# Massachusetts

# Orchid Society

P.O. Box 1041 Medford, MA 0<u>2155</u>



#### **MAR 2020**

INSIDE THIS ISSUE

Minute Minutes

**Amherst Show Pics!** 

**Show Table Results** 

Upcoming Sister Society Show Information

**Upcoming Events** 

March Meeting -Seedling Culture

Article: Breeding Improved Species -Selfings and Sib Crosses, by Sue Bottom

**AOS** Corner

Officers, Directors & Chairs



- Pick this year's show theme! Click <a href="mailto:show@massorchid.org">show@massorchid.org</a> to enter suggestions and sign up for the 2020 show committee. High priority volunteer roles include social media chair, hospitality chair and volunteer coordinators. We are also looking for people willing to make community outreach phone calls; to retirement homes and community centers to introduce our show and its features.
- Are you interested in a particular speaker topic at a monthly meeting? Let us know what topics you'd like to hear by going to our new forum at: https://www.massorchid.org/Forum/8495542

We are always interested in new topics for demos and speakers at the regular monthly meetings. Feel free to stop a Board member and tell them what you'd like to hear about.

# CONGRATS TO THE FOLLOWING FOR AMHERST AWARDS!

Brigitte Fortin - 3rd Place Display

Mike Badia - 3 rosettes: **Best Orchid Grown Under Lights** (den.
pendulum), **Best Of Class (**paph.
leanum) and **Best In Show** (paph.
phrag warszewiczianum var humboltii)

Anne Pfaff - 1 rosette: **Best Of Class - Lycaste and Best In Show** (Maxillaria tenuifolia)



MAR 2020

## MOS NEWSLETTER









#### MOS show table results February 2020

Judges: Mike Badia, Ron Maloney, Michel Perbost, Nat Schecker

Scribe: Brigitte Fortin

exhibitor's name	plant's name	Lights/Windowsill/ Greenhouse	Warm/Cool /Inter
Nat Schecker	Paph. malipoense	L	I
Anne Pfaff	Clo. Grace Dunn 'Chadd's Ford'		
Warren & Susie Wheelwright	Den. kingianum	G	С
Wheelwrights	Coelogyne cristata	G	С
Brigitte Fortin	Epicatt. Rene Marques 'Flame Thrower' HCC/AOS	L	I
Ben and Amanda Larson	Sudamerlycaste lata outcross	L	I
Mike Badia	Ascocentrum ampullaceum	L	I
Mike Badia	Den. pendulum	L	I
Mike Badia	Blc. Morning Song 'Crown Fox' AM/AOS	L	I
Ralph & Chiecko Collins	Cerastylis philippenensis	G	
Collins	Den. Ise 'Yayoi'	G	
Collins	Den. Spring Bird 'Kurashiki'	G	
Collins	Den. Hamana Lake	G	
George Baltoumas	Den. Sea Mary 'Snow King'		

The January People's Choice Award goes to Anne Pfaff for Clo. Grace Dunn 'Chadd's Ford'



total ribbons: 14 total plants: 32

#### MOS show table summary 2019-2020

	May	June	July	August	October	Nov.	Dec.
Brigitte Fortin	1		3				
Mike Badia	1		1	1		2	
Linda Abrams		3	1		1	1	
Ron Maloney	2	1	2	2		3	
Ralph and Cheiko Collins	8	2	7				
Jeff Feldman			1				
Meg Bright-Ryan		1				1	
George Baltoumas							
Cindy Sykes						1	
Dina Deresh				1			
Warren & Susie Wheelwright							
Anne Pfaff				1			
Brandt Moran		2					
Betsy Opitz	1					1	
Bennet Riley ***						1	
Nat Schecker ***						1	
Anna & Rudy Seitz						1	
Hanna Vincent		1					
Bill Kimball	3						
Sasha Crotty			1	1		1	
Adrienne Giovino			1				
Michel Perbost			2				
Zash Hudson ***			1	1	2	1	
Virginia Ehas-Morse				1			
Ben & Amanda Larson							
Karyn Stewart	1						
Total #ribbons	17	10	20	8	3	14	

