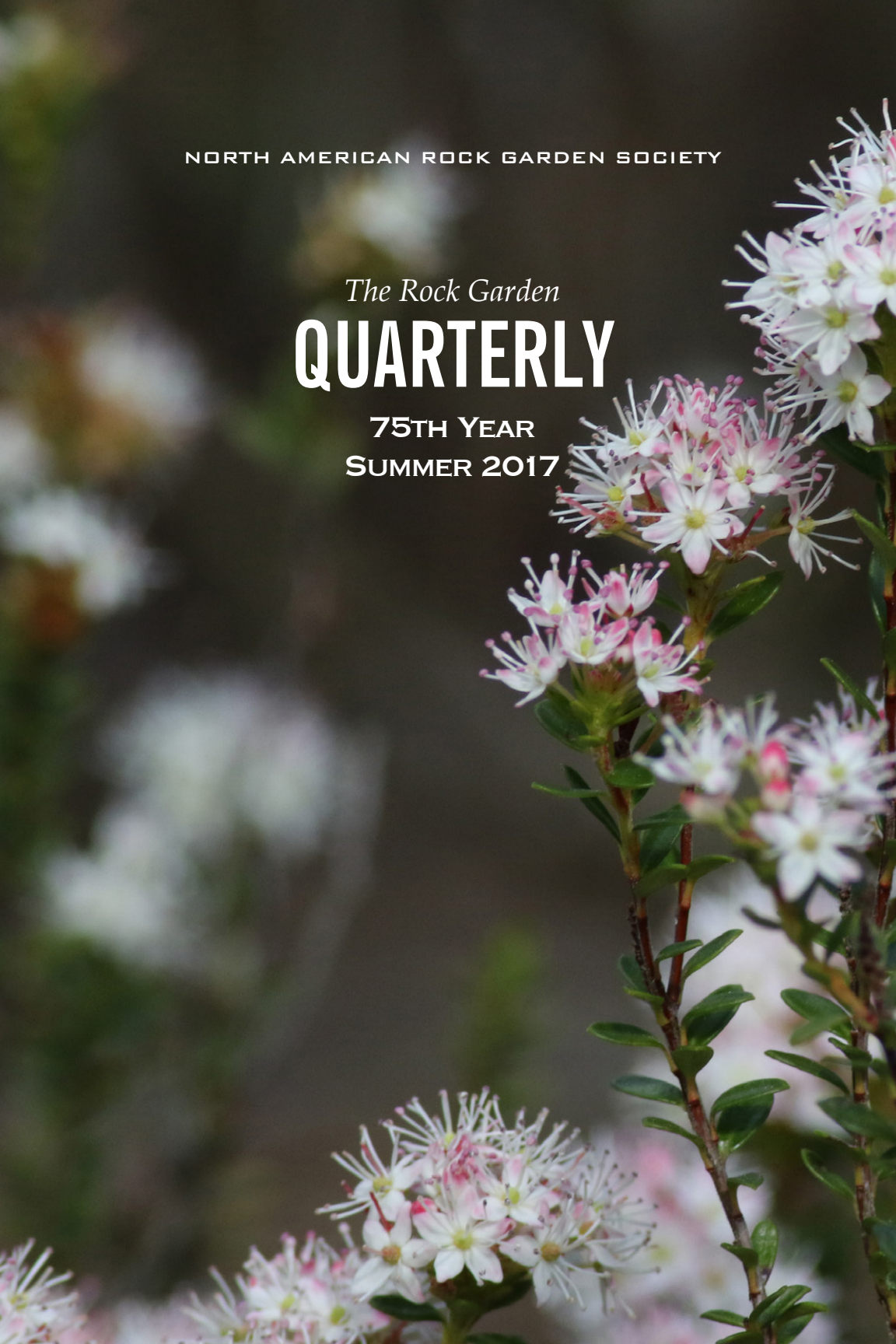


NORTH AMERICAN ROCK GARDEN SOCIETY

The Rock Garden

QUARTERLY

75TH YEAR
SUMMER 2017



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All illustrations are by the authors of articles unless otherwise stated.

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Front cover: *Kalmia buxifolia*, Larry Mellichamp

NORTH AMERICAN ROCK GARDEN SOCIETY



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From the Editor

IN THIS ISSUE of the Quarterly I'm excited to feature a set of articles curated by Bobby Ward highlighting some of the incredible gardens and fascinating native plants in and around Raleigh, North Carolina, site of the NARGS national meeting this November. The hot, humid climate of the Southeast is a far cry from the cool, moderate climate of the British Isles where rock gardening first developed as a style, and that is exactly what makes rock gardening in the South so incredibly exciting. As you'll see in this issue, rock gardeners there are on the bleeding edge of innovation, experimenting with styles, plants, and techniques to create their own particular version of rock gardening that might just make those of us in cooler or drier climates wish we had a little southern heat of our own.

In addition to the North Carolina articles, this issue includes a tour through the flora of Vancouver Island and a terrific how-to article on growing one my favorite plants, cyclamen, from seed.

Shortly after I accepted the position of editor, I sent out an email to the membership asking you what you wanted to see more or less of in the Quarterly. The response was terrific, and I want to thank each of you that responded. If you didn't respond, or some how missed the email, I still want to hear from you! You can reach me anytime at gsparrowgardens@gmail.com.

Overwhelmingly, you said that you wanted to see more practical gardening information on these pages, and that is what I am aiming to give you. In this issue, you'll see added sidebars on a couple of the articles emphasizing practical cultural information, and going forward I plan to keep emphasizing that so the Quarterly is not only beautiful and inspiring but practical and helpful as well.

To build on that, on page 250 I'm introducing what I hope will be a new regular feature, the NARGS Hive Mind. In this feature, I invite all of you to share your experiences and techniques around a topic. I'll take your responses and compile them into an article built from the combined wisdom of our entire Society.

I hope you'll enjoy this issue, learn, participate, and keep filling the world with beautiful alpine plants and rocks.

Viva la Rock Garden!





Coastal Karsts

The Alpine Limestone Plateaus of Vancouver Island

PAUL SPRIGGS

ON READING MY fellow Canadian Todd Boland's article about the serpentine barrens of the Northern Labrador Peninsula of Eastern Canada (RGQ, summer 2015), I felt compelled to echo his article by enlightening the readership about a special plant-rock association that occurs at the other end of Canada, on its wild and wet west coast: the alpine, limestone plateaus of Vancouver Island.



Quercus garryana and *Camassia*

Vancouver Island is the largest island on the west coast of North America. With a length of 286 miles (460 km) and width of 62 miles (100 km) at its widest point, it is an ecologically diverse and special place. With a relatively small population of 750,000, the island is mostly an uninhabited wilderness, save for some remote native communities and isolated fishing villages. Most islanders are crammed into the small coastal plain that runs down the south-east coast, a tiny fraction of the island's area. Here on the plain, in the rain shadow of the Pacific Insular Mountains, the Garry oaks (*Quercus garryana*) and camas (*Camassia quamash*/*C. leichtlinii*) grow in what is the northernmost extension of the Mediterranean



Western red cedar (*Thuja plicata*)

rain shadow climate that reaches all the way down to central California. We even have large areas of hairy manzanita (*Arctostaphylos columbiana*), another plant whose range extends half the length of California. By contrast, out on the

west coast of the island, the temperate rainforests reach their peak of grandeur, as the highest precipitation rates in North America produce some of the biggest trees on the planet. These forests of Douglas fir (*Pseudotsuga menziesii*), Sitka spruce (*Picea sitchensis*), and western red cedar (*Thuja plicata*), growing on rich alluvial floodplains, rival the great trees of California in size and splendor. Between these two vastly different ecosystems rise our mountains, known as the Vancouver Island Ranges.

