

The Bulb Garden



~Gardening with Bulbs ~

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Getting from Seedlings to Flowering Bulbs in the Garden

Kathleen Sayce

Kathleen Sayce lives on the south coast of Washington in the Pacific Northwest, where she gardens on the east face of a sand dune above salt marshes on Willapa Bay, a mile from the Pacific Ocean. An ecologist, she consults on wetland mitigation, landscape management and native plant gardening. Formerly a science officer for the country's first environmental bank, she applied energy and physics principles to help clients run businesses more efficiently, anticipating several of the many carbon drawdown processes being promulgated today.

There are many ways for seed-grown bulbs to fail to establish and thrive in the open garden. Having invested considerable effort to get from seed to flowering bulb, it can be disheartening to find that the last step, from pot to open soil, was not, or worse, cannot be successful. Some failure modes you can control, some you cannot. Success comes more easily when the bulb's needs line up with your garden's conditions, including climate, local herbivores, regional diseases, insect pests, soil characteristics, and perhaps most importantly, how much patience you have as a gardener to decipher past failures and try again.

Climate: A species may not cope with your climate. It may be too sunny, too shady, too cold, too dry, too wet, too humid, or not cold or warm enough. Sometimes you can modify climatic problems sufficiently by manipulating soil or shade or seasonal covers to achieve flowering bulbs. Jane McGary overcame climatic issues in her garden by installing an open-sided greenhouse roof, and raised beds with carefully designed soil mixes to control soil charac-

teristics. Cold frames, alpine houses, portable covers, watering systems, and greenhouses are all ways to control climate issues.

Soils and soil mixes: On the way to flowering size bulbs in pots, soil mixes may age out and lose critical air space. Suddenly, or slowly. Wonder why Jane McGary and Uli Urban detailed their preferred soil mixes so carefully? It's a prime failure route. I use ground pumice and gravel in my pots to maintain soil porosity for three to five years. Those who read Ian Young's Bulb Log know that Ian details his potting mixes just as carefully. It is critical that a soil mix in a pot keeps good porosity for years when growing bulbs from seed to seedling to planting out.

Once out in the garden, soils may be too acidic, too alkaline, drain poorly, or drain and dry off too much. Some of these characters can be modified; some cannot. Many gardeners resort to specially prepared beds to overcome drainage issues, porosity, organic levels, or to provide the right pH.

By accident I found that a healthy garden soil amended with minerals, compost, and a mulch of fresh hardwood chips (made from leaves and branches, and called ramial) produced good soil characteristics for many species. I even bought a chipper so I could chip freshly cut hardwood branches and leaves. I amend all beds every few years with minerals, my own ramial, and other woody chips (both hardwood and conifer). I also add biochar when I have it available. With ramial, good mineral supplements, and compost, the nitrogen

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Scadoxus in Zimbabwe by Jonathan Hutchinson

Jonathan Hutchinson is a previous recipient of the Mary Sue Ittner Bulb Grant to study Scadoxus in Ethiopia and holds the National Collection of Scadoxus at Devon in England. He continues to research and grow this fascinating genera of bulbs. All photos are by the author.

In June of this year I was invited to give a talk to staff members at the Oslo Botanic Garden in Norway. This came about from an initial contact with some professors and students who are undertaking work on specific genera of African petaloid monocotyledons including *Scadoxus*.

In the previous summer it was suggested that I contact Professor Charlotte Sletten BJORÅ, who was undertaking DNA research on *Scadoxus* but was limited by the amount of material that was available for the studies.

In October of 2018 I was delighted that Professor BJORÅ and Professor Inger Nordal were able to visit the National Collection of *Scadoxus* (which Jonathan holds in Devon, U.K.), where we spent much of a sunny weekend taking leaf samples for rapid drying in silica gel. This preserved the quality of DNA needed for their research.

In the 1970s Professor Nordal had done much of the research and taxonomic work on *Scadoxus*, which until that time was still part of *Haemanthus*, making it a particularly easy genus to become familiar with. She was now very keen to see this work progress and to see tested a number of hypotheses that had formed, though at the time of the initial re-

search there was not enough material available to enable any conclusions.

I will always remember how Professor Nordal marvelled at the thickness of the flower bract of *Scadoxus membranaceus*. Asked if she had not seen the plant before, she said that she had only known many of the plants previously from herbarium specimens. Whilst I knew this was the case for much taxonomic study, it hadn't really occurred to me what an onerous task botanists and taxonomists must have to be able to provide a description from a plant that



was possibly dried years before, that so much of the plant is lost due to pressing, particularly all the colour pigments, and especially the feel of the plant. How much we take for granted with the plants that we grow!

Another major topic of the weekend, and a particularly exciting one, was that I had been asked by Professor BJORÅ if I would be interested in joining a botanical trip to Zimbabwe! She was arranging this twelve-day study trip along with Professor Clemence Zimudzi of the University in Harare, Zimbabwe, and would include other professors, MSc and PhD students from both countries. The trip was based on a number of petaloid monocotyledon genera of which *Scadoxus* was one that a number of the participants



Above: *Scadoxus pole-evansii*.

Left: *Scadoxus puniceus*, growing in full sun.

had a particular interest.

Zimbabwe is a country I had wanted to visit for many years primarily because one of the *Scadoxus* species, *S. pole-evansii*, is endemic to the Nyanga Mountains that border Zimbabwe and Mozambique. This was such a fantastic opportunity, knowing that one of the key aims was to find this beautiful species and also that I would be travelling with such a knowledgeable group, I was bound to get a great deal from the experience.