15

38

12

31

17



**Total plants** 

<sup>\*\*\*</sup> beginner

<sup>\*\*</sup> photos



Sudamerlycaste lata outcross, Ben & Amanda Larson



Coelogyne cristata, Wheelwrights





Den. Spring Bird 'Kurashiki', Collins

Den. Ise 'Yayoi', Collins



Paph. Malipoense, Nat Schecker

### MOS NEWSLETTER

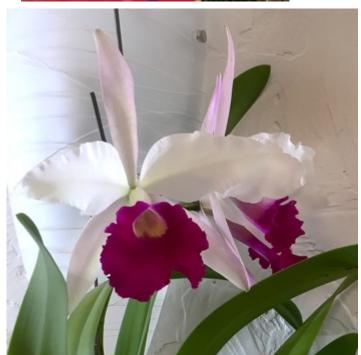


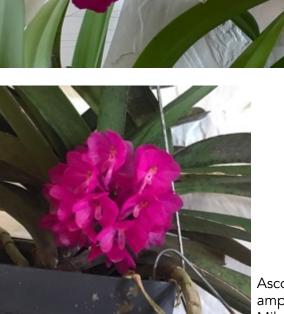
Den. Hamana Lake, Collins

Den. Pendulum, Mike Badia



Blc. Morning Song 'Crown Fox' AM/AOS, Mike Badia





Ascocentrum ampullaceum, Mike Badia



Den. Kingianum, Wheelwrights

### New Hampshire Orchid Society Annual Orchid Show and Sale

Speaker program and free guided tours daily Exhibits, plants, supplies, jewelry, artwork & more

March 27: 1 p.m. to 7 p.m. March 28: 9 a.m. to 5 p.m. March 29: 9 a.m. to 4 p.m.

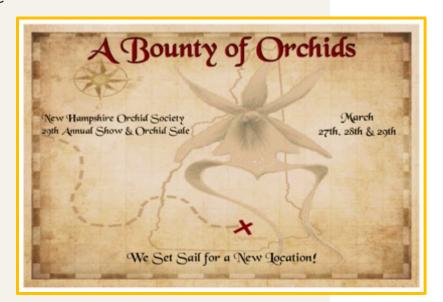
Awards ceremony Friday, March 27, 5-7 p.m.

Cash bar, general admission price applies

Free photographer access 8-9 a.m. Sat and Sun

The Falls Event Center at the La Quinta Inn & Suites by Wyndham Manchester 21 Front St, Manchester, NH(603) 413-7550

Click here for more information.



# Nutmeg State Orchid Society Annual Orchid Show & Sale

Sat March 21 2020 12:00 PM to 5:00 PM to Sun March 22 2020 10:00 AM to 4:00 PM

Click <u>here</u> for more Information.



#### UPCOMING EVENTS

**Monthly AOS Judging** 

07 Mar 2020 10:30 AM Tower Hill Botanic Garden 11 French Drive, Boylston, MA

<u>Monthly Meeting – De-Flasking and Seedling</u> <u>Culture, with Brandt Moran, Jeff Feldman and</u> <u>Linda Abrams</u>

10 Mar 2020 7:30 PM Sons of Italy, 117 Swanton St Winchester, MA

Nutmeg State Orchid Society Show and Sale

21-22 Mar 2020 10 AM-4 PM West Hartford Meeting & Conference Ctr West Hartford, CT

<u>New Hampshire Orchid Society Orchid Show</u> <u>and Sale</u>

27-29 Mar 2020 10 AM-4 PM West Hartford Meeting & Conference Ctr West Hartford, CT

Monthly AOS Judging

04 April 2020 10:30 AM Tower Hill Botanic Garden 11 French Drive, Boylston, M

<u>Monthly Meeting - George Crozer,</u> New Trends in Paphs and Phrags

14 April 2020 7:30 PM Sons of Italy, 117 Swanton St Winchester, MA



#### <u>March Meeting Program – Seedling Culture</u> Proper seedling care from the moment they come out of the flask.

This program was developed by Mike Badia, Brandt Moran, Jeff Feldman and Linda Abrams. Presented by Brandt Moran with assists from Jeff and Linda. Although Mike will be away in March, his participation and commitment to this project has been substantial and is greatly appreciated by the above gang of 4.