Reaching a height of 7200 feet (2200 m), our mountains are not exceptionally high. However, due to the immense snowpack resulting from the high winter precipitation levels, our subalpine zone starts at just 4500 feet (1400 m), and the alpine tundra starts at around 5000 feet (1500 m) Here, snow can



linger well into mid-August, creating true alpine conditions and giving the plants only a very short window to do their thing. Very few roads penetrate this wilderness, and virtually none of it is ever seen, even by most locals. The only way to experience the alpine meadows, pocket glaciers, and turquoise lakes is to walk in, which in itself poses some problems. Solid wilderness skills are crucial here because once you're in, you're on your own, with no cell phone reception, no roads, and no people to rely on. Perhaps what's best about Vancouver Island is how easily one can find solitude. Most islanders don't venture into our rugged backcountry. In fact, since very few paved roads cross the

island, most locals don't even know what's in there! Being an island with no bridge to the multitudes of the lower mainland, finding your own piece of remote wilderness is relatively easy.

Geologically, Vancouver Island is part of the outer coastal insular ranges. These mountains were created 100 million years ago as the North



American plate collided with the terranes of western North America, folding and thrusting upwards to form these mountains, as well as the Olympic ranges to the south and Haida Gwaii to the north. Existing in the “ring of fire,” most of the island’s rocks are volcanic in origin. These hard rocks limit the diversity of plant growth and result in the most common Vancouver Island alpine vegetation regime: the subalpine heath. These landscapes are



Phyllodoce empetriformis

dominated by ericaceous shrubs such as pink and white alpine heather (*Phyllodoce empetriformis* and *Cassiope mertensiana*), and white-flowered rhododendron (*R. albiflorum*), with sporadic groves of twisted mountain hemlock (*Tsuga mertensiana*) and subalpine fir (*Abies lasiocarpa*).

Although these areas have a rugged charm of their own, the flower displays are, generally speaking, not overwhelming. The lower pH soils and poor drainage of this ericaceous landscape tend to limit the floral diversity and, with some exceptions, these are not great places to botanize. Glaciation has also played a role in limiting the flora. Mountain areas to the south, even as close as the Olympic Mountains (which mostly escaped the advancing ice) often have richer floras.

Despite this, you can find some interesting treasures such as white-flowered penstemon (*P. davidsonii* subsp. *menziesii* f. *albus*) and Arctic species such as alpine azalea (*Kalmia procumbens*) in the sub-alpine heath.



Rhododendron albiflorum

Stepping off the volcanic rock and onto the limestone, however, changes everything. Except where karst processes are extreme and have left no substrate, the floral displays become spectacular.

Only about 4% of Vancouver Island is composed of limestone, but the influence of high coastal precipitation levels on the soft carbonate rock results in a diverse karst landscape characterized by caves and underground streams, sinkholes, arches, fossils, and all the other typical karst landforms. Due to the dense forest cover, most of Vancouver Island's limestone is difficult to see, save the occasional outcrop or cave entrance.

However, in a few places, these limestones have been thrust up into the alpine zone above 5000

feet (1500 m), leaving exposed alpine epikarsts. These high alpine occurrences are not huge, ranging in size from 470 acres (190 hectares) on the Clayoquot Plateau to small outcrops of just a few hectares. Some areas are flat and some are super-steep, but they all contribute to plant diversity. All are covered in snow for most of the year and host a distinct and varied flora. Not all limestones are created equal, though all originate on the shallow ancient sea floor and are composed of marine organisms such as corals and seashells. Some are soft, such as dolomite; while others, like marble, become much harder due to heat and pressure. Vancouver Island's limestones are all referred to as the Quatsino formation, and though dolomite is absent here, a range of consistencies exist.

Stepping off the dark volcanic rock onto the white-grey of the limestones, one is instantly struck by how the limestones host significantly richer plant communities. Why is this? The simple answer would be that these lime-loving species have evolved over millennia to thrive in the higher pH soils of the dissolved limestone. Scientists are just starting to discover the secrets of limestone-plant associations. On Vancouver Island, a unique association exists between karst and the lowland coastal temperate rainforests. Coastal forest karst ecosystems are more productive than similar forest sites on non-karst terrain.



Karst processes produce bizarre stone structures.

The reason for the increased productivity on karst ecosystems is the nutrient cycling associated with the carbonate bedrock. As this rock is dissolved by the generally acidic rain, it releases calcium carbonate (CaCO_3), carbon dioxide, (CO_2) and mineral micronutrients into the soil, encouraging better plant development and growth.

Another reason why the plants seem to grow better in these alpine karst environments is the ability of the limestone to buffer pH levels. The rain that falls over these alpine limestone areas is on the acidic side to begin with (pH 5.6), but the limestone acts as a buffer, allowing a flora that can flourish in higher pH soils (pH 6.5) rich in calcium and magnesium. Rock gardeners take note! Drainage is also a factor. So many of the plants we love to grow require perfect drainage, and these limestone plateaus, with their sinkholes, fissures and caves, offer no chance for water to pool and settle. This is in stark contrast to the volcanic areas which are riddled with alpine tarns and mountain streams. For the traveler, this poses a problem as drinking water is almost impossible to find, and one must typically melt snow to quench one's thirst.

Descriptions of how limestones influence plant life, a very old topic among European botanists, started late on Vancouver Island. For instance, an early botanical expedition on these alpine areas didn't happen until 1984 when a team of government botanists flew onto the Clayoquot Plateau near Tofino to gather data needed to propose an ecological reserve (eventually, the area became an undeveloped provincial park). The team spent two nights camping on the plateau and expanding the species list for the island, discovering previously unknown disjunct populations and range extensions of many alpine plants. That this happened as recently as 1984 reflects how unknown and how rarely visited these areas are. As mentioned above, the plateaus are very difficult to access especially given that many of the areas are found within the boundaries of the large, rugged, and relatively trail-less (given the park's size) Strathcona Park. Here, fly-ins are not allowed, which limits these areas to only those who are extremely fit and able to carry a heavy pack for multiple days. Carrying



It requires hiking and camping to visit this flora of this region.

Following pages: *Castilleja miniata* and *Campanula rotundifolia*





a crammed pack also limits plant specimen collecting, the documentation on which current plant knowledge is based. As none of these areas have access trails, steep and epic bushwhacks are the order of the day. Add to that the heat of doing this in the summer (when the flowers are blooming) and the dreaded hordes of mosquitoes, plus no water for drinking or lakes to swim in. Only those with an iron constitution should venture here. Once through the shroud of thick bush that guards these alpine areas, other issues come into play.



Knife-like blades of eroded limestone

Travel over the limestone involves navigating the often sharp and steep rocks that we call the limestone cheese grater, more than capable of ripping you to shreds if you were to fall. The high precipitation rates have eroded these soft limestones into incredibly sharp knife blades that test the durability of all but the best hiking boots. On top of this, falling into one of the huge sinkholes that riddle some of the plateaus is always a possibility. From a distance, the plateaus resemble moonscapes in many places, but on closer inspection, there is much here to offer the rock gardener and wildflower hunter.

Alpine plant enthusiasts will find a plethora of plants here. Many of these are restricted to the limestones, which makes them rare on Vancouver Island. These would be considered disjunct populations, separated geographically from the main range of the species distribution. My early days of mountain botanizing on Vancouver Island led me to believe that these plants were rare everywhere.



