts Flower Supply; photographer: Ed Cott. Great Lakes Judging Center
- [16] *Paphiopedilum* Amarantine 'Roberts' AM/AOS (*liemianum* x *moquetteanum*) 82 pts. Exhibitor: Roberts Flower Supply; photographer: Ed Cott. Great Lakes Judging Center





- [1] *Phragmipedium* QF Naukana Kealoha 'Littlefrog' AM/AOS (Incan Treasure x *longifolium*) 80 pts. Exhibitor: Rob Halgren; photographer: Ed Cott. Great Lakes Judging Center
- [2] *Cypripedium* Philipp 'Mevad' AM/AOS (*macranthos* x *kentuckiense*) 84 pts. Exhibitor: Dave Miller; photographer: Katie Payeur. Great Lakes Judging Center
- [3] *Bletia striata* 'Mayfair' HCC/AOS 78 pts. Exhibitor: Barbara Ford; photographer: Katie Payeur. Great Lakes Judging Center
- [4] *Catasetum* Dark Tale 'Maroon n Gold' HCC/AOS (Donna Wise x Louise Clarke) 79 pts. Exhibitor: William K Parker, Jr.; photographer: Bryon Rinke. Great Plains Judging Center
- [5] *Zygolum* Rhein Moonlight '#1' AM/AOS (*Zygosepalum labiosum* x *Zygopetalum* Artur Elle) 81 pts. Exhibitor: Brian Truong; photographer: Bryon Rinke. Great Plains Judging Center
- [6] *Phalaenopsis* Walnut Valley Hero 'Max and Bryon' HCC/AOS (Brother Love Hero x Walnut Valley Fantasia) 79 pts. Exhibitor: Max Thompson and Bryon Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [7] *Phalaenopsis* Walnut Valley Love Pixie 'Max and Bryon' AM/AOS (Brother Love Hero x Zuma's Pixie) 80 pts. Exhibitor: Max Thompson and Bryon Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [8] *Echinosepala shuarii* 'Bryon' HCC/AOS 77 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [9] *Paphiopedilum niveum* 'Kathryn' CCM-HCC/AOS 84-79 pts. Exhibitor: Hossein Noorbakhsh; photographer: Ed Cott. Great Lakes Judging Center
- [10] *Loefgrenianthus blanche-amesiae* 'Bryon' CBR/AOS. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [11] *Prosclycia* Max and Bryon 'Bryon and Max' HCC/AOS (*Encyclia pachyantha* x *Prosthechea citrina*) 78 pts. Exhibitor: Max Thompson and Bryon Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [12] *Paphiopedilum* Cam's Cloud 'Bryon' HCC/AOS (*bellatulum* x *emersonii*) 79 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [13] *Paphiopedilum* Frank Smith 'Max Thompson' FCC/AOS (Norito Hasegawa x *rothschildianum*) 90 pts. Exhibitor: Max C. Thompson; photographer: Bryon Rinke. Great Plains Judging Center
- [14] *Epidendrum* Panama Ruby 'Bryon Rinke' AM/AOS (*medusae* x *peperomia*) 82 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging Center
- [15] *Bulbophyllum* Melanie's Star 'Timbucktoo' AM/AOS (*baileyi* x *lobbii*) 80 pts. Exhibitor: Sarah Pratt; photographer: Bryon Rinke. Great Plains Judging Center
- [16] *Phragmipedium* Mardi Gras 'Anna' AM/AOS (*brasiliense* x *fischeri*) 80 pts. Exhibitor: Jana Butcher; photographer: Bryon Rinke. Great Plains Judging Center

LINDLEYANA

New Ecuadorian Orchid, Part 2

A New Species of *Sobralia* (Orchidaceae: Sobraliinae) from Southeast Ecuador

BY HUGO MEDINA, JOSÉ PORTILLA AND IVÁN PORTILLA



ABSTRACT A new species of *Sobralia*, *Sobralia sanchezjosana*, is described and illustrated. The new species is compared to *Sobralia kermesina* Garay (1956) that is differentiated by the size of the notoriously smaller flowers and the morphology of the lips. The lip of the new species is distinctive in the keels and lack of lobes at the base. The column is also distinguished by the more elongated wings that hug the anther.