<u>Background</u> On June 29<sup>th</sup>, 2019, Brandt, Mike and Jeff opened 2 flasks of Bl. Morning Glory (B. Nodosa 'Susan Fuchs' FCC/AOS x L. purpurata semi-alba 'Lenette 20'). The plan (along with the copious consumption of some of Italy's finest wines) was to pot the seedlings into community pots (compots) and then subject them to the culturing 'whims' of the 4 players.

Our presentation will include opening a flask, a discussion of general seedling culture and each of the 4 different cultures the compots were placed in and finally, the resulting differences after several months of growth. This will be a highly interactive talk (it's fun to interrupt Brandt), and will include pictures of the different setup components plus a display of the results.

Our goal is to illustrate that there are no complicated/expensive requirements to growing seedlings and that a very simple set up in your home can provide excellent conditions for seedling growth. You will learn that even a minimally experienced grower can get off to a fast start! And you will have fun!

We look forward to seeing you at SOI on March 10<sup>th</sup>. You could be the first on your block to control the market for some obscure hybrid cross!

Brandt Moran: Highly credentialed (and awarded) orchid grower for 24 years; well known in a close circle of associates for his myriad of homegrown hot peppers.

Mike Badia: Former windowsill grower extraordinaire; now grow-room expert with a notable palate for the above-mentioned Italian wines. Linda Abrams: Long time MOS member, former Show Table Chair for 26 years and an expert grower who overcomes haphazard conditions in her cold cellar grow-room.

Jeff Feldman: Fun seeking hoodlum with absolutely no growing credentials but allowed participation.....if he brings the wine!



Epicatt. Rene Marques 'Flame Thrower' HCC/AOS, Brigitte Fortin

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## St. Augustine Orchid Society

www.staugorchidsociety.org

# Breeding Improved Species – Selfings and Sib Crosses by Sue Bottom, <u>sbottom15@hotmail.com</u>

Pollinators are nature's hybridizers, they select which orchid to pollinate based on the flower color, shape or fragrance and then the environment selects for those individuals that germinate, grow and flower best. Within a given population of orchids, the pollinators are combining and recombining genetic materials for generations and concentrating whatever trait it was that attracted them to that orchid in the first place. Unusually colored flowers or plants that bloom at a different time may be ignored by pollinators so that atypical forms may not be propagated by Mother Nature. Mutations may disappear or lie hidden, masked in the genome (DNA) of that plant.

**Selfings.** When using an orchid for the first time in a breeding program, it is impossible to know what is concealed in the chromosomes of that plant without following a tried and true approach used by hybridizers; making a selfing of the plant. A selfing occurs when pollen from a plant is placed on the stigmatic surface of that same plant, so that plant is both the mother and father to its seedlings. The plant label will say 'Orchid Name x self'. Sometimes selfings are made just for the sake of convenience, because the hybridizer only has a single plant from which to produce additional plants, but there are other reasons for making selfings.