A pink puddle of *Silene acaulis*

However, having traveled and explored off-island in recent years, I have found that many of our rare plants are common on the mainland ranges such as the Cascades and Rockies. Of course, this is due to the fact that we live on an island, where plant populations are generally poorer. I reflected on this in Calgary this past summer when I saw cutleaf anemone (*Anemone multifida*) in a natural area of a city park. This plant requires a minimum of two days' hard travel to see on Vancouver Island! Moss campion (*Silene acaulis*), a circumpolar species, is abundant on the limestones and more showy than on the adjacent igneous rocks. It can make huge, ancient buns, entirely covered with bright pink flowers pressed tight against the foliage. Saxifrages are well represented here, with at least 10 species including a new record for the island, wedge-leaf saxifrage (*Saxifraga adscendens*), found just this past summer. One saxifrage of note is the purple mountain saxifrage, (*Saxifraga oppositifolia*), another circumpolar species. Many cultivars and wild selections of this plant are grown by rock gardeners, but I've never seen this plant growing as tightly as here on the west coast. The buns are as hard as rocks, with the rosettes packed much tighter than any cultivated form I've seen. Sadly, I've never seen it flowering on the island, as it blooms very early. Getting to them this early would involve



Phlox diffusa can be found in a wide range of color forms.

not only the above-mentioned hardships, but also camping and traveling in winter conditions to access the vertical, snow-free rock faces where this species grows. Spreading phlox (*Phlox diffusa*) is the only phlox to be found here, but of interest to gardeners is the diversity of color forms that may be found, from deep purple to pure white and all variations in between. Arctic aster (*Eurybia siberica*) makes an appearance here too. This plant was well separated from its main range, which extends all the way to the Arctic, as the common name implies. Another rarity for the island is mountain death camas (*Anticlea elegans*), another disjunct population which also looks different from mainland forms with larger flowers and greener leaves. Yellow mountain avens (*Dryas drummondii*), while common in the interior ranges, is also



Anticlea elegans



Erysimum arenicola

disjunct here and never forms the great mats seen in the Rockies. Thus a real treat whenever one stumbles across its tiny nodding yellow blooms. Western sweetvetch (*Hedysarum occidentale*) of the pea family, with pink-purple flowers, is another species with disjunct distribution. The yellow-flowered cascade wallflower (*Erysimum arenicola*) also occurs here, though not exclusively on limestone.

Among some of the more common ferns such as maidenhair fern (*Adiantum aleuticum*) and lady fern (*Athyrium alpestre* var. *americanum*), two other interesting ferns occur here: green spleenwort (*Asplenium viride*), a hairless spleenwort with green leafstalks and only found on limestone on Vancouver Island; and the curiously



Asplenium adulterinum

named sinful spleenwort (*Asplenium adulterinum*). This small fern, while extremely rare in North America, is also found in Europe (disjunct indeed!), and is believed to have evolved as a hybrid between the non-limestone species *Asplenium trichomanes* and the above mentioned *A. viride*.

Shrubs are poorly represented here, but Arctic willow (*Salix arctica*) can be abundant, forming ground-hugging mats that conform to the shape of the very rocks over which they're growing. The plateaus also host a variety of western



Taraxacum cf. ceratophorum

species, not always associated with limestone. Some of these include the field locoweed (*Oxytropis campestris*), a large-flowered, showy form of tufted saxifrage (*Saxifraga cespitosa*), subalpine daisy (*Erigeron glacialis*), pussytoes (*Antennaria spp.*), louseworts (*Pedicularis spp.*), Sitka mistmaiden (*Romanzoffia sitchensis*), silky phacelia (*Phacelia sericea*), scarlet paintbrush (*Castilleja miniata*), subalpine buttercup (*Ranunculus eschscholtzii*), and common harebell (*Campanula rotundifolia*). Also occurring here is the smallest dandelion you'll ever see (*Taraxacum cf. ceratophorum*). This is just a small sampling of the diverse flora encountered on these plateaus.

In the past few years, my friends and I have been exploring these remote areas in the hopes of discovering special things. While we haven't found any "new" plants, there certainly have been some surprises and adventures. Perhaps the best part of traveling here is that we get to immerse ourselves in a unique and beautiful alpine landscape that few people ever see.



Dryas drummondii



Growing Hardy Cyclamen from Seed

MARGARET P. BOWDITCH

WE LIVE IN southeastern Pennsylvania, on the edge of USDA hardiness zone 7, but some winters can have times of zone 6 weather. In the warmer half of the year we live in coastal Maine in a zone 5 climate. I have cyclamen in both places, but most are in Pennsylvania. Growing these little treasures is not an instant gratification project, as it takes 2 – 3 years from seed to garden plant, but the reasons for growing cyclamen are many. These plants produce their pink or white flowers when little else is in flower, and they are often fragrant. In addition to the blooms, their foliage alone would make them worth growing. Foliage can be plain green, silver, pewter, or elegantly patterned and is attractive at least 6 months of the year. We used to live in a house with all sorts of gardening situations indoors and out, but for the last 4 years we have lived in a retirement community in a 3-room apartment with small gardens outside. So I am challenged to find microclimates, etc., but gardeners are born for challenges. Despite the challenges, I have found a method that works for me, and I end up with too many plants and have to give them away or sell them at plant-group benefits.

While cyclamen are native to the Mediterranean and surrounding areas, some are hardy in Pennsylvania and Maine, and I order the ones suited to my outdoor growing conditions. The hardiest are *Cyclamen hederifolium*, *C. coum* and *C. purpurascens*. Somewhat less hardy but worth trying here are *C. mirabile*, *C. cilicium*, and *C. intaminatum*. Some *C. mirabile* of the Tilebarn series have leaves that emerge with pink leaf markings. This color may startle the timid but the technicolor effect fades as the leaves mature. I grow my *C. purpurascens* in Maine as they have summer flowers with an intensely sweet



Cyclamen seedlings growing on.

Opposite: A diversity of *Cyclamen hederifolium* leaves.



Cyclamen hederifolium

fragrance, and I want them where I can enjoy them. The other species are planted in Pennsylvania in well-drained soil in partial shade. There *C. hederifolium* blooms from late summer through the fall and the leaves decorate the garden for many months from fall to spring, while *C. coum* blooms late winter into spring. The other species bloom on a slightly different schedule but mostly spring or fall.

Ordering seeds is the first step. My seeds come from the plant societies I belong to including NARGS, the Alpine Garden Club of British Columbia, and the Cyclamen Society. As I live in the US, only the NARGS seeds come without the necessity of having a seed import permit. Seeds are harvested in the summer and the fresher the seed, the faster the germination. Years ago, Ellen Hornig sent fresh seed in the summer, but that is no longer possible, as her wonderful Seneca Hill Nursery has closed.