KEYWORDS Ecuador, new species, Sobraliinae, *Sobralia*, *Sobralia sanchezjosana*

INTRODUCTION The genus *Sobralia* Ruiz and Pav. was described in 1794 to honor the Spanish botanist Francisco Sobral (Pupulin et al. 2011). A total of 167 species are currently recognized (World Checklist of Selected Plant Families [WCSP] 2019). They are distributed from Mexico into tropical regions of South America (Dressler 2002, Szlachetko, et al. 2009). In Ecuador there are about 45 species distributed from the foothills of the Andean region toward the Amazon and the west.

Sobralia generally occur as terrestrial or lithophytic herbs, but a few are also found growing as epiphytes. The majority of the species have a short, rigid rhizome forming a dense mat of coarse roots between the bamboo-like shoots. The shoots are generally unbranched bearing many leaves, generally glabrous, and range from 0.33 to 6.00 meters in height. The leaves are always plicate, thin, rigid, and flat, acute to acuminate and generally glabrous. In a few species, leaves are pubescent and range in color from entirely green to reddish-purple or differing in colors between the abaxial and adaxial surfaces.

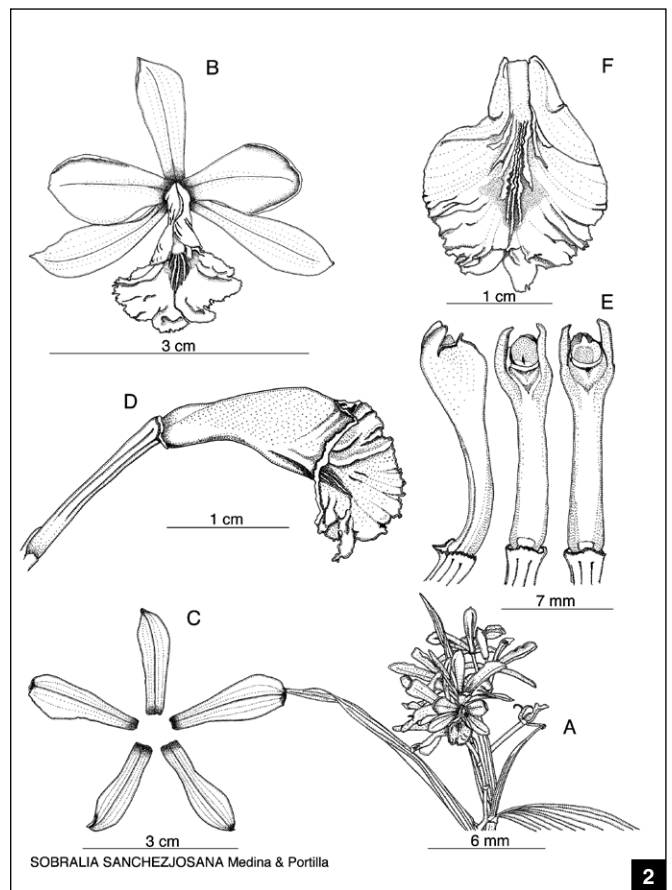
There are two main types of inflorescences in the genus. The first are those with a terminal inflorescence producing one or two ephemeral flowers successively for up to ca. 15 days. The second group produces axillary racemes (Meister G. 2017) with many flowers open simultaneously that can be open for up to seven days. All of these species produce many flowers open simultaneously.

The new species described here was discovered in the Morona-Santiago province of Ecuador near Chiguinda. After a careful review of the plant morphology we have concluded that it represents a distinctive new species similar to *Sobralia ciliata* (C.Presl) C.Schwenf. ex Foldats (Schweinf. C, Ex. Foldats, 1969) and *Sob. kermesina* Garay (Garay, 1956). All three of these species belong to the group that produces axillary racemes and share several other traits typical of the group including delicate fleshy flowers with elongated keels and filaments on the disc of the lip, which hugs the column to give the lip the appearance of a trumpet, and eight pollinia.

