

The Bulb Garden



~Gardening with Bulbs~

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Growing Iris from Seed

Karl Dan

I grew up gardening; when I was still a little sprout, my parents had me sow bean seeds, gourds and the like, large, easily handled and fast growers. An enthusiastic Iris fan, I can't get enough of the blue colors, and I hybridize Hemerocallis, Iris, and Kniphofia among others.

Thankfully all the native American species have blue members. I grow the Native Americans, not the European Bearded Iris, which is what gardeners think of when iris is mentioned. I garden in a Zone 8 mosquito-infested swamp, by the Elizabeth River in southeast Virginia.

Most gardeners are unaware of just how easy it is to grow iris from seed. There are several benefits, such as having a strain of plants fully adapted to your own local conditions, and because some species like the Pacific Coast Iris are very resistant to transplanting, the only way you can establish them is by seed. Another important reason is the growing of species and sharing of the seed with seed exchanges and plant societies. Many species, especially those in the Middle and Near East, are near extinction already. Only by growing and sharing the seeds as much as possible can we be assured of needed genetic diversity. Hybridizers and commercial growers are focused on varieties that sell well which limits to some degree what is available, whereas dedicated amateurs are much more eclectic in their choice of species and hybrids to grow.

There are two tried and true methods of starting iris seeds, the indoor and the outdoor methods. Both are more or less equally easy, although everything

varies in nature. I'll start with the facts of the indoor method, and later after the section on the outdoor method, I'll close by revealing some observations and tips which may prove new and perhaps helpful to some gardeners.

Fresh seed is collected in the late summer and sent in to the seed exchanges, societies, and commercial seed houses. Start with new three-inch plastic pots, as these can be had for pennies, I do not wash or sterilize old pots, because it's just not worth it with expensive or rare seeds. I have used both a purchased soilless seed starter and coco coir; the latter is excellent, but it has no nutrients. Seeds are planted in the dampened mix in a "clock face" pattern of five or six seeds per pot thus: 12, 2, 5, 7, 9, and one in the middle. This gives plenty of room for the seedlings to grow and transplant without tangled roots. You see the pattern in the photo of my seed pots. Depth of seed varies



Iris seeds planted in "clock face" pattern

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Growing Iris from Seed (cont'd)

but ¼- to ½-inch is fine, because some seed like the Louisiana iris naturally get covered with mud and silt over an inch or more in the wild and germinate just fine.

You can label pots easily with a marker. Put the number in your journal with the other important information: where the seed came from, how much it cost, how many seeds were planted, when seeds germinated, grew, bloomed, etc. This is very important when it comes to growing different species from various habitats.

All iris are native to the northern hemisphere and our garden iris go through moderate to severe winters just fine. This means you must simulate autumn and winter for the seeds. There's a reason nature protects the seeds; by containing concentrations of chemicals and enzymes, the seed is prevented from germinating until after the chemicals are broken down by cold, rainy or snowy winters, which would be fatal to a newly sprouted seedlings. For the autumn part I leave the pots under lights for a month. Two different species germinated in the time they remained under lights. After a month all other pots were drenched and drained then placed in a refrigerator crisper for the winter part. Either place a plastic bag around each pot, or do as I do: stack two pots on top of each other, 18 pots to a drawer. The entire drawer is then enclosed in a clear plastic trash bag. Unless, like the commercial growers you have dedicated refrigeration, you must protect the seeds from the gasses and chemicals of ripening/rotting fruits and vegetables. These are dangerous, even fatal to the embryos. The average refrigerator temperature is what you want, 35-40° F (58-67° C).

Freezing is fatal. Check your pots periodically. I have found they rarely need any additional watering. The cooling period should be 45 to 90 days, so I go about six weeks. The pots are then taken out of the fridge, put under the lights and watered when needed. Germination is rapid after that. Some species are especially vigorous and will need potting on until the weather settles. I start a liquid feeding program with one feeding with African violet food, the next with Orchid food, and then with liquid houseplant food. You get the picture. The mixes all have different ingredients and the plants will thrive. I have had more than one seedling grow and increase before late spring when I transplant them into the border. When you plant your tomatoes outside it is safe to transplant your seedlings to their permanent positions where they will grow on and bloom. I will pick up here after we discuss the outdoor method.