Diverse leaves on *Cyclamen coum* seedlings

When I began growing cyclamen, I simply planted them in seed pans, put them in a cold frame, and waited a season or more before germination. This process works and many growers have success with this simple method, but now I use a faster, more reliable method to speed the process and achieve higher rates of germination. The first step of my germination process starts when the seeds arrive and I make labels. I have learned that all cyclamen seeds, unless newly harvested, benefit from a day's soaking before planting, so I soak each variety in a separate little plastic bag with the label attached. While the seeds are soaking, I prepare the seed pans and soil. I make drainage holes in aluminum foil mini loaf pans and fill them with a mix of houseplant potting soil amended with Turface (a baked calcined clay product used to add porosity to soil) and grit. I wet each container down with boiling water and let them cool. Once the soil is cool, I distribute the seeds over the soil surface as evenly as possible. It is important to place the seeds so that they are not close to each other, as they will likely be in the seed pan for years. The usual advice is to cover all with a layer of grit but I use a thin layer of Turface. Others find this an invitation to liverworts and other unwelcome visitors but that hasn't been a problem for me. The benefit of Turface as a top dressing is that it is a perfect indicator



Labels made, seeds soaking



Cyclamen hederifolium seedlings



Cyclamen coum 'Something Magic'

of water needs, changing from a dark beige color when wet to a light beige when dry. When the seeds are sown and covered, I place the pans in a 60-degree place where they can germinate in the dark. By turning down the heat in my bathroom, I can create a perfect cool, dark place for germination in the closet. I have persuaded myself that not having warmth in the bathroom is worth it for the seeds that germinate in a closet there. Luckily my husband has his own bathroom. In dark, cool conditions, cyclamem seeds germinate in anywhere from 3 weeks to a year. As soon as I see



Young cyclamen in the cold frame.

little leaves poking up, I move that pan to a space under fluorescent plant lights running 16 hours a day in my bedroom. Although they would do better if grown at 60 degrees, the bedroom is at 70 degrees with a small drop in temperature at night. In early spring, all seed pans, even the *C. purpurascens* that may not have germinated, go outside into a north-facing cold frame. Then in May we head to Maine. I ship my



Late summer bloom on a white flowered *Cyclamen hederifolium*.



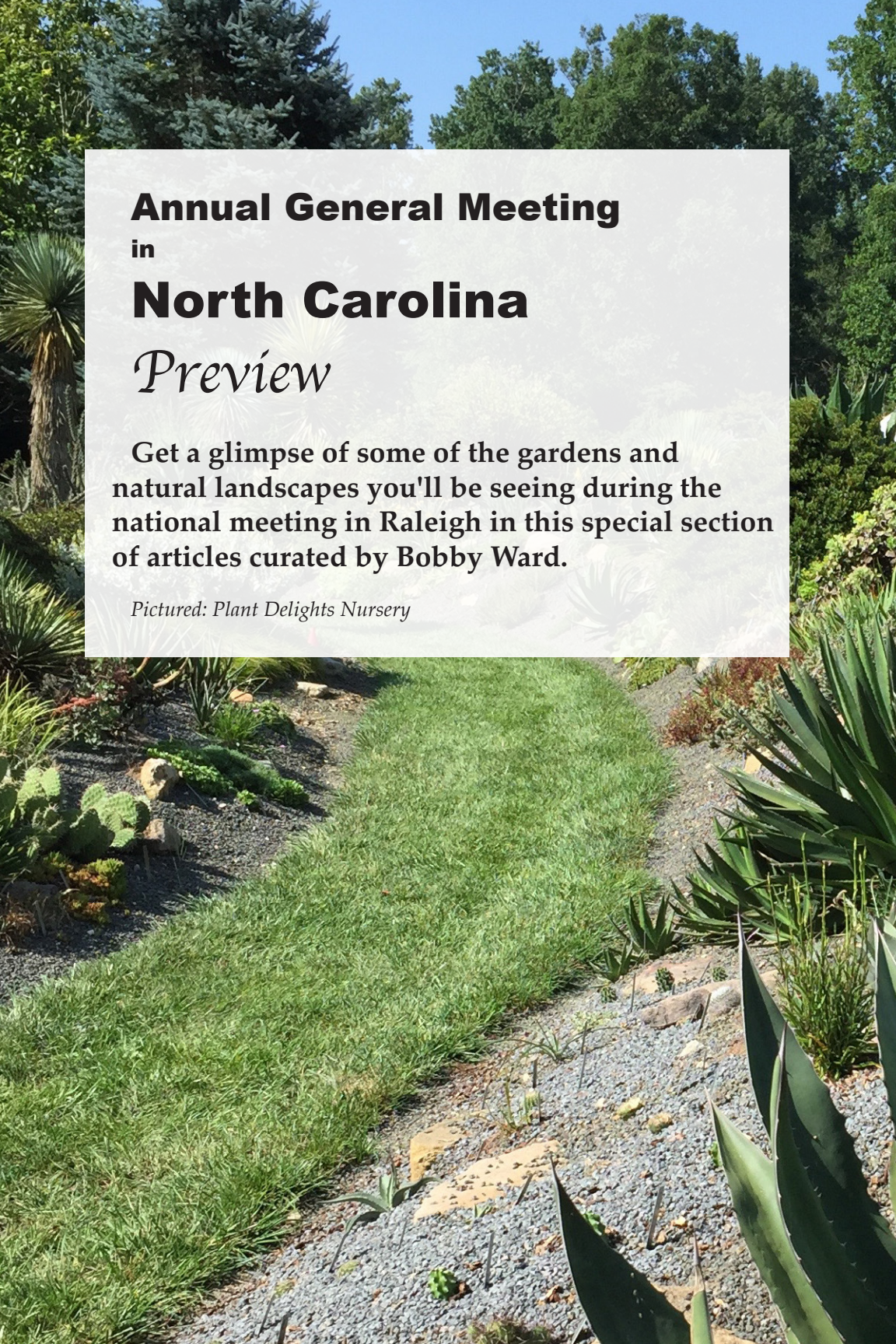
Cyclamen coum blooming in late winter.

clothes so that my plants and seedlings can travel by car. In Maine, my seedlings live on the eastern end of a porch and seem to do well. When they return to Pennsylvania the cyclamen seedlings spend the winters in the cold frame until the tubers are at least $\frac{1}{2}$ inch in diameter, big enough for life in the garden. Some make the Maine journey several years before getting big enough to be planted out.

One seedling solved a problem for me this fall. I'd signed up to enter a flower show, and all my possible entries for the class "Flowering Plant" went into decline. There was no point in lugging a large substandard plant to the show. But just in time, a tiny *C. hederifolium* 'Lysander' poked up through the mix with a lovely flower and patterned leaf. So I took my 11-month old baby up in a 1-inch clay pot with a top dressing of grit. It was dwarfed by others' entries but got a second prize. Then a different panel of judges looked at entries and read the detailed information card that accompanied each exhibitor-propagated plant. Perhaps it was the story of the cold bathroom or tiny 'Lysander's charm, but it got a national award, the ribbon far larger than the plant. Hence another reason for growing cyclamen.



A tiny, prize winning *Cyclamen hederifolium*



Annual General Meeting in North Carolina

Preview

Get a glimpse of some of the gardens and natural landscapes you'll be seeing during the national meeting in Raleigh in this special section of articles curated by Bobby Ward.

Pictured: Plant Delights Nursery





Croatan Carnivores

TIM ALDERTON

IN THE SEVERAL years that I've lived in North Carolina, I have spent only a little time exploring the varied natural areas found throughout the state. But recently, I visited one of these areas, the Croatan National Forest in Carteret County in the eastern part of the state, to see some of the most unearthly of plants—plants that “eat” rather than are eaten.

Late May and June bring on the flowers of the most famous carnivorous plant, *Dionaea muscipula*, the Venus flytrap. I ventured along Pringle Road, north of Cedar Key, where I had read that populations of the federally protected plants still prospered in the most northeasterly part of their range in

the relative wilderness of the longleaf pine savanna. Controlled fires lit periodically and the occasional blaze from a lightning strike provided the open habitat needed by *Dionaea muscipula* and other carnivorous plants growing in the seasonally wet depressions in the expanse of pine savanna. Driving along Pringle Road, stopping periodically when a spot of color from wildflowers or blackened brush from recent burns caught my eye, I managed to locate one of the populations of these hungry plants.