Another aspect which was particularly important to Professor BJORÅ was that the distribution of *Scadoxus puniceus* which runs down the eastern side of the continent is disjunct with distinct isolated pockets between Ethiopia and South Africa. One of these areas is in the south of Zimbabwe, limited to areas in and around Matobo National Park. This had been the basis of one of the hypotheses raised by Professor Nordal, as to whether these isolated pockets come

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demand is minimal. I use feather meal, alfalfa meal and other plant sources rather than synthetic nitrogen; the latter strips carbon from soils, and my silty sand needs all the carbon it can get.

When you dig up a plump and healthy bulb to find vigorous white roots wrapped around fungal-inoculated wood fragments, you know you are doing something that plants like. This doesn't work for all species, but my main focus is western North America bulbs, and most of them seem very happy with this treatment. As are Pacific Coast native iris, lilies, roses, penstemons, fleabanes, and others.

Herbivores: These are a key failure mode, and are diverse, with various plant dietary preferences. Small herbivores include mice, voles, chipmunks, squirrels, ground hogs, gophers. Big herbivores include deer, goats, sheep, deer, elk, horses, cattle, and pigs. Protracted and systematic herbivory can kill bulbs within one season.

In one bulb genus, only leaves are eaten, while in another, bulbs are excavated and consumed in their entirety. Some animals adore germinating or freshly sprouting seeds. It took me years to realize that voles, jays and crows like iris sprouts. And lily sprouts. And tulip and *Brodiaea* sprouts. My answer was a mesh frame to hold pots of seeds, within which confines them, I "only" need worry about slugs and snails.

Originally I thought I was very, very bad at growing bulbs. It took me far too long, and far too many plant deaths, to realize that I am alright as a grower, but have an over abundance of voles. The weasels have moved out; feral cats are gone; neighborhood coyotes are too few in number; and so local voles thrive. If I bait for voles, I risk killing raptors, the only vole-predators left in my neighborhood. I am still working on the right balance. If I had a choice, it would be to have a thriving weasel family in my yard. They are amazing predators of rodents.

Reports on the efficacy of cats as predators is mixed. A recent study showed that vole populations do not drop with cats, they only grow more cautious. Adorable Spouse is allergic to cats, and neither of us like finding cat feces in our yard. I am also a birder, and outside cats are notoriously indiscriminate killers of songbirds.

Moles are annoying too but not generally lethal for bulbs; they do create underground runways for voles, providing them with improved access. I try to herd moles into the lawn and harass them only in the garden beds. Baits that deter moles contain castor bean toxins, which kill invertebrates in the soil, leaving moles with nothing

to eat while trashing the invertebrate health of the soil. I no longer use them. I'd rather have healthy soils *and* moles than unhealthy soils and no moles.

Slugs and snails: Introduced species of slugs and snails (otherwise known as terrestrial pulmonates) are voracious and indiscriminate consumers of fresh foliage. Use a general scattering of slug and snail bait throughout the garden as Ian Young does, to keep their numbers down.

If you have lawn, and if that lawn has a number of European dandelion-like weeds, you are inadvertently providing nursery habitat for slugs and snails. Just saying. One such species, *Hypochaeris radicata*, hairy cat's-ear, has leathery broad leaf rosettes, which pulmonates seem to prefer for their eggs. I use a weeder to pull them out of the ground by the taproot; in spring when I flip the rosettes over to dry out, there are dozens of eggs on the undersides.

If you want pesticide-free slug and snail control, either start your garden in a site surrounded by a virgin forest, without turf, and carefully clean all soil, tools, equipment and pots coming into your garden to keep out slug and snail eggs, or take other steps to reduce slugs in the garden. As you can probably guess, I do not use a 'weed and feed' herbicide plus fertilizer on my lawn, because I am cultivating native sedges, sea thrift, poppies, salvias, and other non-grass species there. And yes, more than a few bulbs have spread into the lawn. I use manual methods to reduce hairy cat's-ear, add crushed oyster shell and

rock dust amendments to provide improved nutrition, and mulch mow infrequently. A smaller yard would have a simpler solution for slug and snail control: begin by eliminating turf.

Cultivate garter snake habitat if you live where they are native; garter snakes eat slugs of all sizes. They need fresh water pools at ground level, and denning areas for winter; this can be as easy as multi-year compost piles partially covered with tarps for winter-dry dens.

Rocks or concrete slabs give snakes a place to sun; these can

be set on top of the tarps. Veggie gardening friends have a system of three rotating compost piles, where each pile is kept for three years. They build a new pile each year and cover it for two winters; after the third winter it is opened and the resulting compost spread in the garden beds. The result for their garden is a healthy garter snake population, and very few slugs.

If surrounded by open land, toss the slugs and snails out of your garden (not into the neighbor's yard!). Studies indicate that tossing a pulmonate fifty or more feet away reduces their ability to return to your yard. Create



First mesh frame. All photos by the author.

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hiding places for them, and clean them out regularly before dawn. Set out beer traps. Put on a headlamp at night and go hunting with a salt shaker. In North America, the problematic species in gardens are all introduced. Native pulmonate species are out in the native forests and bush, eating organic matter and fungi, not in your garden eating introduced plants.