I am a gardener but have another life. My take on gardening is a lot of set it and forget it. I will not baby or coddle a plant for a week's bloom, while in the other 51 weeks it just takes up garden space. By selecting your most vigorous and healthy homegrown seedlings you can over time have a strain suitable to your native conditions, capable of growing without much additional care. I grow many such iris species that I have started from seed, as easily as planting zinnia or marigold seed. It's just that the timing is different. The professional breeders and growers plant in flats, pots, cold frames and of course properly prepared beds. I have no time to bury pots in ashes, flats in sand, and so on as some literature suggests. I do, however make special raised seedling beds.

For my Laevigatae series and hybrid crosses I chose a low area of the swamp where it takes a couple of days to drain. I blocked out the bed with pine landscape timber and put in several hundred pounds of granite from the abandoned railroad tracks to nowhere that crisscross the area which is a built up river basin. Twigs and branches six inches or so filled in the bed. Hundreds of gallons of my two-year-old compost were next. The compost was piled up heavily and you should let a heavy rain or two compact this before you proceed.

The actual seed starting mix is composed of a very mineral topsoil (not the soggy clods that come in 40-pound bags!), peat moss and enriched garden soil, to a depth of about six to eight inches. Peat moss...pro...con...I erased my carbon footprint long ago, and will erase many others as well by planting trees.

The bed should be ready and mellowed by October, which seems to be the ideal time over all to plant your iris seed. Plan your rows; don't plant a desert or mountain species next to a water-loving one. I make a row with the trowel and carefully space the seeds far enough apart. Iris seeds are for the most part large and there is no excuse to crowd the seeds in the rows. Crowding causes disease among the seedlings and makes it almost impossible to transplant them. I have enough difficulty doing that already. I cover the seeds with ¼- to ½-inch of soil. It's not exact and doesn't need to be. That row is marked Row 1 (R1) and I plant another row beside it, about eight inches apart.

Let's say I have four small packets of seed of a Siberian Iris, so R2 is planted and staked thusly: R2-1, R2-2, etc. All information is entered into the notebook of this particular bed.

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The Magical Fairy Lanterns

Nhu Nguyen

Nhu is currently President of the Pacific Bulb Society and enamored of our many Calochortus species. He retains his interest in them while he has taken a position in Hawaii where there is whole new flora to explore. (All photos by Nhu Nguyen)

Calochortus, the “beautiful grass” as translated from Greek roots, is among the most beautiful geophytes of western North America. The four major groups are the mariposas, the cat’s ears, the star tulips, and my favorite, the fairy lanterns, or globe lilies as they are sometimes called. They are distinctive because the petals and sepals form a hollow structure that is elegantly held pendent, giving the appearance of a lantern.

The genus as a whole is distributed throughout western North America from the Rocky Mountains westward to the Pacific, extending into the Pacific Northwest, then south into central Mexico. The fairy lanterns, however, are restricted mostly locally to the hills and forests of northern California.

There are only five species in this group, but each of them is distinct and beautiful in many ways. These flowers captivated early botanists so much that three out of the five species bear in their names words that would describe something beautiful and captivating: *amabilis* – “lovely”; *pulchellus* – “beautiful”; and *amoenus* – “delightful”.

Widespread from coastal mountain ranges of southern California to somewhat near the Oregon border, as well as in the Sierra Nevada foothills, is *Calochortus albus*. Due to its wide range this species can be quite varied, from tiny immaculate white, to those with the very suggestion of pink, to

robust plants that can hold a dozen flowers with green-brown stripes, to the captivating southern populations

that bear the crimson color of blood. The rich delightful color of roses is captured by *Calochortus amoenus*. It occurs in the southern ranges of the Sierra Nevada foothills.

This species can be quite prolific in bloom and can produce a great display when several bulbs are planted together in one pot.

The Golden Fairy Lantern, *Calochortus*

amabilis, is not uncommon in coastal mountain ranges north of San Francisco Bay. Some populations can be an immaculate and rich egg-yolk yellow, whereas others can have darker markings on each petal. Very similar looking to the Yellow Fairy Lantern is the Mount Diablo Fairy Lantern, *C. pulchellus*. Mount Diablo is a small mountain (1173 m/3849 ft high) and starting from its base all the way to near the summit are yellow-green lanterns that are more robust in stature than their Yellow Fairy Lantern



Above: *Calochortus albus*; Top right: *C. amoenus*; Lower right: *C. pulchellus*; Below: *C. amabilis*.