In a recently burnt area, remnants of brush resprouting leaves revealed the

Dionaea muscipula, North Carolina's iconic Venus flytrap growing in boggy, frequently burned habitat



Opposite: *Gentiana autumnalis* doing blue as only a gentian can.

identity of some of the overbearing neighbors of the little carnivores. Young leaves of *Vaccinium*, *Lyonia mariana*, and *Clethra alnifolia* emerged from the bases of charred twigs, preparing to retake the open ground once covered by their vegetation. Meanwhile, *Dionaea muscipula* took advantage of this open canopy to flower and set seed while the good times lasted. Small clusters of $\frac{3}{4}$ -inch (2 cm) white, five-petal blossoms stood atop 8–12 inch (20–30 cm) scapes, rocketing from 3–4-inch (10 cm) rosettes of fresh green, miniature bear traps growing among the charcoaled stems and venturing into the nearby *Aristida stricta* (wire grass). The grassy foliage of *Stenanthium densum* also took advantage of the new-found sunlight to erect its own tall raceme of white, six-tepal stars with protruding stamens tipped in burnt ochre pollen. Other neighbors in this location included *Sphagnum*; a wiry, pastel blue colored *Lobelia nuttallii*; florescent orange-flowered *Polygala lutea*; the prostrate marching stems of *Vaccinium crassifolium*; and the fragrant foliage of *Myrica cerifera* var. *pumila*.

Another trip into the Croatan in search of predatory plants came in early November. John Henderson, an amateur nature photographer from Cedar Key, promised to show me at least six of the resident carnivorous plant species growing only a few miles from his home. With his topographical map of the southeastern Croatan in hand, we jumped into his Jeep and drove up Pringle Road. His map detailed locations previously found and noted with mileage marks and descriptions of what one would find at each. Only a few hundred yards beyond my own May discovery, we stopped to see another location offering a home to *Dionaea muscipula*.

Walking a few hundred feet off the road through a thin scattering of *Pinus palustris* and passing tufts of *Liatris*, as well as a few plants formerly known as *Aster* and young shoots of *Arundinaria gigantea*, we came upon an area where low depressions or ruts allowed for moister conditions than that of the surrounding open pine savanna. With close inspection, John began pointing out nickel- and quarter-sized rosettes. Tiny, pale green, tennis racket-shaped leaves covered in red hairs tipped in orbs of sticky glue sometimes held minuscule arthropods trapped in the adhesive jewels: *Drosera capillaris*, the first of three sundew species found that day. Upon even closer inspection, a second species, *Drosera brevifolia*, began to appear. The largest rosettes growing only to the size of a nickel and sticky, red, ping-pong paddle-shaped leaves nearly lacking petioles helped to distinguish these patient hunters. Pale yellow mats of *Sphagnum* in places surrounded the tiny, red rosettes of *Drosera*, highlighting both plants in this unique habitat. Sometimes only inches away, hiding at the base of clumps of grass, with green rosettes of leaves tipped in blood-red jaws, *Dionaea muscipula* waited for the unsuspecting insect prey to land and trigger the leaves to close.



The abundant white bells of *Lyonia mariana* in bloom

A few feet further, on slightly higher ground, a disheveled, deep purple-blue blossom of *Gentiana autumnalis* stood out like a beacon from the surrounding tan blades of *Aristida stricta*. Scanning the area for other interesting plants, my eyes brought into focus another tiny jewel. A single, glossy yellow flower of *Utricularia subulata* glistened atop a wiry stem poking up from a patch of bare ground, marking the presence of a subterranean network of trapdoors waiting to capture minute worms and invertebrates in the moist soil. Yet another predator of sorts grew in this location as well. Pink, ½-inch (1.25 cm), trumpet-like blossoms held on wiry branching stems hid the thieving nature of *Agalinis aphylla*. *Agalinis*, a genus of hemiparasites, preys on other plants, tapping into their roots to steal nourishment, but is not totally dependent on them as the plants themselves can still photosynthesize. This location also contained the creeping *Vaccinium crassifolium*, a late flowering *Polygala lutea*, and resprouting *Gordonia lasianthus*.



Sarracenia purpurea usually blooms in the spring, but this loner has thrown out an odd, late autumnal flower.

After spending thirty or forty minutes at that location, John and I got back into the Jeep and traveled about two miles to our next stop on Millis Road. Climbing up a low bank into another open pine glade brought into view a depression about 300 feet long by 40 feet wide (about 90 m x 12 m), spotted with traps of water-filled *Sarracenia*. Two species grew in the perpetually wet soil, the most apparent of these being *Sarracenia flava*. Hundreds of now-browning, 18-inch (46 cm) tall, trumpet-like, tubular leaves stood among the grasses and other bog plants. A few still showed the summer's chartreuse tubes with varying degrees of burgundy red veins radiating up the leaves and onto the hood, still waiting for unsuspecting insects to venture into their water trap. Scattered around, remnants of parachute-like seed heads were only memories of the bizarre, yellow, spring blossoms. The second species, *Sarracenia purpurea*, formed several patches near its taller cousin. The dense clusters of 6-inch (15 cm) tall, green-veined, red pitchers appeared fresh as spring, despite the fall appearance of *Sarracenia flava*. One loner flowered, holding a red spaceship-shaped blossom on top of a 10-inch (25 cm) scape.

Looking beyond the very apparent *Sarracenia*, John again pointed out the tiny rosettes of *Drosera*. Two species grew in the small open patches of the boggy soil. *Drosera capillaris*, with the tennis racket leaves, grew here as it did in the previous location on Pringle Road, but it was joined by the third species of the day, *Drosera intermedia*. The leaves of *D. intermedia* grew longer, thinner petioles and appeared more like a badminton racket than the tennis rackets of *D. capillaris*. Also, the rosettes grew to an enormous quarter- to fifty-cent piece size.

Growing alongside *Sarracenia* and *Drosera*, the versatile *Coreopsis gladiata* sent up a few thin, 10-inch (25 cm) stems topped in 1½-inch (3.8 cm), golden yellow daisies with a dark brown center. In the muck of the bog, pipe cleaner stems of a *Lycopodiella* maneuvered their way around the clumps of grasses and *Sarracenia*. In the middle of the almost entirely herbaceous community of this bog, a solitary clump of *Myrica cerifera* anchored the wet soils. A few small clumps of bushy, glossy black-fruited *Ilex glabra* were the only other woody to venture in to the wet expanse. On the bank of the depression, pale blue inflorescences of *Ionactis linariifolia* loosely covered the open, needle-like foliage of the 8-inch (20 cm) tall plants. On the relative high ground,



The sticky threads of *Drosera intermedia* wait to ensnare unsuspecting insects

a lone *Gentiana autumnalis* held an unblemished blossom of a rich blue funnel with a white throat brushed with mashed-pea green and flecked with speckles.

As John and I prepared to leave, I looked down and noticed the late flowers of a spiral orchid. The leafless, 8-inch (20 cm) tall stalk held nine white blossoms on a twisted stem. We would later find out that this orchid, *Spiranthes longilabris*, which was identified with the help of several people in the native plant community, happened to be federally endangered and had not been recorded in Carteret County.