Domestic birds: Chickens, geese and peacocks all eat seedlings and small bulbs, and will systematically clear vegetation out of areas. Chickens and peacocks scrape, pull and dig out plants to create dust bathing areas in flower beds. I took to pounding in stakes and flooding their dust baths with water to push neighborhood peacocks out. Geese also open up areas by tugging out and eating vegetation, and prefer puddles to dust. Ducks do not clear, except around nests, eat slugs, and like wet bathing areas—those muddy peacock dust wallows are just fine for ducks. Chickens eat slug eggs and sluglings, baby slugs that have just hatched.

Missing plant labels: Do not forget that birds and voles pull labels from pots and soil in the open garden. Jays particularly like to do this, as do peacocks. Jays will fly off with them; you might find their stashes later. Crows leave them nearby. Peacocks yank out even well-buried labels and toss them around. The peacock in our neighborhood also likes to sneak up behind me and deliver an eardrum-splitting honk when I am head down, weeding. Then he snickers and moves off, only to sneak back later and repeat.

Pot color and material: Many species prefer cool soil, no matter how warm the air. Overheating of roots may be a cause of seedling death in some climates. Small, thin-walled, dark-colored plastic pots do not provide cool soil for plant roots in warm weather. I have shifted to square pots to clump them together, larger square pots ditto, shade, more shade, painted dozens of dark pots with light gray paint (and thought about getting white pots), used styrofoam boxes, and made hypertufa troughs, all to give plants cooler root runs. It does help. I also top dress pots with light-colored granite gravel (chicken grit) to help reflect sunlight and keep the soil cooler beneath.

Trees: Tree roots grow up into pots, through cracks in pavers or concrete, or just straight up in gravel. They can take over a pot in months, and starve out the plants growing inside. When you cut the roots off and pry open the soil wad inside, you may find withered bulb remains. Or no trace of the plants that once grew there. In the ground under those same trees, *Cyclamen* plants often hold their own.

My mesh frames are near a redwood tree. I lift every pot in those frames twice a year to keep redwood roots out. All pots around trees outside are lift-

ed at least once a year. Or propped up on bricks to create an air space between gravel and pot. Or both.

Accidental pot kicking: One of my early successes in germinating *Erythronium* seeds ended abruptly when Adorable Spouse knocked three pots over into gravel near an entry. I repotted what I could screen from the gravel, but none survived. Accidental flattening, driving over, dropping trees and scaffolding on, and other mishaps are included in this category. Find a safer (e.g. more remote) place for your pots, if you can. Constructing new mesh and cold frames helped; these are more easily recognized as “No trampling/dropping/flattening” areas than are what appear to be random clusters of pots. Which did not help when an arborist dropped a tree top on my first cold frame, but it needed rebuilding anyway to keep out voles.

Physical disturbance: Dogs, children, spouses, contractors, horses, cattle, goats, deer, elk and other large animals can trample, break off and mash vegetation into the ground. Pigs are amazing excavators, great for turning over densely vegetated areas and opening up areas for gardening uses, but your bulbs are jam in the ground for them, which is to say mashed if not eaten outright. Most bulbs may recover in a year from accidental mashing of green and growing leaves.

Dogs and plants in pots may not do well together. Growing up, I watched my mom chide my dog, a large shepherd, every time she found a plant tugged out of a pot or a pot on its side—until the day when her tiny poodle was caught, greenery in mouth, paws on the pot she'd just pushed over. She'd been the culprit all along! I leave you to decide how to handle these problems. Banishment, fences, et cetera.

Other problems include: Diseases (bacterial and fungal), narcissus fly and other insects, and stealing plants. These aren't huge problems for me so far, except for disease in *Ornithogalum*, see below. When diseases take out bulbs, I avoid growing those species to avoid using fungicides and pesticides in my garden, but this is my personal decision.

Impatience: Patience is everything in a garden. Patience to wait until seeds germinate, grow large enough to pot on and then plant out. Three years is probably not long enough to wait for seeds that are still thinking about the right time to germinate. I tossed several pots of ungerminated cyclamen seeds after five years of not one seedling leaf, and reused the soil for potting up other plants, only to find *Cyclamen* seedlings in multiple pots the very next year, all mixed up and now unlabeled, growing gaily amongst other bulbs.

I thought I'd lost several pots of *Romulea* bulbs, checked the soil in each pot as the contents were

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tossed across a garden bed, and found *Romulea* leaves sprouting madly within weeks. We will see how the voles like them. And how *Romulea* likes wet winters. My guess is yes to voles, and no to unrelenting wet, but I've been wrong before. I will watch as spring comes on and see how they survived. Patience.

Some comments on a few genera:

Crinum: There is nothing quite like watching large fat *Crinum* seeds open and send out roots and leaves. You start with a dozen seeds and get three healthy seedlings, and years later, plant out the lone survivor, only to watch slugs tear it apart. Slug bait. Sunny spot and summer water help. Then an *Arbutus* 'Marina' nearby puts out a burst of growth and suddenly *Crinum*'s sunny spot is a partly shady spot and it sulks. Or dies. Or you dig it up and move it to a new and sunnier spot. If you can find it to dig up.

Crocus: Easy to germinate, easy to grow on from seedling to flowering size corms by transplanting en masse or separating and spreading across the soil in larger pots. But, watch for squirrels and voles, who will excavate pots to get at the corms. All of them. In the garden, *Crocus* corms are like chocolate truffles to squirrels.