TAXONOMY *Sobralia sanchezjosana* H. Medina, J. Portilla and I. Portilla *sp. nov.* Type: ECUADOR. Morona-Santiago: in the road el Sigsig to Chiguinda, around Granadillas town, 3°12'46.11"S, 78°44'57.56"O, 1820 m, 2017, flowered in cultivation at Ecuagenera Gualaceo, *I. Portilla 0249* (holotype: HA). Figures 1–2 and 3

Species novae est Sobralia kermesina Garay., *similis differat ab magnitudine atque collectae flores minimi, morphologiam de labra, per labrum denique Proprietas ea, carinis basi in lobos, deficiatur. Longi agminis alis magis distinguuntur antherarum ama.*

Plants terrestrial, caespitose, bamboolike. *Stem* cylindrical, erect, rigid, glabrous, ca 105.0–150.0 cm tall, 0.3–0.7 cm in diameter. *Roots* thick, long pubescent, flexible, branched, 6.0 mm in diameter. *Leaves* up to 16 per shoot, elliptic-lanceolate, long acuminate, stiff, plicate, dark green, glabrous, 11.5–15.1 cm long, 2.4–3.0 cm wide. *Inflorescence* a raceme



[1] *Sobralia sanchezjosana*. [H. Medina]

[2] *Sobralia sanchezjosana* H. Medina, J. Portilla and I. Portilla. A. habit; B. flower; C. perianth dissected; D. column and lip, side view; E. column, ventral and lateral view; F. lip expanded view. Illustration of the holotype by Hugo Medina.

with 8.0–15.0 purple flowers produced in up to three clusters per shoot below the terminal axils of the leaves; *floral bract* acuminate, short, 0.5 cm long, 0.6 cm wide; *ovary* slightly covered by the floral bract, terete, 1.50 cm long, 0.05 cm wide. *Flowers* fleshy, purple, medium-sized for the genus, 3.0–4.0 cm in diameter; *dorsal sepal* lanceolate, acute, the apex slightly concave, 2.1 cm long, 3.5–0.6 cm wide; *lateral sepals* similar to the dorsal sepal, lanceolate, acute, apex slightly concave and reflexed, 2.1 cm long, 0.4–0.6 cm wide; petals oblong-elliptic, acute with four veins, 2.3 cm long, 0.2–0.9 cm wide; *lip* dark pink, ovate, crenellate along the undulate margins, the base whitish and in the apical half, yellow with 12 prominent, thickened keels, 2.2 cm long, 1.7 cm wide when expanded; *column* slightly spatulate, 1.4 cm long, 0.2 cm wide, and at the apex of the column, 4.5 cm long, 3.5 cm wide, with prominent, falcate apical wings. 0.2 cm long, 0.1 cm wide. *Fruit* unknown.

ETYMOLOGY Named after Alex Sanchez from Spain, former curator of the Shanghai Botanical Garden in Shanghai, China, famous for his love of nature.

DISTRIBUTION Known from the southeast of Ecuador, in the province of Morona-Santiago, along the road from Sigsig to Chiguinda. In the province of Zamora-Chinchipec vicinity of town of Sabanilla.

PHENOLOGY Plants in cultivation bloom sporadically in January, September and October.

HABITAT AND ECOLOGY The plants of this species grow



terrestrially in secondary forests along the slopes of the roads, in intermediate and humid conditions. The plants occur both among herbaceous vegetation and in exposed sites.

DISCUSSION The new species is best attributed to a group of species characterized by axillary inflorescences. The species in this group are distributed from Central America to South America, with its largest concentration in the foothills of the Andes. The new species is most similar to *Sob. kermesina* Garay but can be distinguished by the much smaller flowers, the middle disc with 12 prominent keels (vs. 8 keels), the absence of lobes at the base of the lip, and the column with wings that embrace an elongated anther (vs. shorter wings of the column). The new species can also be compared to *Sob. ciliata* (C.Presl) C.Schweinf. ex Foldats but differs from that species in the more weakly ciliate margins of the lip and petals.