I found remarkable the number of familiar garden plants growing within sight of the carnivorous plants that I had gone to see. *Myrica cerifera*, *Clethra alnifolia*, and *Ilex glabra* connected the plants in our gardens to the wild predatory plants' world, strange neighbors that one would never expect to see cohabitating within our own gardens. Others, like the recovering *Gordonia lasianthus*, challenge the gardener to grow them in conditions like their inhospitable home in the intermittently wet/dry pine savanna, where they flourish despite recurrent fires. Within several yards of these two locations, other familiar landscape plants grew not in the lush ways we are accustomed to in our own yard, but as wild, hardy cousins, able to take the stressful conditions found in the pine savanna. The ubiquitous *Ilex vomitoria*, *Pinus taeda*, and multiple species of *Quercus* were growing as scrubby shrubs to 40 foot (12 m) trees. *Pinus palustris*, though less common in landscapes, provides the main canopy of the surroundings where some trees, I have read, are over one hundred years old, though their smaller size makes them look much younger due to the extreme conditions of the savanna.



Delicate white blooms of the endangered orchid *Spiranthes longilabris*

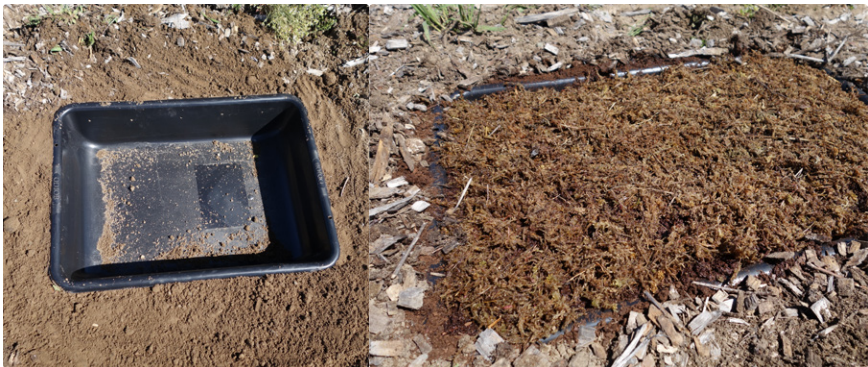


Sarracenia purpurea is an easy and beautiful addition to a bog garden.

Carnivores in the Garden

Joseph Tychonievich

The many bog-dwelling carnivorous plants are beautiful and interesting additions to the garden and, provided with the right conditions, are easy to grow. Most, despite their warm native habitat, are cold hardy to zone 6 or even 5. To make a home for these plants, you can create a bog using a plastic tub sunk into the ground or a rubber pond liner. Drainage holes put a couple of inches below the soil surface will produce the wet but not saturated conditions these bog plants require. Alternatively, you can set a container in a bowl or dish that will hold water and keep your container wet. Fill the bog garden with peat or a mixture of peat and sand to ensure the highly acidic conditions these plants are native to and then keep it watered using rainwater whenever possible, as most tap water is alkaline and will raise the pH.



A cheap plastic tub can make a very effective bog garden.



Snowdrops at Montrose

NANCY GOODWIN

Editor's note: *Nancy Goodwin's garden at Montrose will be on the tour during the NARGS annual meeting in Raleigh, North Carolina in November, when attendees will get to see this incredible planting of fall blooming snowdrops in peak bloom.*

THE GENUS *GALANTHUS* (snowdrops) brings cheer to gardeners in winter, a beacon promising cold weather and an extended show of small white flowers. Whenever my snowdrops are visible I spend much time on hands and knees to examine the flowers in detail, noting the shapes and markings on their inner or outer tepals, and shapes and colors of leaves. Even when they aren't visible above ground, they remain an imaginary vision.

Members of the amaryllis family, snowdrops are poisonous to most critters so they can survive without protection from deer, rabbits, and other herbivores. They can tolerate summer heat and droughts by remaining dormant, only appearing above ground in my garden in the cool of mid-fall through early spring (depending on the species and weather). Many forms multiply quickly and transplant easily when in growth, which begins in the roots about a month before the tips of their leaves appear above the soil.

My passion for snowdrops began when my husband and I moved to Montrose, in Hillsborough, North Carolina, and I started to garden seriously. I finally had good, loamy soil to work with, and I wanted to grow everything I could that would thrive in my climate, so I joined the Royal Horticultural Society, American Horticultural Society, and the American Rock Garden Society primarily for their journals and seed exchanges.

The first winter in my new garden, I found one small patch of large-flowered snowdrops at the edge of the woods and moved a few bulbs to the old rock garden at the front of the house where they grew vigorously. In 1985 I purchased snowdrops and other bulbs on sale after Thanksgiving, planting them here and there hoping to discover the place where they grew most happily. As time went on, I bought more bulbs when I found them offered in bulb catalogs, accepted divisions from friends, and gradually learned that many species and forms grow well here including *Galanthus elwesii*, *G. reginae-olgae*, *G. peshmenii*, *G. gracilis*, *G. nivalis*, *G. woronowii*, *G. ikariae*, *G. rizehensis*, and *G. plicatus*.

Montrose house is at the top of a fairly steep hill that ends in a broad flood plain bordered by a small river. To control erosion, a
Opposite: Massive plantings of *Galanthus elwesii* var. *monostictus* in full bloom in November

Works Progress Administration project in the 1930s installed a series of terraces above the river. To use that history and shape of the land as a design feature, in early January of 2002 I planted a snowdrop walk with *Galanthus nivalis* at the top of one of the ridges, drawing attention to a curving path almost 300 feet (91 m) long and about 3 feet (1 m) wide. It took me about a month of planting one bulb to a hole to create a “river of snowdrops” that reaches peak bloom in mid-February. These snowdrops grow beneath large tulip poplars (*Liriodendron tulipifera*) where they have increased quickly for me. After only about 3 years, I had a fine display which could be seen from the more formal areas of the garden.

In the fall of 2002, I began planting in a woodland area beneath *Aesculus flava*, *Celtis occidentalis*, and *Maclura pomifera*. I had planted a few snowdrops in this area several years before to see how well they grew, and they increased quickly, so I decided to make a major planting there. This project took about 10 years to complete as I cleared the land of small trees and weeds and began planting and dividing the early-flowering form of *G. elwesii* var. *monostictus*. My original bulbs came as 12 “snowdrops” from a local farm supply store, and when I first planted them, I had no idea they would bloom in late fall and early winter.

I was so delighted by the displays of these species that I began looking for other areas to fill with one form or one species and now have large plantings of *Galanthus gracilis*, *G. nivalis*, *G. n.* ‘Viridapice’, double-flowered *G. n.* ‘Ophelia’ and ‘Cordelia’, *G. elwesii* Edward Whittall Group, *G. elwesii* (an early flowering form with faces), *G. reginae-olgae*, *G. elwesii* var. *monostictus* on another winding path at the top of another ridge, and other unnamed forms. The differences of each species or form can be seen easily when in full growth and planted in masses—gray-green leaves of various widths, shiny green leaves, short leaves, taller narrow leaves.

Now that I have many large areas throughout the woods planted with snowdrops, I have come to appreciate the value of galanthus as a winter cover crop. They can be seen across a wide valley, at the edges of the ridges, and in many other areas separated by paths or fields. I plant them in wooded areas, which are well drained in summer and, although they grow best in a neutral soil, I seldom fertilize them. I spend much of each winter looking closely at my snowdrops in search for something different and worthy of a major planting, but I have resisted the temptation to collect named varieties. I am fascinated by the enormous variety available but shocked by the prices they bring.

When the last few leaves of my snowdrops fade in early April, I count the months until I see the tips of the first *Galanthus reginae-olgae* in October. Toward the end of the summer, I am counting the days!