(continued on page 6)

Book Review: *The Amaryllidaceae of Southern Africa* by Nicholas W. Plummer

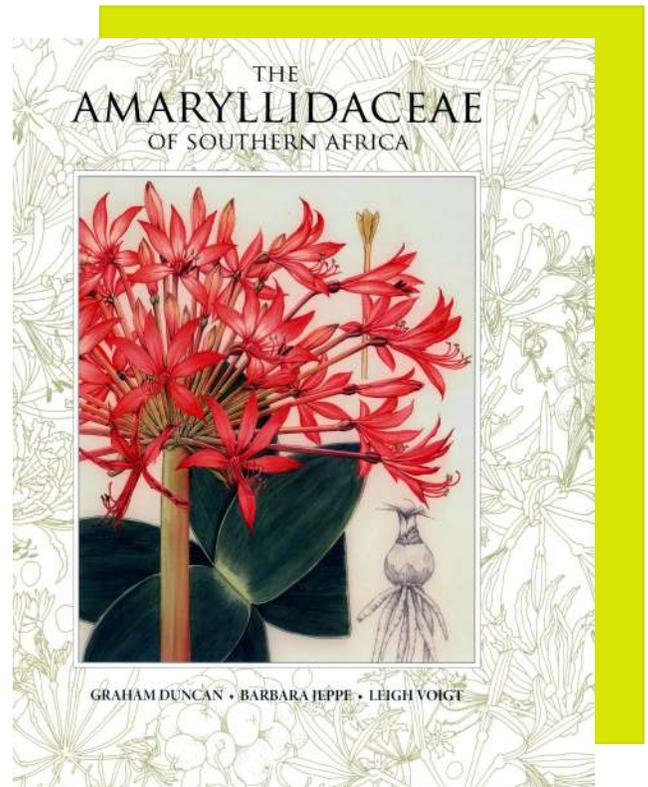
Nicholas Plummer grows bulbs, orchids, and diverse other plants in his garden and greenhouse in North Carolina. He blogs at <https://sweetgumandpines.wordpress.com/>

When I first learned of the impending publication of *The Amaryllidaceae of Southern Africa*, I wondered whether it would be worth purchasing. After all, a huge amount of information on South African amaryllids is available without cost at web sites like the PBS wiki or PlantZAfrica.com, a site maintained by the South African National Biodiversity Institute. However, early descriptions of the book were uniformly positive, and I have hesitated before to purchase an attractive horticulture book, only to discover that its limited print run has sold out and secondhand copies are far beyond my budget. Thus, when the book became available, I searched around for the best price and ordered a copy from a distributor in the United Kingdom. I was not disappointed.

Considered first as a physical artifact, the book is an impressive specimen. It is printed on heavy, glossy paper bound together with a satin ribbon bookmark. The endpapers and tough dust jacket are beautifully decorated with line drawings of amaryllid inflorescences and the dust jacket also has a lovely color illustration of *Brunsvigia radulosa*. Weighing nearly three kilograms (about 6.6 pounds), the book is almost too heavy to read comfortably unless it is placed on a table, and it would certainly not be a good field guide. However, its physical presence gives the impression that it will outlive the purchaser.

And the content? This is the finest botany/horticulture book I have read in a long time. As most advertisements and descriptions indicate, its main selling point is its botanical illustrations, which represent almost forty-five years of work by Barbara Jeppe and her daughter Leigh Voigt. The book covers every single species in all of the amaryllid genera found in Southern Africa, a region encompassing both the summer- and winter-rainfall regions of South Africa, Swaziland, Lesotho, Namibia, and Botswana. Each full-color botanical illustration shows the bulb, foliage, flowers, and fruit. A notation at the bottom of each illustration indicates its scale as a percentage of life-size, making it easy to determine the actual size of the flowers. In my browsing of the book, I found only a couple of species illustrated with older paintings or lacking an illustration, because no living material was available.