Acknowledgments

We are indebted to Alfonso Doucette, PhD, for reading, correcting and carefully translating this article.

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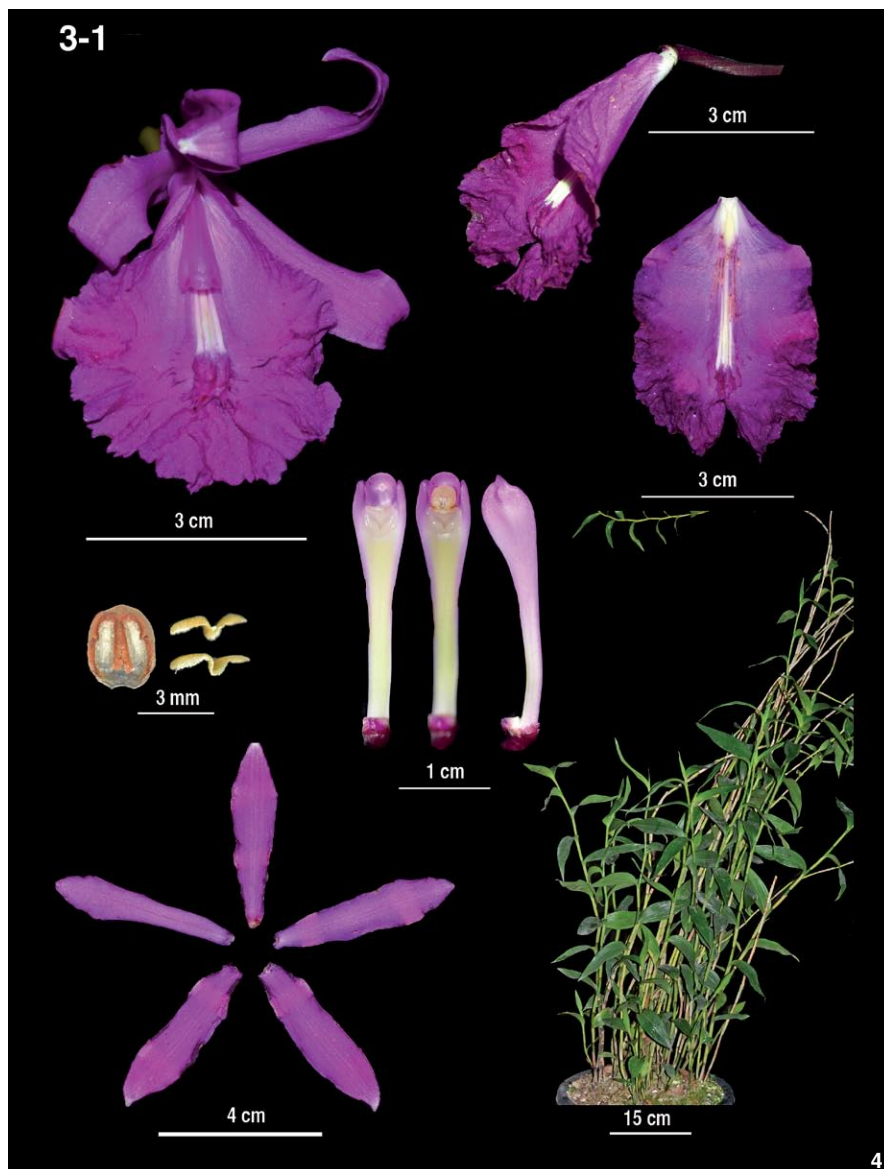
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— José (Pepe) Portilla is the CEO, founder and President of Ecuagenera CIA Ltda. and the current president of the Azuay Orchid Society. Pepe, as most people know him, has dedicated his life to research and conservation of Ecuador’s natural richness. Ecuagenera, a family-owned company in business more than 27 years, leads South America in research, conservation and propagation of species and new hybrids that are exported worldwide (email: pepe@ecuagenera.com). Iván Portilla, Pepe’s brother, is Vice-President of Ecuagenera and in charge of orchid shows worldwide (email: ivan@ecuagenera.com) and Hugo Medina is a research assistant and has described numerous new Ecuadorian orchid species (email: producciongye@ecuagenera.com).