I grew *Crocus speciosa* from seed in an outside pot, put the pot out on a low wall one sunny day so I could admire the flowers from the house, came out the next morning to find potting soil scattered all over, and the pot



Above: *Crocus* in mesh planter. Right: *Eucomis* survivor.

empty of both crocus and potting mix. A few stubs of basal plates remained, so I gathered them up, replanted them in fresh mix, put the pot in the mesh frame, and waited. Three years later I once again had flowering *C. speciosa* corms, and in the mesh frame they will stay.

Meanwhile, several dozen species and varieties of *Crocus* have been planted and lost to squirrels and voles in the open garden, largely due to me being a slow learner. I still have a few *C. tommasinianus* here and there where voles have not yet found them. If you can grow *Crocus* in an open garden, enjoy them!

Cyclamen: Tough, takes sandy soil, dry summers and wet winters in stride, voles leave them alone, ants cart the seeds around, so I have *Cyclamen* as weeds, which I love, and pass along to others just as the first plants of this genus were passed to me.

When growing from seed, if the seeds are well dried, best be patient. Very patient. Otherwise a doddle to grow on and plant out. Midday shade is best, though plants grow in full sun in the lawn, where I usually leave them. Still teaching Adorable Spouse to mow around them when in leaf and flower in the lawn. Sometimes I toss seeds or pods where I'd like more; this is the ultimate easy way to grow bulbs in the open garden.

Eremerus: Being susceptible to big lilies, I grew this from PBS seed, none of which made it to planting out size. I caved, bought rhizomes, planted them out, and between deer, voles, and slugs/snails, they were gone in weeks. Weeks! Slugs I can fight, even voles, but deer? Adorable Spouse refuses to fence the yard because he likes seeing deer browse, hang out, sleep in the shade of the redwood tree, and amble through. No *Eremerus*.

Erianthus: Grew from seed, planted out, vanished. Tried again. Bought corms, planted out, vanished. Tried again. Eventually concluded dry soils in summer are major issue. Probably fine in pots if I remember to water. When one of your long-term garden goals is self-maintaining bulb displays in open ground with no additional watering, this is not useful. No *Erianthus*.



Erythronium: Another genus I adore growing. Some are native here, and thrive despite all I toss at them. Others do not, ditto. Bulbs tend to grow deep in the soil, which may keep voles from munching on them. I protect seedlings and young bulbs from birds and voles, and can usually plant out at year three, with flowering the next year. They often want more summer moisture than my garden has, which limits where they are

able to grow, usually low on slopes, in part shade. Mesh frame is the optimal location for seedlings and small plants to grow in, as they need exposure to cold and wet winters.

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Eucomis: More than a decade ago I bought three bulbs of a small white-flowered variety, probably *Eucomis autumnalis*, at a garden center. I planted them out, wondering about climate, slugs, etc., and to my total surprise, this bulb thrived, flowering in late summer-early fall year after year. I fully anticipated early losses to wet cold, slugs/snails, and other menaces. This clump has continued to grow and bloom, and slowly enlarged. Three years ago I gathered seeds from a couple of flowering stalks and put the pot in a mesh frame, where the seeds promptly germinated. Last year I moved them to a larger pot, in the frame, and next year I intend to plant them out.

Fritillaria: Still trying to go from pot to garden with this genus. Some success with commercial bulbs if planted in part shade and moist areas of garden, but prolonged summer drought in recent years has eliminated all bulbs in the open garden despite mulches, compost and other soil amendments to build up water storage capacity. Bulbs just wither away in a few years, or voles get them. This genus has done much to teach me that my garden is really a too-well-drained and under-watered rock garden. The few thriving bulbs I have are in pots, and I'd hate to lose them now.

Galanthus: Planted at least five varieties only to see each one vanish, was slow to figure out they need moist soils year round. Put a sixth group of bulbs



Fritillaria camschatcensis in a pot.

from a PBS member (thanks, Jim), in cool shade near a *Rhododendron rex* that I water all summer, and voila!, this planting survived and is thriving. Needs moisture all summer, hence placed close to the one shrub I water in dry months. Have not yet been able to grow from seed, am happy that I have one spot where it persists in my garden. The original half

dozen bulbs have become a clump of more than twenty, which probably should be divided and spread out a bit.

Gladiolus: Grew several European glads from PBS seed. Planted out, they flowered once or twice then either vanished or dwindled away. I suspect voles and dry summer soils. I like the flowers, but not enough to fight voles for them. *Gladiolus murielae* survives in the open garden but does not flower unless I lift it each winter.

Homeria/Watsonia: This species of yellow-flowered *Homeria* has turned into a thug, seeding and spreading by below ground parts. Loves the dry summers. Voles and moles might shift the bulbs around below ground. I now spend my time removing this bulb from beds whenever its long leafy stems appear.

This might be a good genus to consider for meadow areas, where its grassy foliage blends with grasses and sedges. It is fine with dry summers, wet winters, whatever. Impossible to eradicate, as bulbs dig down very deep into the soil and tiny offsets hide when I dig or tug up clumps. It has moved into the lawn, probably from seed.

Ixia: Grew several from PBS seed, planted out a few bulbs. Thrives at times, declines at times, haven't figured out how to get consistent results. The confounding factor might be voles.

Lilium: Hands down, my favorite—fragrance, size, seed pods, statuesque presence in the garden: lilies are the 'It Bulb'. Various germination modes mean that you must have knowledge and patience to get seedlings and then flowering bulbs. Vulnerable to slugs and snails, mice, voles, jays. Lilies have highly edible bulbs and tender foliage when first sprouting each spring, buds are also vulnerable: Deer will casually nip flower buds before they open, strolling past. Protect, protect, protect.