All species, including those few with no illustration, have a detailed description written by Graham Duncan, the curator of the indigenous bulb collection



at Kirstenbosch National Botanical Garden (Cape Town, South Africa). In addition to a physical description, Duncan's text includes a brief history of the species (including provenance of the illustrated plant), flowering period, distribution and habitat, conservation status, and cultivation notes. This latter section will probably be of great interest to PBS members. If, like me, you sometimes have trouble remembering which parts of South Africa receive winter rainfall and which months in the southern hemisphere correspond to our northern hemisphere growing season, you'll be pleased to see that the cultivation instructions usually state exactly when a species should be watered in terms of season, not months of the year.

The various genera and species are presented in alphabetical order, making it easy to find a species of interest. Each genus is introduced with a more general description that includes numerous color photographs, many of them showing plants in habitat. Introductory material at the front of the book includes sections on amaryllid biogeography and survival strategies. These sections were particularly interesting to me, because I find that much of the fun of growing exotic plants lies in learning about their

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Growing Iris from Seed (cont'd)

Also, I have the seed packet there in the garden and on it goes the same information: date planted, which row, how many seeds. I already know the vendor/source and cost of the seed. You leave working space before you plant the next rows, just a footpath of pine straw, but you must be able to work between the rows. I get about 10-12 rows per bed. The beds are mulched fluffily but heavily with pine straw. By mid-November the tools are put away and I do not garden again outdoors until mid-March. Three months to live your other life, although there are garden club meetings, conventions, the journals... The outdoor bed starts germinating March 12. The first up is probably *Iris tenax*. Proving the literature is correct, that it's the easiest Pacific Coast Iris, I have a straight green row of this species and can't wait to see them bloom. Most seeds were up by April 15, but some straggled throughout the summer. Look carefully at your spring rains. Your seedling bed MUST be kept watered. As soon as the weather breaks I start a regimen of Miracle-Gro and/or Miracid. The seedlings love it. This is usually done after a heavy rain. By fall some plants have six or eight full-size fans, some 24 inches tall. These beauties will no doubt bloom the next spring.

That's all there is. I've read of growers in the snow zones rolling up huge snowballs on their iris seed beds, with the seedlings popping up like mad in spring. Experiment, read the literature on the species or kinds of iris that you are interested in. Join the societies and seed exchanges. For mere pocket change you can purchase iris seed from all over the world, and you better believe the European and Asian members avidly seek our American species, so please send in your extra seeds, cleaned and labeled to these wonderful exchanges. Lastly, some general notes on iris seeds. Iris are among the longer lived flower seeds, like tomatoes, zinnias and cucurbits; a shelf life of five to six years is not unusual.

Dykes and Rodienko reported 15-18 year old seeds germinating! The seed exchanges offer year- or two-year old seeds at vast discount. The seeds are PERFECTLY viable; sometimes all inhibitors are even broken down over time. An example of this: One year I bought a pack of Pacific Coast Iris, and promptly lost them. About five years later I found them in a drawer. I planted them and

within a week they germinated. Mother Nature told those seeds here's soil and moisture: this is your last chance. Germinate now or die.

You can experiment with these seeds, I am happy with only a plant or two from a pack of seed. You must understand though that some seed are very sought after or are in short supply. Five seeds per pack should be considered very generous. Also, order early, because preference is given to large seed donors. That's the only way these exchanges can survive so please donate. Lastly: The literature is in agreement, and I am too: expect AT BEST 50 percent germination of iris seeds. There are exceptions due to climate and

species. Last fall from the exchanges and a fantastic contact or two on the Continent (European), I managed to get several Siberian species and crosses. These germinated at 80 percent, some at 90+.



Karl's outdoor seed beds, well-mulched with pine straw (needles)



One of the native Pacific Coast Iris, Iris douglasiana

The Magical Fairy Lanterns (cont'd)

cousins. It would not be a stretch to think that these two species diverged at some point in the distant past, where those that made it onto Mt. Diablo were isolated from the rest and thus evolved their own separate characteristics eventually becoming a distinct species. These characteristics of robustness and color are even more pronounced in cultivation. A mature bulb of the Mount Diablo Fairy Lantern can be quite robust and can hold quite a few flowers. One of my bulbs in its healthiest year produced a huge inflorescence, but sadly it also seemed irresistible to a (insert words of anguish here) rodent that chewed it off at the base before all the flowers opened.