Getting and Growing Snowdrops

Bobby Ward

Nancy Goodwin has discovered that snowdrops grow best at Montrose in deciduous woods with loamy soil where there is adequate moisture and good sun during the fall and winter growing season, but well drained during the summer dormant season. Her foolproof method in moving snowdrops in her garden is to dig an entire clump while in growth, being certain to include the long roots; immediately put them in water so the roots won't dry out, replant and water thoroughly. If she is giving the bulbs away, she wraps the entire clump of bulbs and dirt in a damp paper towel. "Just don't let the roots dry out and don't damage the roots," she says.

Here in the South, most snowdrops are available at garden centers in late summer and autumn, frequently when the bulbs are dry, and the result is that gardeners find little success. However, if you can get bulbs earlier just as they are going dormant or can obtain bulbs that have been carefully dug, stored, and not allowed to dry, your likelihood of success is considerably improved.

Some U.S. sources of snowdrops include the following:
Temple Nursery, POB 591, Trumansburg, NY 14886. Catalog \$5.
Ernest Cavallo. Email to request catalog: ernestcavallo@aol.com
Carolyn's Shade Gardens: carolynsshadegardens.com
Russell Stafford's Odyssey Bulbs: odysseybulbs.com



Elizabeth Lawrence: The Sage of Southern Gardening

ANDREA SPROTT

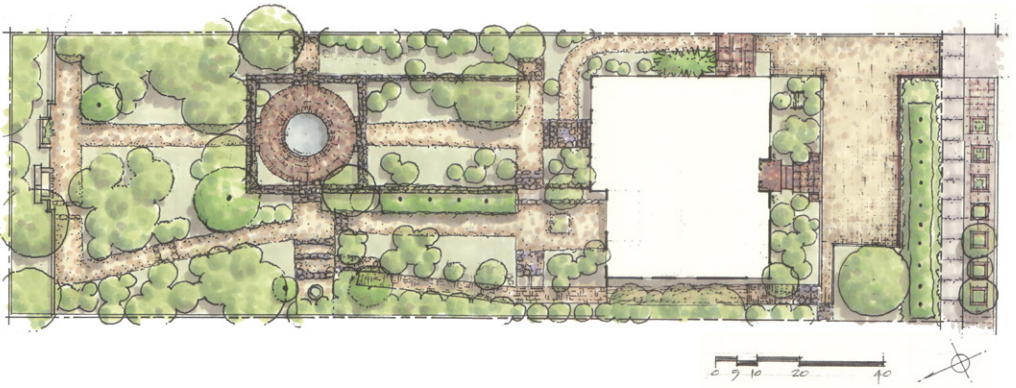
Elizabeth Lawrence is best known as a garden writer-- one of the best of the 20th century. Through a highly informative yet conversational style of writing, she encouraged her readers to embrace diversity in their gardens by trying something new. Even though she most often wrote of her own experiences in her two Southern gardens in North Carolina, her readers and correspondences spanned the entire country and beyond, making her a literary and horticultural icon.

Elizabeth Lawrence was born in Marietta, Georgia, in 1904. Shortly thereafter, her family moved to Hamlet, North Carolina, and then to Raleigh, so she and her younger sister, Ann, could attend St. Mary's School, from which she graduated in 1922. Elizabeth graduated from Barnard College in New York City in 1926 with a bachelor's degree in English with a focus on the Classics. Still curious and eager to expand her knowledge after returning home to Raleigh, she decided to earn a second degree from North Carolina State College (now University). In 1932, she became the first female graduate of the first landscape architecture program in the U.S. South, launching her career as a landscape architect. Throughout her life, Elizabeth designed and consulted on numerous gardens for private residences, commercial sites, church courtyards, and historic sites. Despite her many accomplishments as a designer, today it is her writing for which she is celebrated.

Elizabeth wrote for several popular magazines of the time: *House & Garden*, *The American Home*, and *Popular Gardening*, sharing her deep knowledge of plants as well as her successes and failures as she pushed boundaries in her garden.

As the frequency of Elizabeth's publication grew, so did her confidence, and she began work on her first and best-known book, *A Southern Garden: A Handbook for the Middle South* (1942), which has been in print nearly continuously for the past 75 years. The first book of its kind and immediately lauded coast-to-coast, it includes Elizabeth's plant trials and research, and specifically addresses the needs of gardeners in USDA zones 7 and 8. But more than the practical gardening information, Elizabeth's writing style, engaging enough to appeal to gardeners and non-gardeners alike, is what made her beloved then and today.

Opposite: Elizabeth Lawrence at her garden gate, August 1957.
Photo courtesy the Charlotte Observer collection.



Map of the Elizabeth Lawrence Home and Garden

In addition to designing, writing, and gardening, family was always a very important part of Elizabeth's life. She never married, finding her time filled with caring for the family garden of over an acre in Raleigh; her widowed, aging mother Bessie; and their large Victorian home. As this was all becoming too much to keep up, Elizabeth made the decision that she and her mother would leave Raleigh. In 1948, Elizabeth and Bessie sold the house in Raleigh and moved to Charlotte to be close to Elizabeth's sister Ann and her family.

Ironically, even though Elizabeth was still a practicing landscape architect, she did not make or keep any drawings or plans of her new Charlotte garden. Thankfully there is enough historical documentation that confirms the garden design that exists today is original. The layout is formal; intersecting pathways neatly outline garden beds while subtle changes in hardscape materials create garden areas, one flowing effortlessly into the other. Elizabeth Lawrence excelled as a designer in many ways, but her keen understanding of scale and the relationship between house or structure, garden, and human, is notable. She once wrote, "Proportion is ALL," which is especially important when it comes to a small, city lot like hers -- just 75 feet wide by 225 feet deep (about 22 m x 68 m) -- with nearly every inch cultivated.

Writing did not cease through what must have been a hectic time in settling into a new house and a new city, and neither did her endless search for new and interesting plants. I searched Elizabeth's records for a lapse in plant orders between 1948 and 1950 and, surprisingly, I found none.

Elizabeth kept excellent records. In addition to keeping journals of when plants were in bloom, Elizabeth studied minute details of plants and noted her observations meticulously in a handwritten database of index cards. She had a scientist's mind for documenting and accumulating research, and an artist's sensitivity for color and combining plants.

We are incredibly fortunate to have these index cards, the metal file drawers sitting exactly where they did originally, stacked neatly on her desk in her studio, where they were (and still are) always easily accessible. About 13,000 index cards make up the collection, each card filled with information about a particular plant. Elizabeth used this information to constantly edit the garden and evaluate its plants roster. There were Southern classics like magnolias, camellias, daylilies (*Hemerocallis*), phlox, and an amazing collection of daffodils (*Narcissus*). And then there were many rare specimens and oddities, like butcher's brooms (*Ruscus aculeatus*), poet's laurel (*Danae racemosa*), dwarf *Forsythia*, and Chinese paper bush (*Edgeworthia*).

Friends and visitors came away with the same impression: Elizabeth's garden was a peaceful place; it was dynamic and filled with plants. She once said to a visitor, "You have not seen my garden... you have only seen it today."

Elizabeth cultivated many things: numerous friendships through letters, landscape design work, and popularity as a garden speaker of nearly encyclopedic knowledge. Not to mention all her writing, which earned her much more than an incredibly wide-reaching audience of enthusiastic readers. For *A Southern Garden*, Elizabeth Lawrence was awarded the Herbert Medal, the highest honor given by the Amaryllis Society (now the International Bulb Society). She was the first female to be awarded this honor, and one of only seven since the award's inception in 1937. She received a citation from the American Horticultural Society for "important contributions to horticulture" and the Horticultural Writing Award from the National Council of State Garden Clubs. She was named an Honorary Life Member of the Louisiana Society for Horticultural Research and received the Award of Merit from NARGS for the eleven articles she wrote for its journal.