The seminal act of violence that revealed the presence of dastardly voles was a venerable planting of 'Black Dragon' lilies that had thrived for more than fifteen years, and then vanished overnight. When I investigated, I found vole tunnels to each former cluster of multiple bulbs. I dug over the area, composted, and eventually replanted nearby, using mesh boxes. Keeping watch that summer, I found vole tunnels all around the new cages. I filled them with gravel. The replacement lilies are thriving so long as their protection holds.

I plant lilies out in wire mesh boxes (made of half inch mesh, also called hardware cloth -1 cm mesh) by digging a big hole, tamping the soil flat, setting the box, usually 6 x 6 x 6 inches (15 x 15 x 15 cm), tamping an inch of soil on top of the mesh bottom, placing the bulb, firming soil around it inside and outside the mesh. I fold a mesh top together but not closed, like angled petals, to keep the top open

***Scadoxus* in Zimbabwe cont'd**

from a common ancestor or if they have evolved separately, but morphologically look so similar that they have been classified as the same species. Hopefully some of the material received from the National Collection and subsequently from the Zimbabwe trip will answer this question.

I had also been asked if I would like to collect material; this was something that I definitely wanted to undertake but I knew it would require a good deal of paperwork. This would ensure that collections complied with the Nagoya Protocols to allow for documented material to be a valuable part of the National Collection.

Thankfully, due to the support of Lucy Pitman, Plant Heritage Plant Conservation Officer for National Plant Collections in England, and Dr. John David, Head of Horticultural Taxonomy for the Royal Horticultural Society, England, the various problems that arose with my seed collection requests were ironed out and eventually my request to collect was granted.

Sadly, on the evening before we were due to return from Zimbabwe, the protests that affected the whole country, due largely to massively inflated fuel prices, came almost to a point of meltdown. This brought the capital to a standstill with all the businesses and offices closing down, and of course this included the offices of the Zimbabwean Research Council, where I was due to get my paper work signed off! Hopefully these will still come through to support the material that I was able to collect.

The trip was made up of two excursions: from Harare drive south to Matobo National Park for *Scadoxus puniceus*; return to Harare; and then drive east to Nyanga Mountains National Park for *Scadoxus pole-evansii*. It was hoped that the widely distributed *Scadoxus multiflorus* would be found as we travelled through the other areas.

Matobo National Park

Travelling down to Matobo on good tarmac roads gave us plenty of opportunities to stop and look at areas of roadside vegetation. Bulbous plants were the focus for the whole trip and we saw a number of genera to appeal to the whole party. *Ledebouria* with their very variable and marked foliage was an area of speciality for one professor and her PhD student, with a number of collections made along the journey and throughout the trip. *Chlorophytum* and *Hypoxis* were also on the list to be sought out, both genera being difficult on occasion to distinguish from other species.

Christopher Chapano, Head of the Botanic Garden in Harare, was delighted to find specimens of *Dipcadi*, a diminutive member of the *Hyacinthaceae*. He said it was very poorly represented in the Botanic Garden herbarium and so was keen to rectify that.

On the showier side we saw many *Gloriosa*

superba in a wide range of colour forms, both bicoloured and of red or yellow. *Crinum macowanii* was also a common sight growing in damp seeps in depressions along the road side.

By the time we reached our destination the light was fading quickly, but a bulging herbarium press showed off the successful start to our trip.

Matobo National Park is famed for its landscape of huge boulders and bizarre standing stones. Here we spent two days, enabling us to visit much of the park. We continued to see a wealth of plant material that appealed to the interests of the team, but of particular importance to me was to be able to gather twenty separate collections of *Scadoxus puniceus* seed.

This wonderful bounty then continued to keep me



Gloriosa superba, Zimbabwe's national flower.

busy for the rest of my trip evenings, as not all of the seeds were ripe at the time of collection. I needed to ensure that as it did ripen the red pulp that surrounded the seeds did not then turn to a soggy mass. Some of the seed then wasted no time in starting to germinate so the prior purchase of small plastic containers proved very useful for protecting the seeds and their delicate radicles.

One particularly special part of the trip for the whole team was on meeting a couple of game wardens and being asked if we would like to see some white rhinoceros? With strict instructions from them on what we should and should not do, we were led to an open expanse and were able to watch from a remarkably close distance as a small family came closer towards us. On talking to the guards about the *Scadoxus* seed and what might eat them, they said that the baboons did on occasion, and eating the seeds had a narcotic effect upon them! After this very positive start to the trip we returned to Harare to change flower presses and prepare for travelling to Nyanga in the eastern highlands of Zimbabwe.

Having the Chalets as accommodation at Punch Rock, Nyanga, set amongst a beautiful stand of mature flat topped *Acacia abyssinica* was a wonderful starting

Growing from Seedlings to ... cont'd

for large shoots. A layer of 3-5 inches (8-12 cm) of gravel gives each shoot space to grow upward and deters voles from digging down into the cages.

Sometimes I put gravel around the mesh sides as well. Just in case you were wondering, this has not yet worked for tulips, and I do not know why.

Muscari: So easy! So tough! Patches in garden beds over time, and seedlings in lawns. Bulbs tossed up by moles sprout and dig themselves back into the ground. I don't collect seeds and pot them up, just toss seeds where I want them to grow, as with *Cyclamen*.