- [3] *Sobralia sanchezjosana* H. Medina, J. Portilla and I. Portilla. Prepared sheet of the holotype by H. Medina.
- [4] Prepared sheet of *Sobralia kermesina* Garay. Used to compare the two species. [H. Medina]
- [5] Illustration of the syntype of *Sobralia ciliata* (C.Presl) C.Schweinf. ex Foldats, 1969. Drawings of the Royal Botanical Expedition to the Viceroyalty of Peru, 1777–1816.

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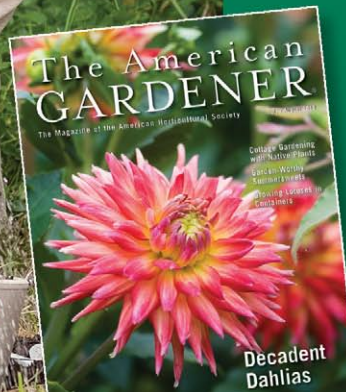
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12–15—Asociacion Bogotana de Orquideologia, Jardin Botanico, Avenida Calle 63 # 68–95, Bogota, Colombia; Contact: Julia Jordan, +57 310–2279596; julie.jordan@grchia.com

14–15—Galveston Bay Orchid Society/SWROGA Show “Symphony of Orchids,” Hilton Houston NASA Clear Lake, 3000 East NASA Parkway, Houston, TX; Contact: Joyce McMillan, 832–279–0211; joycemcmillan@att.net

14–15—*South Bay Orchid Society Show & Sale, South Coast Botanic Garden, 26300 Crenshaw Blvd., Palos Verdes Peninsula, CA; Contact: Arthur Hazboun, 310–995–1592; webmaster@southbayorchidsociety.com

14–15—Wisconsin Orchid Society Show “Fall In Love With Orchids,” Mitchell Park Horticultural Conservatory, 524 S. Layton Blvd., Milwaukee, WI; Contacts: Richard Odders, 262–632–3008; odders2445@gmail.com/Bil Nelson, 414–467–6642; qorchids@att.net

20–22—Alabama Orchid Society 35th Show & Sale, Birmingham Botanical Gardens, 2612 Lane Park Road, Birmingham, AL; Contact: Dr. Beverly A. Von Der Pool, 205–821–0689; bvonderpool@yahoo.com

20–22—Great Divide Orchid Society Show & Sale, Wingate Hotel, 2007 North Oakes Street, Helena, MT; Contact: Nancy Horn/Cheri Bergeron, 406–459–9252; nancyhorn@outlook.com

21–22—Ridge Orchid Society Show “Orchids Gone Wild,” W. H. Stuart Center – UF IFAS Extension Polk County, 1702 US Highway 17–98 South, Bartow, FL; Contact: Glen Gary, 863–602–0778; glengary54@yahoo.com

25–29—Asociación Guatemalteca de Orquideologia National Show, Zoológico La Aurora, 5 Calle, Interior Finca La Aurora, Zona 13, Guatemala City, Guatemala; Contact: Robert Fuchs, 305–245–4570; bob@rforchids.com

25–29—Mayaguez Orchid Society “Festival de Orquideas del Oeste,” Mayaguez Mall, 975 Hostos Ave., Mayaguez, PR; Contact: Julio David Rios, 787–649–2655; david1156@hotmail.com

28–29—*Fascination of Orchids International Show & Sale, South Coast Plaza Village, 1621 Sunflower Ave., Santa Ana, CA; Contact: Theo Johnson, 714–979–5887; oorchidshow@gmail.com