Lastly, the most elusive of the species and one that I have only seen in a couple of very specific collections is *Calochortus raichei*. The flowers are large, and often have contrasting darker sepals that are a mix of browns and greens difficult to describe, on a backdrop of often golden petals. The species is named for botanist Roger Raiche. These plants grow mostly on his property, The Cedars, in northern California. This area has large outcrops of serpentine rocks that degrade into soils having high levels of metals that are toxic to most plants. It is perhaps this special soil requirement that makes this species extremely difficult to grow, which I will discuss momentarily. (The plants don't require serpentine soils for metabolic functions, but can stand all that heavy metal toxicity whereas other plants can't.)

As with many other bulbous plants, I always advocate growing them from seeds. Seed-grown plants are better adapted to garden conditions and outperform plants of wild provenance. Once upon a time, seeds of *Calochortus* species were available from Ron Ratko's catalog. However, fairy lanterns do not often make it into Ron's or other catalogs for one beautiful and annoying reason. The seed pods of fairy



Top: *Calochortus raichei*; Above: *Calochortus* sp. bulb extension.

lanterns, like the flowers, are elegantly held upside down (with the flowers facing down); therefore it can be quite frustrating to collect seeds because they drop right out of the pods as soon as they mature. Pods should be collected just as they ripen or they should be bagged so that the dried seeds fall into collection bags. This makes it a special challenge to collect seeds in the wild.

Cultivation of the fairy lanterns is probably the most difficult of the four groups in the genus. They rot when there is too much rain. They rot when it gets too hot. They rot when there is any remnant of water in the summer. They rot when you confess your love of their beauty. To successfully grow these plants, we need to examine their habitat more closely. These bulbs often

grow on well-drained slopes or in areas where both the leaves and soil can dry out quickly. The most important factor though is the air temperature during their winter growing season. Since these plants grow in northern California, they experience cool days and even cooler nights. Even if the day gets hot, night time temperatures will drop back down, often a 16° C/ 30° F differential. In other words, if you live outside these areas, you may be able to get away with growing certain forms of *Calochortus albus*. If you are able to provide a suitable climate, then grow these plants in well-drained mixes with no more than 25% inorganic matter and 75% organic matter. I have found that pumice as an inorganic medium works well.

Give the bulbs a deep pot because each year the bulb will grow larger and deeper, leaving a string of successive shells of the bulb from the previous year on top. Eventually though, the bulbs will reach the bottom of a pot and will need to be moved up. Repotting every three years or so is recommended to refresh the mix, as well as pulling the bulbs up

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The Magical Fairy Lanterns (cont'd)

from the bottom of the pot. Like many Californian bulbs, it takes about a month after watering in the fall before new leaves will break the media surface. Plants will grow throughout winter and bloom in spring. *Calochortus* as a genus likes to be fertilized so give them slow-released fertilizers or water with a dilute (1/4 strength), well-balanced fertilizer with every watering. In the summer, make sure that the media is bone dry or nearly so, otherwise you risk rotting off the bulbs.

Since my climate in the San Francisco Bay Area is cool in summer, the mix tends to dry out slowly so either I stop watering at least a month before the leaves should senesce or remove the bulbs from the medium completely and allow them to dry out. If all goes well, you will be rewarded with lanterns of captivating beauty. If you cannot provide the conditions described above for cultivation, it is just as rewarding to visit these plants in the wild where they happily grow.



GRANTS AWARDED 2017

Three applicants have been awarded Mary Sue Ittner Grants for Bulb Research for 2017. They are Samantha Hartogs for "Floral Traits and Pollination Syndrome in *Thalictrum*", Jesus Martinez-Gomez for "Umbel-viable Diversity in *Allium*", and Carrie Tribble for "Phylogeography and Trait Evolution of the Ethnobotanically Important *Bomarea edulis*". As a condition of the grants, we will be publishing articles from these recipients on their research in future editions of the Bulb Garden.