Narcissus: Like *Crocus*, these are straightforward to grow to flowering size in pots. Toxicity keeps herbivores from consuming this genus, even when small, so they can be grown outside in pots. But in the ground, they wither away in local droughty summers. I've planted and lost dozens of varieties. Dozens.

One spring I realized that *Narcissus bulbocodium* was thriving and seeding around. Long dry summers in sandy soils are too much for most *Narcissus*, which want some summer soil moisture. Now I plant Mediterranean species, and move them into shady areas, and to locations at the bottom of slopes instead of across mid to upper slopes in full sun. My garden soil is

composed of silty sand, with very wet winters and dry but not hot summers—most garden varieties of *Narcissus* do not like bone dry summer soils.

If you garden in clay with summer moisture, they are probably fine in your garden. My most successful *Narcissus* planting is a large pot of 'Grand Soleil d'Or', placed near a bird bath so I can easily water it every week all summer.

Ornithogalum and Hyacinthoides: My very first flower beds were created by pruning and weeding the shrubs along the east wall of our old house, and planting beneath them. Then, Adorable Spouse pointed out the house needed a new foundation; this meant working space was needed on all sides, which meant planting areas had to be moved. We marked out an 'open zone' on all sides of the house, and I began a

new bed along the east side, ten feet away, in the lawn. I transplanted, weeded, mulched, pruned and planted in this new bed, and the very next spring, *Ornithogalum umbellatum* and *Hyacinthoides xmas-sartina* appeared. They attempted to take over the new beds, having lived for many decades in the lawn. I attempted to dig them out.

Around a decade ago, *Ornithogalum* began to dwindle. Now it tries to grow each year, but a bacterial disease takes out all leaves and flowers every spring before seed set. This disease also takes out all other species in the genus, and *Galtonia*.

The same did not happen to *Hyacinthoides*, which continues its march towards garden domination, and which I continue to dig out, yank off flowering stems, and think longingly of species-specific plant diseases each spring. I do not compost the flowers or seed heads, or share bulbs, preferring to slow its march towards world-wide dominance rather than help it spread.

Scilla: Grew several species from seed only to watch them decline in the garden and vanish, or never flower. Dry summers harass some species, apparently, but not others, and not enough heat units keep some from flowering. *Scilla peruviana* was gifted on to a warmer summer gardening friend, where it has been much happier.

Sternbergia: Multiple attempts never produced masses of flowering plants from seed. The best I could do was plant commercial bulbs and cross fingers in hope. I did actually get one flower in one year, in a dense patch of thyme, which apparently hid it from voles long enough to flower once. I also suspect over-dry summer soil.

Trillium: A genus to cheer about! It takes years to grow *Trillium* seeds to flowering size rhizomes, but yes, I grow them on in pots, and plant them out, and have flowering clumps that persist in several places in the garden. Shade, some summer moisture, and crossed fingers each late winter that hungry deer will not wander through and browse the flower buds as they begin to color up. Plus they need some water in summer. Many *Galanthus* bulbs died teaching me this lesson, which I was then able to apply to *Trillium* without the same trials.

Tulipa: When I took Master Gardener training in the 1980s, one of the brochures we were given was titled "Why Cherry Trees Die." It detailed more than two dozen ways to kill off ornamental cherry trees in homeowner gardens. I could write a similar pamphlet on why tulips die.

Tulips are easy to grow from seed into flowering bulbs in pots. It's when I plant them out that the fun begins. Deer eat the flowers—they prefer hybrids, and mostly leave species' flowers alone. Wonder



Narcissus in shade.

PBS Board Meeting—Minutes , July 21, 2019

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

President Nguyen called the meeting to order at 1:05 p.m. EDT.

July 21, 2019 Meeting: Wickham moved to accept the minutes as sent out. Second by Hildebrand. Motion carried.

Treasurer’s Report: Trachtenberg sent a screen shot from UBS showing a balance of \$37,268.73. Trachtenberg said the bookmark supply is low. Nguyen offered to redo them using drawing from Anne Wright. Trachtenberg has looked into obtaining a liability policy from Travelers, but no quotes could be obtained until a questionnaire was filled out and submitted.

Membership: McGary reported a membership of 314 from a notice received September 5. She usually received notices every 5 or 6 days but has heard nothing recently. She speculated the true membership to be about 320 and will contact David Pilling to look into the problem.

The Bulb Garden: Hansen is doing final editing on the next issue (17-2 Spring, 2019) which contains a large article on Oxalis and one on importing seeds. Correction for pricing *The Bulb Garden*. Hildebrand moved that issues older than 2 years be put on a thumb drive and sold for \$25.00 or offered for downloading at \$20.00. Newer issues are free to members. Second by Trachtenberg. Motion carried.

Hippeastrum Project: The author would like the book to be published “as is”. McGary had edited it to diminish repetition. He wants his own words, which would require reformatting at additional cost. He had two tables with the same information.

BX: McGary and two PBS members who live near each other are offering to do a one-time clean out of what is on hand now. McGary would mail out using her own computer and system, through her own USPS account. She would notify and send out a list and also ask that no more seed or bulbs be sent at this time. Hildebrand moved to authorize McGary and two others to clean out the inventory of seed and bulbs on hand. Second by Trachtenberg. Motion passed.

Nominating Committee: Trachtenberg offered to chair the Nominating Committee. Hildebrand offered to help the Nominating Committee identify people willing to serve. After the Nominating Committee announces the slate of officers, the Board must wait two weeks to vote. All four positions are for two-year terms.