28–29—Kentucky Orchid Society Show, St. Mathews Episcopal Church, 330 N Hubbards Lane, Louisville, KY; Contacts: Richard Humke, 502–299–1231; richardhumke@gmail.com/Catherine Lockett, 502–893–9282; catlockett@gmail.com

28–29—Smoky Mountain Orchid Society Show, Stanley’s Greenhouse, 3029 Davenport Road, Knoxville, TN; Contacts: Mary Ann Lang, 865–675–3695; maryannlang@charter.net/Casey Littell, 865–297–8202; 1littellgirl@gmail.com

28–29—Tampa Orchid Club Expo, USF Botanical Gardens, 12210 USF Pine Drive, Tampa, FL; Contact: Cheryl Crilly, 813–244–7564; cents4me@aol.com

OCTOBER

2–13—Central California Orchid Society “The Big Fresno Fair Orchid Show,” Fresno Fairgrounds, 1121 S Chance Avenue, Fresno, CA; Contact: Gordon Wolf, 209–999–0181; gwsangca@yahoo.com

3–6—Maui Orchid Society – Maui Fair “Orchidland Show,” War Memorial Gymnasium, 700 Halia Nakoia St., Wailuku, HI; Contact: Bert Akitake, 808–250–1585; jakitake@hotmail.com

5—*Deep Cut Orchid Society Annual Orchid Auction, Monmouth Park Racetrack, 175 Oceanport Avenue, Oceanport, NJ; Contact: Joan Messander, 732–787–4660; jmesand1@verizon.net

5–6—Central New York Orchid Society Fall Show, Beaver Lake Nature Center, 8477 East Mud Lake Road, Baldwinsville, NY; Contact: Nancy Loveland, Nancy Loveland; rivergardening@yahoo.com

5–6—Riverside—San Bernardino Counties Orchid Society “23rd Annual Morongo Basin Orchid Festival,” Gubler Orchids, 2200 Belfield Blvd., Landers, CA; Contact: Ronald Lang, 951–663–5237; rflangx25@gmail.com

5–6—South Florida Orchid Society Show “Orchid Treasures,” University of Miami Watsco Center, 1245 Dauer Dr., Coral Gables, FL; Contact: Daniel Christensen, 954–252–8116; damorchid@aol.com

11–13—*Honolulu Orchid Society Show “Celebrating 80 Years of Orchids,” Washington Middle School Cafeteria, 1633 S. King St., Honolulu, HI; Contact: Katherine Leonard, 808–542–8672; kateleonard@hawaiiiantel.net

12–13—Gainesville Orchid Society Show “Orchids in the Garden,” Kanapaha Botanical Gardens, 4700 SW 58th Dr., Gainesville, FL; Contact: Joan MacLeod, 352–665–2640; neilmacleod@bellsouth.net

12–13—Illinois Orchid Society Fall Show “Autumn Splendors,” Chicago Botanic Garden, 1000 Lake Cook Rd., Glencoe, IL; Contact: David A. Kirk, 847–563–0212; david.kirk.a@gmail.com

16–20—Fall Members Meeting and East Everglades Orchid Society Show & Sale, members meeting begins October 16,

the show is being held October 18 – 20, 2019 at R.F. Orchids, 28100 SW 182 Ave., Homestead, FL; Contact: Kimberly Belisle, 786–367–7177; kim@orchidseeos.com

18–20—Club Peruano de Orquideas XIII Exposicion de Orquideas “Peru y sus orquideas,” Parque Reducto de Miraflores, Calle Ramon Ribeyro 490, Miraflores, Lima, Peru; Contact: Giancarlo Bonicelli, 0051–997386077; gbonicelliv@boniplant.com

18–20—The Huntington Library, Art Collections and Botanical Gardens International Orchid Show, The Huntington Library, Art Collections, and Botanical Gardens, 1151 Oxford Road, San Marino, CA; Contact: Brandon Tam, 626–405–3568; btam@huntington.org