The genus *Thalictrum* has one bulbous or tuberous species, *Thalictrum tuberosum*, which in my opinion is the best of the lot in terms of flowers and is not, at least so far, a towering giant. *Allium* is a genus of bulbs many of us grow, with many, many species suitable to nearly every garden; besides, many of them are edible! Lastly, we've published a previous article on *Bomarea* species, and look forward to more information on this not-very-common genus.

Our deadline for 2018 grant applicants in the field of bulb research is May 1, 2018, and a call for applications will be made early in 2018. Please contact a board member for further details. The Mary Sue Ittner Grant for Bulb Research is an annual competitive grant available to PBS members to support any aspect of basic research, field-work, conservation, education, and horticultural discoveries that are geared towards "bulbs". Any plant(s) that fits the definition of a bulb as defined by the PBS Wiki will qualify. Ed.

A Bit of Fun with Arum Species

Angelo Porcelli

Angelo Porcelli gardens in Apulia in the south of Italy, in USDA 9b. His main interests are geophytes from Mediterranean climates from all over the world. At the moment he also grows a respectable collection of Italian geophytes, many of which are little known as well as an ever expanding collection of Amaryllis belladonna hybrids, Crinum, Hippeastrum and South African irids and amaryllids. He is also having fun with Arums.

The genus *Arum* is widespread in the Mediterranean Basin with several species, some of them known to the general public as garden plants, adding interest in the winter months with their foliage when most of trees and shrubs are dormant. In fact there are several *Arum italicum* selections grown just for the leaves alone, but generally the other species are not common garden plants. Some of them have a nice appeal especially for Mediterranean gardens, but mainly they are grown by collectors of aroids and other oddities, as most of them have unpleasant scent, and flowers (spathes) are of somber colors for most species.

Arum lily is the common name for the well known South African aroid *Zantedeschia aethiopica*, which is rather similar to some true *Arum* species, and it's a favorite garden plant in mild areas. In common, they are tuberous herbs from temperate climates in the Araceae family, which includes mainly tropical genera, many of them cultivated as houseplants like *Philodendron*, *Anthurium*, *Spathiphyllum*, just to name a few.

Artificial hybridization in the genus *Arum* is virtually nonexistent, as Peter Boyce says in his book The Genus Arum, I think mainly because there is no commercial interest in this genus. Except for some naturally occurring hybrids, I think there are few documented man-made hybrids.

Several years ago I started to collect various species and one of the first I got was *Arum creticum*, which is probably one of the showiest of the genus, soon followed by *Arum palaestinum*. For some time they both flowered and thrived in my yard without special care, but both never set any seed, unlike native *Arum italicum*, because they are self-incompatible, as are most aroids, a strategy to prevent self-pollination.

Female flowers open the first day, secreting a droplet of sticky nectar and producing an odor, more or less agreeable. In the following days the female flowers shut down and the male ones release pollen. Many insects visit the spathe-tube, mainly some kinds of small fruit flies which I am not able to recognize. At least I haven't found any common or dung flies which are instead irresistibly attracted by the infamous Helicodicerus (Dead

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Book Review: The Amaryllidaceae of Southern Africa (cont'd)

biology, evolution, and habitat.

The end of the book includes a key to all genera and species, a glossary, and a more detailed cultivation guide split into sections for growers in the northern and southern hemispheres. The northern hemisphere guide includes helpful instructions for acclimatizing bulbs imported from South Africa, as well as lists of recommended species for cultivation outside. These lists are, I think, the least useful aspect of the book for growers in North America. The cultivation guide was clearly written with the United Kingdom in mind, and there is no obvious way to translate the “hardy” and “half-hardy” categories into USDA climate zones. In some cases, the guide seems too conservative, stating that *Nerine bowdenii* is “the only fully hardy summer-rainfall amaryllid” and that *Crinum bulbispermum* is merely “frost-hardy.” With these minor quibbles, though, I am still impressed by the cultivation guide and think that its information on propagation, pests and diseases, and potting media will be of great utility to North American growers.

For me, the biggest surprise in this book has been learning just how many absolutely gorgeous amaryllids there are that do not seem to be in cultivation in the United States. Perhaps the list of seed and bulb suppliers at the end of the book will offer me the opportunity to test those instructions for acclimatizing imports.



The Amaryllidaceae of Southern Africa, Graham Duncan, Barbara Jepp, and Leigh Voigt, 2017, Umdaus Press, Pretoria, South Africa.