A quick and simplified review of some basic genetics is in order before going much further, courtesy of Rebecca Northen's Home Orchid Growing. To paraphrase: Every cell in all plants and animals contains chromosomes, and on each chromosome there are smaller structures called genes which control all the characteristics of the individual. For an orchid, there are genes that control its color, size, leaf thickness, flower texture, stem strength and the myriad of other factors that control how that orchid grows and flowers. Chromosomes exist in pairs and both members of the pair are identical in size and shape and contain genes that do the same thing in exactly the same position on each chromosome. However, genes often contain variations that occur over time, mistakes or mutations that arise by accident. Variations of an individual gene are called alleles. Most mutations cause a gene to malfunction and not do what it normally would without the mutation. Fortunately, orchids have two copies of each gene. As long as one copy is normal there may be no indication that a defective gene is present. Within any wild collected orchid there are many hidden mutations. In most cases, alleles are either dominant or recessive. If dominant they alone control the characteristics of the plant, e.g. flower color. If recessive they can only manifest themselves in the absence of the dominant allele. Plants that have the exact same version of a gene on both chromosomes (a double dose) are said to be pure or homozygous for that trait, and if dissimilar, they are heterozygous having dominant and recessive alleles. Hidden or recessive alleles can produce flowers with very different characteristics when expressed, i.e., found on both pairs of chromosomes.

Selfing to Confirm Desired Traits are Present in Double Dose. There are often various forms within a species and these types can each pass their characteristics on to their progeny. Northern uses the example of Cattleya trianae, in which there may be one



population that has good form and another with poor form. If they are well separated geographically, the two populations may be respectively homozygous, but if there has been interbreeding between populations, they may be heterozygous. The only way to tell whether an individual plant will breed true for good form (in this example) is to self the plant and if the progeny are all similar, the plant is homozygous for form. Selfing is a way of proving that the plant is a suitable parent for whatever desirable trait the hybridizer is pursuing.

Selfing to Allow Recessive Traits to Be Expressed. Species lovers would like nothing better than to improve on Mother Nature by giving rare genes and color forms a chance to be seen and enjoyed, and selfing is a means to that end. The hybridizer starts with a plant from a given population. The hybridizer selfs a plant in an effort to express whatever recessive traits hidden within the genome, even if only a small percentage of the offspring show the hidden characteristics.

Developing coerulea color forms in the cattleya alliance has been the Holy Grail for many cattleya hybridizers. Often referred to as blue, the coerulea cattleya and laelia species are unusual although some have been jungle collected so the recessive trait is expressed in the wild. Other rare color forms have not been found in nature, like the coerulea form of *C. aclandiae*. *C. aclandiae* is a small bifoliate from Brazil with sepals and petals that are normally greenish or yellowish with varying amounts of dark spotting and a magenta colored isthmus lip with white edged side lobes. The 'Gulfglade' cultivar having the common color form was selfed by Ken Griffith of Lenette's, presumably to amplify its unusually large flower size. Most of the progeny had the typical color form but there were a very few coerulea forms produced, including the awarded cultivar 'Blue Sky', HCC/AOS.



1a. C. aclandiae 'Gulfglade'



1b. *C. aclandiae* 'Blue Sky', HCC/AOS



1c. C. aclandiae 'Blue'



Selfing to Produce More Plants with Rare Traits. If a hybridizer has one of the rarer color forms in which recessive genes are expressed, he or she might self the species plant in order to produce a higher percentage of progeny exhibiting the atypical trait, somewhat akin to blue eyed parents producing blue eyed kids. Continuing the *C. aclandiae* example, Fred Clarke of Sunset Valley Orchids selfed the 'Blue Sky' cultivar and all the progeny from the selfing exhibited the coerulea color form although the intensity of color in the lip varied. Unusual color forms are often selfed in the hybridizers efforts to produce and intensify the atypical flower colors, in that selfings are almost always the fastest way to stabilize and concentrate a rare gene. Potentially deleterious genes may likewise be concentrated, so it is not uncommon for fewer viable seeds to be produced in a selfing.