The meeting was adjourned at 2:33 p.m. EDT. The next meeting was set for 12:00 noon EST, January 19, 2020.

Respectfully submitted,
Kathryn S. Andersen, PBS Secretary

Treasurer’s Report for Fiscal Year 2019

	Year end 2019
Balance Jan. 1 2019	\$ 33,808.38
U.S. Members	\$ 4,910.00
Overseas Members	\$ 3,450.00
BX Receipts	\$ 4,420.78
Investment results	\$ 4,120.00
INCOME	\$ 16,900.78
BX/SX Postage Domestic	\$ (847.45)
BX/SX Postage International	\$ (1,215.06)
BX/SX Supplies	\$ (140.57)
BX Helper	\$ (282.77)
Board Conference call	\$ (370.62)
Treasurer's Supplies	\$ (813.01)
Publications	\$ (3,425.00)
Stamps.com fee	\$ (67.97)
Accountants fee	\$ (500.00)
Web Registration	\$ (104.38)
Publication postage	\$ (1,237.47)
PayPal expense	\$ (482.92)
Membership Directory editing	\$ (120.00)
Bulb Garden editing	\$ (2,800.00)
EXPENSES	\$ (15,428.26)
Net Income 2019	\$ 1,323.60
Balance Dec. 31, 2019	\$ 35,131.98

Bulb and Seed Exchange Back in Business!

The PBS Board is delighted to announce that Luminita Vollmer is now our new BX/SX Director. To get back to the business of the exchange, the Board has established some guidelines for donors and recipients; these are listed below. If you have any questions, please contact Luminita at the email address given. This address is just for the BX/SX Exchange.

For each exchange there are 2 components: 1. Donations Request, and 2. Exchange Offering.

1. A “Request for Donations” will be posted on the Pacific Bulb Society list. Members and friends of the group should send seeds or bulbs (including corms, tubers, and small rhizomes) that they wish to share with other members to me at the address posted with the request. (Please, no large hybrid rhizomes such as named irises) If a member does not participate in the discussion list but wants to receive SX/BX notices, please contact Luminita at pbslv.xchange@gmail.com

All members are welcome to send in seeds and bulbs, but I would prefer to receive them after a Donations Request is mailed. It will allow her to be on the lookout.

Scadoxus in Zimbabwe cont'd

point for our ventures around Nyanga National Park. For the first day after getting our permits to access and allow us to collect, we started to drive the loop of road called the Scenic View; this soon turned out to be an area of considerable disappointment as the whole area had been taken over by *Acacia mearnsii*, one of the Australian black wattles. Some areas of this had been burnt through to leave the charred skeletons of the trees. On inspection of the blackened ground we saw thousands of emerging seedlings that would prove to be the next generation. Large tracts of ground outside the park had been eradicated of this tree so hopefully this area would also be cleared at some time.

Unperturbed by this minor setback, the following day we set off to Mtarazi Falls, which is one of the given locations for *Scadoxus pole-evansii*. After viewing the beautiful falls themselves we followed directions that took us to an area where they had been seen growing on a previous occasion. On eventually finding a couple of seedlings our anticipation of seeing further plants certainly grew but Professor Zimudzi's call "We've found it and it's in flower!" was more than any of us had expected. To see this beautiful plant in flower and in habitat was a real treat and considering it was something I had wanted to see for years, it was well worth the wait!

The other recorded locality for this species is a few miles away at Pungwe Falls so we decided to visit this location. Sadly, we were soon prevented as the roads were very badly pitted and flooded and there was a risk of the vehicles getting stuck. Still, we returned home triumphant from what was the highlight of the whole trip.

On our return journey to Harare we continued to look for *Scadoxus multiflorus* which had been harder to find than anticipated; Professor Zimudzi said this was due to the lack of rain. We stopped in areas where it had been seen previously and was known still to grow, but there were absolutely no signs of



Mtarazi Falls, Nyanga National Park.

growth. Eventually, we did find a couple of specimens at an undocumented site and they were in seed so this was another success.

Everybody on the trip was very pleased with what had been achieved and the trip was deemed a huge success on a number of counts, from the number of collections made, to an increased distribution for a species of *Chlorophytum*, which had previously been thought to only occupy a much smaller area.

To meet up again in Oslo and talk about the Zimbabwe experiences of a few months previous was great, but I felt very privileged to be asked to give two talks, about the RHS and the gardening Charity Plant Heritage, which oversees the holding of the National Collections in Britain and Ireland to a small audience of university and Oslo Botanic Garden staff. Professor BJORÅ also spoke about synergies between botanic garden and university staff while Ida and Kine, the two MSc students, gave presentations on *Scadoxus* phylogeny and the *Scadoxus puniceus* complex.

I am particularly grateful to Professor Charlotte BJORÅ of the Oslo Botanic Garden, Norway, for enabling me to be involved in the work that they continue to undertake and to the South African Bulb Group (United Kingdom) for providing me with funds to assist my travel to Zimbabwe and to be part of a truly memorable and worthwhile experience.

The following sponsoring bodies gave monetary assistance enabling me to be part of this trip: the Royal Horticultural Society, the Finnis Scott Trust Fund (named after Valerie Finnis and her husband), the Stanley Smith Horticultural Trust, the South African Bulb Group, the Nerine and Amaryllid Society (affiliated with the RHS) and Plant Heritage-Devon Group. I am sincerely grateful to them all.