19–20—Greater Cincinnati Orchid Show, Krohn Conservatory, 1501 Eden Park Drive, Cincinnati, OH; Contact: Jeanne Rhinehart, 513–383–3805; jeanws@me.com

25–27—Asociacion Alajuense de Orquideologia “Exposicion Nacional de Orquideas de Alajuela 2019,” Escuela Migel Obregón Lizano, Alajuela, Costa Rica; Contact: Jorge Giovanni Salazar, (508)8820–5608; suiza040@yahoo.com

25–27—Blue Ridge Orchid Society Show “Orchids and Ghosts,” Center in the Square, 1 Market St., Roanoke, VA; Contact: Lillian Gillespie, 434–324–4755; gillespielgh@fairpoint.net

25–27—Delray Beach Orchid Society Show “Orchids on the Square,” Old School Square Fieldhouse, 51 N. Swinton Ave., Delray Beach, FL; Contact: Michele Owens, 954–695–9889; molovesorchids@gmail.com

26–27—Eastern Iowa Orchid Show & Sale, Cedar Rapids Elks Lodge #251, 801 33rd Ave. SW, Cedar Rapids, IA; Contact: Andy Coghill–Behrends, 319–512–8076; mistercoghill@hotmail.com

26–27—Michiana Orchid Society Fall Show, Holy Cross College, 54515 State Road 933 North, Notre Dame, IN; Contact: Sandy Ohlund, 219–778–4457; sohlund@frontier.com

26–27—Windsor Orchid Society Show “Orchid Spooktacular,” St. Cyril’s Slovak Centre, 1520 Chandler Road, Windsor, Ontario, Canada; Contact: Ed Cott, 519–819–4611; laelia@aol.com

NOVEMBER

2–3—Kansas Orchid Society Fall Show & Sale, Botanica, The Wichita Gardens, 701 Amidon St., Wichita, KS; Contact: Sarah J. Pratt, 316–655–0572; svcsjp@gmail.com

8–10—Triangle Orchid Society Show “Fall for Orchids,” Doris Duke Center at Sarah P Duke Gardens, 420 Anderson Street, Durham, NC; Contact: Phil Brindle, 919–

884-8750; brindlep@frontier.com
9-10—Ft. Pierce Orchid Society Show “Kaleidoscope of Orchids,” River Walk Center, 600 N Indian River Drive, Ft. Pierce, FL; Contact: Rita Zebelin, 772-418-7426 (text only); rita2zfpos@gmail.com
15-17—Asociacion Vallecaucana de Orquideologia “Caliorquideas 2019,” Orquideorama, Av 2 N #48-10, Cali, Valle, Colombia; Contact: Maria Del Rosario Malveny, +57-312-843-0462; madelrmalveny@gmail.com
16-17—Deerfield Beach Orchid Society Show “Orchid Obsession,” Safe Schools Institute, 1790 Spanish River Boulevard, Boca Raton, FL; Contact: Cheryl Babcock, 954-464-8996; crbabcock1@netzero.net
21-24—Asociacion Altaverapacense de Orquideologia “XXXVI Exposición Internacional de Orquideas, Cobán,” Convent of Santo Domingo, Anexed to Catedral Church, 1th Avenue 1-31, Zona 1, Central Park, Coban, Alta Verapaz, Guatemala; Contact: Hemuth Ibañez, (502)5204-1846; yiel_1957@hotmail.com

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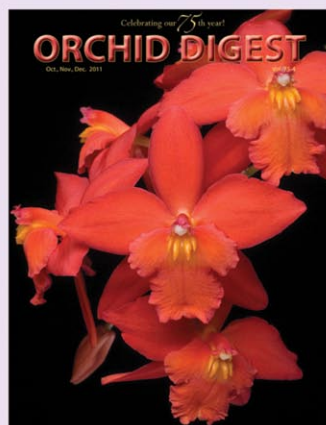
Here's a little trick I learned a few years ago:

cut a piece of the yellow sticky cards sold in agricultural supply houses for trapping small flying insects and insert it into the pot. Wait a couple of days. If you have bush snails they will be attracted to the card and get stuck. You will not get them all but you will get an amazing number of them.