Selfing to Determine Species Status. Species may be selfed as a means of demonstrating that the plant is, in fact, really a species if the offspring produced are relatively uniform. Depending on the degree of variation exhibited, a hybridizer can conclude that the plant is not a pure species but rather a natural hybrid or a species where introgression has occurred if the progeny of the selfing shows a high degree of variation. Dr. Rubén P. Sauleda, who is both an orchid taxonomist and hybridizer, has used selfings to show that certain *Encyclias* that were once thought to be species are really natural hybrids between species. In a paper recently published (Sauleda, 2016), he discusses two *Encyclia* populations once thought to be two color forms of a single species that are really separate species. As Dr. Sauleda so whimsically puts it:

Both E. cordigera and E. macrochila range from Mexico through Central America and much of northern South America. There appear to be within the populations of both species ecotypes or forms that exhibit gradual phenotypic and/or genetic differences over their geographical area possibly as a result of environmental heterogeneity. The populations of both species exhibit a behavior typical of a clinal distribution (King, Stansfield and Mulligan, 2012), which results from the change of allele frequencies within the gene pool of each species. However, the differences are not sufficient to classify individuals from the extreme ends of each population as distinct species since intermediates exist within each species throughout the range. In addition, there is no evidence of gene flow between the two species.







2a. E. cordigera

2b. E. macrochila

Encyclia cordigera and Encyclia macrochila are found from Mexico, through Central America and much of Northern South America.

All photos courtesy of Ruben Sauleda

Translation for the non-taxonomist: There are two separate populations of Encyclias that coexist within a fairly large geographical area, *Encyclia cordigera* that always has a purple lip and *Encyclia macrochila* that always has a white lip with a purple spot on the labellum (not to be confused with the Brazilian species *Encyclia randii* which also has similar coloration). Within the broad geographical range over which the two populations occur, there is some variation in the shape and color of each population, but these slight differences are normal given the expression of different genes within the population gene pool and there is no evidence of interbreeding between the two populations.

Plants from each population were selfed. If separate species, the expectation was that the majority of the progeny would be fairly homogenous in shape and color while if the offspring were intermediate between the two populations, it would suggest that the parents were simply different color forms of the same species. Rubén summarizes his results:

Selfings of both E. cordigera and E. macrochila always result in progeny consistently similar to the parent. The progeny of E. macrochila always has a white labellum with a purple spot or purple veins on the disc. The labellum of selfings of E. cordigera always range from light purple to reddish-purple depending on the color form that was selfed. In addition, results of hybrids made with E. macrochila are distinctly different to hybrids made with E. cordigera demonstrating the genetic difference between E. cordigera and E. macrochila.









3a-c. Selfings of E. macrochila

Some minor variations in the color and form of progeny from selfings of plants within the population of *Encyclia macrochila*, all showed a white lip with purple spot or veining.

All photos courtesy of Ruben Sauleda

**Sibling Crosses and Line Breeding.** With a sibling cross, two plants that originated from the same seed pod are interbred. The plant label for this hybrid between brother and sister will say 'Orchid Name x sib'. Typically a group of seedlings are bloomed out and then the hybridizer selects plants that have superior form, color, vigor or some other valued trait and uses them in his or her breeding program to concentrate the desired characteristics. The expectation is that there will be a higher proportion of desirable traits expressed in the offspring from sib crossing. Multiple generations of successive sib crossings results in what is referred to as line breeding. Often line bred species are superior to their relatives found in the wild.



4. The standard color form of *Phal. violacea* is beautiful as well as fragrant, with fuchsia coloration and yellowish greenish tips.

Photo courtesy of Courtney Hackney



Sib Crosses to Improve on Mother Nature. A case history from the annals of Phalaenopsis violacea breeding by H.P. Norton of Orchidview in South Carolina shows the value of making sib crosses. The standard color form of Phal. violacea is a fragrant and beautiful fuschia with yellowish green tips on the petals and sepals. In the early 1980's, the Nortons were given 25 violaceas by Michael Ooi of Malaysia. They bloomed the seedlings and selected the two best cultivars from the original gift and started line breeding to produce better and better violacea flowers. Within a few generations cultivars with intense magenta color as well as alba and coerulea forms were produced. The best progeny of each color form were selected from each cross and used as the parents for the next group of seedlings, concentrating the desirable traits to produce a high percentage of more intensely colored progeny with better and better form.