The Amaryllidaceae of Southern Africa

by

Graham Duncan, Barbara Jepp, and
Leigh Voigt

Is now available

Directly from the following websites, among others:

<https://www.amazon.com/Amaryllidaceae-Southern-Africa-Graham-Duncan/dp/1919766502>

<https://www.nhbs.com/the-amaryllidaceae-of-southern-africa-book>

<http://shop.kew.org/the-amaryllidaceae-of-southern-africa>

Minutes of the April 30, 2017 Board Meeting

Present: President Nhu Nguyen, Vice President John Wickham, Secretary Kathryn Andersen, Treasurer Arnold Trachtenberg, Directors Dell Sherk and Jane McGary, Director and Co-editor Jennifer Hildebrand, Editor Robin Hansen.

President Nguyen called the meeting to order at 12:10 p.m. EST.

Reports

Treasurer's Report: Trachtenberg reported meeting with a nonprofit specialty accountant and finding out that PBS might have to file taxes back to December 2014, the date to which our non-exempt status was retroactively granted. State returns may have to be filed in California where we are incorporated and in New Jersey where we do business. Startup cost will be \$1200 to \$1500 and possibly \$500 to \$700/year to file returns. Accounts total \$43,000. Income has been \$10,000 to \$12,000/year with expenses \$8,000 to \$10,000. Our funds have been growing. We now spend \$2,000 a year for Hansen to edit and \$1,500 a year for research grants. Printing costs are quite stable. UBS has \$10,000 in cash and the rest in fixed income and equities. There is no cost for transfers from PayPal.

Membership: McGary has been out of town and did not have current data available.

BX/SX: Sherk reported that the BX is slow. He is putting together SX8. After 15 years he is getting tired and looking for someone to take over. Wickham offered to help him with the SX. Sherk indicated that the BX is more time consuming, but he is willing to continue with the SX. Karl Church may not be up to the whole BX. Nguyen suggested keeping all options open. Mauro Peixoto of Brasilplants has shipped out his first order of seeds. Sherk requested amaryllids and irids.

Electronic Media: The project deals with trying to make the wiki easier to use by putting in more parameters such as searching attributes. David Pilling, Martin Garak and Mike Mace have worked with Nguyen on this project.

Other Issues:

- We need another platform for pictures.
- Problems with Ibiblio
- Are we getting enough participation? It was suggested to return to topic of the week. McGary will look into this suggestion.

Hippeastrums of Bolivia: McGary is getting started on an English translation of Hibert Huaylla's revision of *Hippeastrums of Bolivia*. There are 51,000 words of text, maps and pictures. She has looked into the possibility of print on demand and found the quality poor.

New Amaryllidaceae of Southern Africa book:

Trachtenberg is looking into ordering this new book by

Treasurer's Report for 2017

2nd Quarter 4/1/17-6/30/17

Beginning Balance	\$	43,842.29
Dues U.S. Members	\$	840.00
Dues Overseas Members	\$	350.00
BX Receipts	\$	1,179.80
Investment results	\$	761.64
Amaryllidaceae of Southern Africa	\$	1,900.00
INCOME	\$	5,031.44
BX/SX Postage	\$	(683.67)
BX/SX Supplies	\$	(232.28)
Board Conference call	\$	(97.61)
Treasurer's Supplies	\$	(496.70)
Publications	\$	(1,430.00)
Publication postage	\$	(597.97)
PayPal expense	\$	(167.62)
Bulb Garden editing	\$	(500.00)
Amaryllidaceae of Southern Africa	\$	(2,345.00)
Accountant Expense	\$	(1,500.00)
EXPENSES	\$	(8,050.85)
Net Change in Account	\$	(3,019.41)
	\$	40,822.88

Graham Duncan. He can purchase it for less from Rachel Saunders than from the publisher.

Donations of seed to pay for memberships: Gene Mirro has offered to donate enough seed to the BX/SX to cover memberships for those who cannot afford them. Mary Sue Ittner has amassed over \$200 in credit from donations for BX/SX. This method of providing membership was thought to be better than gifting them.

Nominating Committee: Wickham will form a nominating committee. Hildebrand will help. A call will go out for people to serve on the committee.