— Sara Johnson

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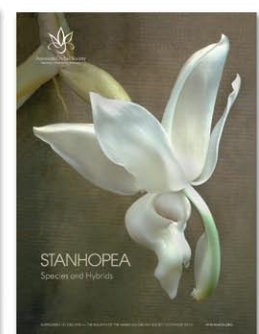
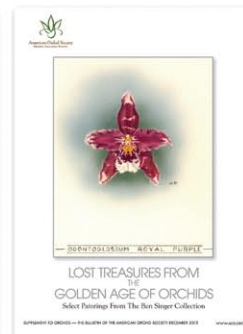
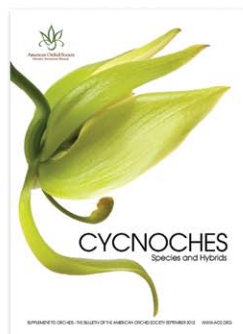
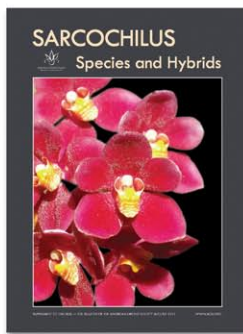
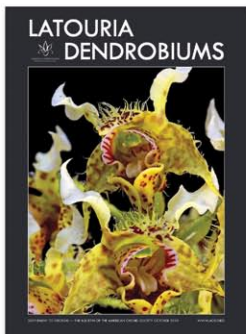
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They Did Not Read the Book

Text and photograph by Leon Glicenstein, PhD

AS A GROWER of Southeast Asian habénarias I had done my homework before I started. Every source indicates that one has to provide a relatively dry period during the plants' dormancy. And although I do spray some water over the pots to slightly moisten the surface of the medium when they are dormant, in general they are kept fairly dry — just as the books and articles suggest.

So imagine my surprise when I found out that this is not necessarily the case. It began with a cross that I had made. One of the things I want to breed for is a *Habenaria rhodocheila* with a bright red (not orange or scarlet) lip. I had made a cross between a bright-orange-lipped *Habenaria rhodocheila* flower and a carmen-red-lipped flower. I really wanted the next generation, which I was hoping would segregate into some nice reds.

I had five seedlings growing in a community pot of sphagnum moss. Four of them began to go dormant while the fifth began to put up a flower spike. What to do? If I dried the pot out, the four would have a good dormancy, but the flower spike would perish; if I kept the pot wet the flowers would develop but I would rot the tuberoïds of the other four. Since I was really interested in the next generation I opted to sacrifice the four and make seed on the plant that would bloom. Oh, well.

The four did go dormant; I kept the pot very wet and did get seed for the next generation and low and behold, the four that went dormant sprouted in about two months. They had not rotted. Something was wrong!

The attached picture shows the plants in flower after five years of being grown in sphagnum moss (I do change it when needed) *and* being watered twice a week so the pots are *never* dry. The plants do go dormant, they grow, they flower, they go dormant, then repeat the cycle. They flower two to three times a year.

I will have to see if this works in my terrestrial mix as well; I have not tried it. But I do know that I keep a lot of my habénaria hybrid sphagnum-moss-based community pots moist at all times and the plants still come up after going dormant. Admittedly I do lose some, but most keep growing.



Compot of *Habenaria rhodocheila* plants that did not require dry winter dormancy.

So, will we eventually be able to select Southeastern Asian habénarias that do not need a dry dormancy and that flower multiple times during the year? I think we can and this will make them much easier to grow. The dreaded dry dormancy period will, for all intents and purposes, have been eliminated.

The plants have not read the books; they do not “know” they are not supposed to grow like this. Do not tell them. — Leon Glicenstein (email: glicenstein33@msn.com).

Do not try this if you do not have enough plants that you are willing to lose.

It works for me, but I can't guarantee that it will work for you.

— 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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