After eight generations of sib crossing, a small proportion of the seedlings from the series of sib crosses that aimed to further intensify the magenta color bloomed a royal purple color, and a new variety of *Phal. violacea* termed 'Indigo' was born. Somehow in the process of recombining genes from the two magenta cultivars to intensify color, a new combination arose from genes long hidden that might never have never arisen in nature. Perhaps, a double dose of the recessive blue color genes or some new mutation that changed the pH of the cells in flowers was inherited and eventually concentrated in some of the seedlings which together with the intense color saturation from the line breeding expressed itself in the fabulous indigo coloration.



5a. Phal. violacea
'Hilltop's Gabby' AM/AOS
H.P. line bred Phal. violacea by selecting the best of
this color form from each generation and making sib
crosses. This is the result after eight generations, a
beautiful deep magenta color form.



5b. Phal. violacea var. indigo
'Hilltop's Sapphire' AM/AOS
A very small percentage of the line bred magenta
seedlings bloomed a royal purple color. This indigo
form was then selfed and the offspring sibbed to
improve form and color.

Photos courtesy of Craig Plahn



Inbreeding Depression. You may wonder about inbreeding, is there is a down side to generation after generation of selfings and sib crosses? The term inbreeding depression refers to the reduction in plant vigor of progeny derived from inbreeding relative to those derived from out crossing. The fear with inbreeding is that some detrimental recessive trait that can compromise the health and fitness of the plant will become expressed. In nature, many orchids have evolved strategies to avoid self pollination although it may occur. If this results in offspring that are less vigorous, the likelihood is that these plants will not survive. In a breeding program, the hybridizer selectively chooses important characteristics to impart to the next generation. Usually the hybridizer selects only vigorous plants with the desired traits, bypassing the weak sisters on the bench.

In nature, it is the pollinators that decide who gets to carry on the family name, but beauty is in the eye of the beholder. The thoughtful hybridizer can improve on Mother Nature by employing various inbreeding techniques. Selfings are an effective way to get rare recessive genes to express themselves in the offspring and sib crosses of select cultivars can result in progeny that are an improvement over their parents. Selective inbreeding with a careful eye to maintaining plant vigor is an efficient means of producing a higher percentage of unusual color forms and quality offspring. If you understand the hybridizer's goal, you may even seek out those selfings and sib crosses in the hopes of finding that truly remarkable species plant.

**Acknowledgements:** Many thanks to the good doctors Ruben Sauleda and Courtney Hackney as well as Fred Clarke for their help and guidance in writing this article and so freely sharing their knowledge with the orchid world.

Citations and Additional Reading:

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Whitlow, Carson. 1970. The Blue Cattleya and Laelia Species – Revisited. *American Orchid Society Bulletin*, 39:5, 422-424.

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Did you know we're on Instagram and Facebook? On FB, we are "Massachusetts Orchid Society – MOS". On Instagram, search #Massachusettsorchid, or find our profile at @massachusettsorchid. Links to our FB and Instagram accounts can also be found at the bottom of the MOS website page. Check out the photos and share pictures of your orchids in bloom!

## ·THE AOS CORNER·



# Seasonal Orchid Care: MARCH/APRIL

## Click here for Checklist

Now you can access the MOS website from your smartphone with this new app!

The new Wild Apricot for Members App allows members to log in and view content from www.massorchid.org.

#### What can your members do with the member app?

- View the member directory
- View a member's profile
- Email fellow members
- View the event calendar and event details
- Register for an event
- Specify the number of guests if the registration type was set up to collect the total number of guests only
- View your existing event registrations
- Pay an outstanding event registration fee
- View your member profile
- Download the app on Apple or Google Play.

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