The meeting was adjourned at 1:15. The next meeting was set for July 30, 2017 at 12:00 noon EDT.

Respectfully submitted,
Kathryn S. Andersen,
PBS Secretary

A Bit of Fun with Arum Species (cont'd)

horse arum lily).

So, just for play, having both *Arum creticum* and *A. palaestinum* flower the same days, I attempted a cross using *A. creticum* as the seed parent. Some seeds developed later, but they looked stunted and most of them aborted, so with little hope I sowed them the following autumn. The first year nothing appeared, but *Arum creticum* has hypogeal germination, similar to some species of *Lilium*,



Arum creticum

where the seeds germinate, developing a miniature tuber which stays dormant until the following year. Finally some tiny leaves started to grow and after keeping them in pots for two years, I later put them in the ground to grow them to flowering size. To be honest, in the following years I was not convinced I had a hybrid at all, as the leaves looked just like *Arum creticum*. Only when close to maturity did I start to observe purple bases on the leaf petioles, which is more a trait of *A. palaestinum*. They have been rather slow to mature and took six years for the first flowering. I was quite surprised when the first spathe unfolded, showing a dark magenta velvet limb (or spathe limb, which is the upper portion of the spathe), I was expecting a more washed pink color considering that while closed, the exterior of the spathes are apple green. The color is quite unusual and I am not aware of any species with this shade, so I consider it a good result.

Just a botanical note on both parents, for those not familiar with these species. *Arum creticum* is found wild on the island of Crete, as the name implies, and literature reports it to be fruit-scented or even Freesia-scented, which is a bit excessive in my opinion. Indeed while not fetid, it still carries a note

of ammonia typical of all Arum species, which is probably the molecule responsible for spreading the odor. Also, the scent is quite variable with temperature. The form (of *A. creticum*) I used is the so-called FCC (First Class Certificate form), which has a pale cream spathe and has been selected in the United Kingdom for its hardiness.

Arum palaestinum grows wild in the Middle East, and it's one of the biggest species, with large leaves and spathe of a very dark purple black, especially in full sun. It is said to have a smell similar to fermenting fruits, but some populations smell weakly of dung and carrion. I have been a bit unlucky to have this form and not the scented one, as probably the resulting hybrid could have been more pleasantly scented. I used to grow another form with a fermenting fruit odor, but it never performed well and after some years it disappeared.

Arum creticum and *A. palaestinum* belong to two quite different subsections (Cretica and Poeciloporphochiton), so hybrids between them are less likely to occur than those in the same subsection, while both have a chromosome number $2n=28$. As a unique feature *A. creticum* and the allied species *A. idaeum* don't have pistillodes (sterile vestigial pistils) or staminodes, that is those infertile flowers separating the fertile male and female parts of the spadix.

Scent of the hybrids is intermediate between both parents, with a note of fruit-like *Arum creticum* and a component of ammonia like *A. palaestinum*. The spadix is longer than *A. palaestinum*, the spathe limb is also longer and it folds back like *A. creticum*. So far they have proven sterile, at least in producing pollen, while they seem weakly fertile as seed parents, as they try to set some seeds

Arum palaestinum



Arum palaestinum

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A Bit of Fun with Arums Species (cont'd)

after pollination with *A. creticum* pollen. It is known that often plants take some years before settling down to set seeds or they do so only occasionally, like most hybrids thought to be sterile. This past spring I finally have two seeds after many pollination attempts, always with *A. creticum* pollen.

The plants show some interesting ornamental features, rather big leaves, a long spathe with a gaudy color very appealing in full sun, good clumping tendency, two flowers per growing point and good hardiness, as they withstood the hard 2017 winter in my area, with several days of frost and snow, down to 26° F (-3° C).



Left: Parents and son;

Bottom left: Spadices of parents and son;

Right: Hybrid of *Arum creticum* and *A. palaestinum*.



The six surviving plants are pretty similar, as most primary hybrids between two botanical species are, but they favor the pollen parent more, with just a couple showing a whitish tip of the spathe. I will grow them for some time, to increase the stock and observe their behavior, finally releasing them under the name *Arum* 'Dracula'.



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Calochortus albus. Photo by Nhu Nguyen.

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