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**It's time to renew
for 2020 !**
**We appreciate your support—
we would hate to lose you!**

<http://www.pacificbulbsociety.org/membership.html>

Growing from Seedlings to ... cont'd

about the taxonomic origins of *Tulipa sylvestris*? Deer eat them, so, no, not a from-the-wild species. Squirrels and voles eat the bulbs. Slugs and snails are particularly hard on seedlings, as are birds. Tulips also don't like summer drought, though are more persistent than *Narcissus* if they can avoid predation.

I do not grow many tulips, and they rarely persist for long when I do plant them. Dozens of tulip bulbs died while I learned this lesson. If you can grow them outside from year to year, please enjoy them!

Zephyranthes: While writing about bulbs that naturalize well in gardens, I read extensively about rain lilies, and the Rio de la Plata, between Argentina and Uruguay, named for indigenous white-flowering *Zephyranthes candida*. I visualized a winding channel of flowers at the foot of the slope in the garden in the long curved bed, grown from seed. Did this happen? No, and for one reason:

Voles. Voles love the foliage and flowers of the entire group. Eat them right down to the soil surface, leaving nubbins of leaves. The cold frame now has a wire mesh band below the movable roof sections, which stays open in mild weather. Here, rain lilies can grow year round under protection. Conclusion: while this group of bulbs could live here, they can't thrive. Rio de la Plata is not going to happen in this garden.

Starting over: Were I starting again, I would strive to cultivate patience, in a "ready, aim, fire" process. Take time to understand the climate and soil, and the local herbivore community, suppress weedy species, deep mulch and incubate new beds to drive out thug plants, amend soils early with mineral supplements, and research management implications for each incoming species. Persuade Adorable Spouse that I *need* a fenced garden area, an alpine house, raised beds, and walk-in cold frame and mesh frame growing areas. Have compost areas, a bigger shredder, more storage for soil amendments and pots. A hypertufa planter area. . .

Or plant what you want where you think it might grow, and see what happens. Observe. Learn from myriad failures, and try again. As you can probably tell, I am inclined more towards "fire, ready, aim." While I am unlikely to use a careful planning process, this might have saved several thousand bulbs from unnecessary or premature death. On the other hand, I have learned to study each failure, to determine if it occurred for reasons I might be able to control the next time. Thus, the second great lesson of gardening: hope.

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BULB & SEED EXCHANGE cont'd

Overseas members (not residing in the USA) should contact Luminita Vollmer before sending any donations.

The seeds and bulbs that can remain alive under normal storage conditions can be mailed in at any time. The seeds and bulbs that need to be planted in 3-4 weeks should be marked with "Short-term viability" or a similar phrase and are best packed in damp vermiculite in a small zip lock bag. Bulbs cannot be larger than 5 cm, but use your own judgement if you believe they can be sent in an envelope. Bubbled envelopes or small boxes will be used to mail bulbs. Each Donation Request will be open for 2 weeks. *Donors need to send seeds and bulbs that are clean, free of chaff, dirt and other debris and ready for distribution to members. Please become familiar with the various noxious weed lists because donations of these items will not be accepted.*

2. Two weeks after a request for donations, there will be an announcement of a seed and bulb Offering which will last for 3 days. **Be sure you don't reply to the list; instead reply to the exchange email address!**

The Exchange will include a list of seeds and bulbs by botanical name, date of collection, donor's name, and synonym name if it exists. Luminita will acknowledge all requests with a confirmation reply. If you don't get one, let her know *as soon as possible!* Please read the rules to the Exchange Offering distribution below. Following the rules will make it a much easier and faster distribution. **Only current dues-paying members can get bulbs and seeds.** If you are not current, you will receive an e-mail. Members with 2 or more invoices to be paid will not receive an order; you will be sent a reminder e-mail.

Donor members will get priority but entries will be randomized, to ensure everyone among the donor group has equal chances.

If you order more than 10 items from the list of offerings, please mark your top 10 preferences with an asterisk (*). Donor members will receive a credit for the postage value of the donated item to a maximum of \$6.00. Each bulb item is \$3.00 and each packet of seeds is \$2.00. The seed order will have at least 5-7 seeds or enough seeds for a 4-inch pot. Postage will be added.

The offering is open for 3 days, followed by a formal closing e-mail. Included in the offering e-mail will be all the information you need to send in your order. Requests for bulbs and seeds must be emailed to (do not reply to the discussion list): pbslv.exchange@gmail.com. **As in the past, an invoice for the cost of bulbs/seeds and postage will be sent with your order.** Payments for the BX/SX can be made by: Cash, check (money orders *not* accepted), credit card or PayPal. **Checks must be made payable to Pacific Bulb Society**, c/o Arnold Trachtenberg, 140 Lakeview Ave., Leonia, NJ 07605 USA. PayPal and credit card payments may be made at <https://www.pacificbulbsociety.org/bx.html>.

Arnold Trachtenberg
140 Lakeview Avenue
Leonia NJ 07605

www.pacificbulbsociety.org

Pacific Bulb Society, *The Bulb Garden*, Volume 17, No. 4

Gardening with Bulbs



Scadoxus puniceus in fruit. Photo: Jonathan Hutchinson.

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Bulb and Seed Exchange

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The Bulb Garden is the newsletter of the Pacific Bulb Society (PBS). It is published, if enough articles are submitted, around the third week of each quarter and is available to PBS members. This newsletter provides gardening or bulb related articles, news of interest to members, and announcements of the PBS organization.

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