The view today from Elizabeth Lawrence's studio looking into the garden.

Perhaps her greatest joy in writing was the Sunday gardening column for *The Charlotte Observer*, aptly titled “Through the Garden Gate,” which ran from 1957 through 1971. Her first article, August 11, 1957, begins:

“This is the gate of my garden. I invite you to enter in; not only into my garden, but into the world of gardens – a world as old as the history of man, and as new as the latest contribution of science; a world of mystery, adventure and romance; a world of poetry and philosophy; a world of beauty; and a world of work.”

Over the 35 years in Charlotte, Elizabeth wrote manuscripts for five more books, three of which were published in her lifetime: *The Little Bulbs: A Tale of Two Gardens* (1957), followed by *Gardens in Winter* (1961), and *Lob’s Wood* (1971). Shortly before her death, Elizabeth handed over two manuscripts to Duke University Press. They were edited and published as *Gardening for Love: The Market Bulletins* (1987, ed. by Allen Lacy) and *A Rock Garden in The South* (1990, edited by Nancy Goodwin with Allen Lacy). In the latter, Elizabeth wrote, “But gardening is an art, and the rock garden is its purest form... All gardeners become rock gardeners if they garden long enough. The rock garden... is the most personal of all forms of horticulture.”

In declining health, Elizabeth sold her Charlotte home and garden in 1984 and moved to Maryland to be close to her niece. But before closing the garden gate, she gave plants to friends, as she wasn’t sure the next owner would be a gardener and it was important to her that those plants live on in her friends’ gardens. Elizabeth passed away on June 11, 1985.

The property was sold in 1986 and acquired by Lindie Wilson, also an accomplished gardener, who quickly realized this was a very special garden that still contained hundreds of Elizabeth’s original plants. Lindie immediately set about uncovering and rejuvenating the garden. For the next 23 years, Lindie studied and researched, and carefully dug in the dirt – always with an unshakable reverence for Elizabeth. She kept her own records in much the same way that Elizabeth did, and talked to “anyone who would listen” about the significance of Elizabeth Lawrence, her work, and her garden. It is thanks to Lindie’s inspired foresight, tireless efforts, careful stewardship, and hard work that the Elizabeth Lawrence House & Garden exists today.

Feeling that it was time to begin thinking about creating her own garden and plan for the future of this property to protect it from development, Lindie sought advice from Elizabeth Lawrence



Elizabeth Lawrence, c. 1980

enthusiasts, preservation experts, and organizations, and in the early 2000s, founded the Friends of Elizabeth Lawrence. Representatives from The Garden Conservancy, a national non-profit organization dedicated to preserving and promoting exceptional American gardens, and the Wing Haven Foundation, a local non-profit which owned one of Charlotte's loveliest public gardens just ten houses up the street, were among those involved from the beginning.

In 2005, the Elizabeth Lawrence House & Garden was designated a local historic landmark by the Charlotte-Mecklenburg Historic Landmarks Commission and entered into the Smithsonian's Archives of American Gardens. The following year, the property was listed in the National Register of Historic Places. In 2008, The Garden Conservancy was granted a conservation easement for the property, after which Lindie sold it to the Wing Haven Foundation. Later that same year, the property became one of a handful of Preservation Projects of The Garden Conservancy.

Today, the Elizabeth Lawrence House & Garden is owned and operated by the Wing Haven Foundation, and is managed in partnership with The Garden Conservancy. It is open to the public as a horticultural and historic resource.

As garden curator, my job is to see the garden through Elizabeth's eyes and interpret that for the public as honestly as possible. It is the single hardest part of my job, and perhaps the most rewarding. I am also using the garden as the living laboratory that it was for Elizabeth, although on a decidedly smaller scale. The garden is always changing, with something new in bloom nearly every day of the year. It is still true that visitors do not see Elizabeth Lawrence's garden... they only see it that day.

In *No One Gardens Alone, A Life of Elizabeth Lawrence*, Emily Wilson's biography of Elizabeth, Wilson wrote, "She was not destined to become well known for having designed other people's gardens, but for having inspired other people's dreams of gardens of their own."

Please come visit and be inspired. You won't be disappointed!



The Elizabeth Lawrence House as it appears today.

The Rock Gardens at the JC Raulston Arboretum

CHARLIE KIDDER AND TIM ALDERTON

THE JC RAULSTON Arboretum in Raleigh, North Carolina, has three garden areas devoted primarily to rock garden plants: a scree garden, rooftop terrace, and a small crevice garden. All three showcase the range of plants that can be grown in a hot, humid climate not normally associated with rock gardens and alpinines.

Scree Garden

In 2006, the JC Raulston Arboretum undertook the installation of a scree garden. We sprayed and rototilled an irregular-shaped area, approximately 85 feet by 20 feet (about 26 x 6 m), just west of the Ruby McSwain Education Building. Our native Piedmont clay does not provide good drainage, so we used cubic yards of soil mix— $\frac{3}{4}$ sandy topsoil and $\frac{1}{4}$ PermaTill® (a heat expanded slate) — to make berms that reach a maximum height of about 30 inches (76 cm). We added a few large boulders to form the bones of the garden and a thin layer of PermaTill® as mulch. To allow visitors to view small plants, we cut a



Agave ovatifolia flanked by the bright red blooms of *Salvia greggii*



The scree garden in summer

gravel path through the bed, which we later coated with Klingstone, a polymer glue that prevents movement of the pebbles yet still allows water to percolate.

We finished the initial planting of the scree garden in September 2006. While this may not have been the optimal season for planting many of the less-hardy taxa, survival over the winter was nearly 100%. Plants were quite small at the time of installation, yielding a quite open look, but they rapidly grew and filled in the space.

The so-called “woody lilies” now provide much of the structure of the scree garden. *Agave asperrima* (syn. *A. scabra*) has flowered once and offsets prolifically, guaranteeing future blooms. *Agave ovatifolia* has proven to be very hardy over several winters, and its powder blue-gray leaves are a perfect foil to the bright flowers of the various *Salvia greggii* cultivars planted around it. The salvias provide a fine-textured, year-round presence to the garden and almost eight months of sporadic bloom.

Yucca torreyi has turned out to be the giant of the scree garden, growing from a one-gallon plant to an eight-foot spiky presence with several foliage heads sprouting from the trunk. The cream-colored flowers emerge in early spring and can be best enjoyed from the steps leading up to the roof of the McSwain Building.

Another plant of considerable size in the scree bed is *Dasyilirion texanum*, although here it’s a matter of circumference rather than height. With large, multiple heads, this dasyilirion has a spread of several feet. The twisted leaves are armed with light green spines that glow when backlit and dance in a strong breeze. Also known as sotol, its flower

panicle can shoot to eight feet tall and is beloved by our local bees.

Delighting visitors with its milk chocolate fragrance, Florida chocolate flower (*Berlandiera subacaulis*) is covered with yellow composite flowers from May through summer. It is native only to sandy areas of Florida and demands excellent drainage the scree provides; it



Chocolate scented *Berlandiera subacaulis*

is even seeding around a bit. Nearby is *Chrysactinia mexicana*, a small, evergreen shrub with yellow daisy flowers during much of the growing season and highly pungent, fine, needle-like foliage.

Fall visitors to the scree garden will miss the lovely flowers of *Pulsatilla*, hopefully serving as an enticement to visit again in the early spring. If you miss the flowers, you might catch the fluffy seed heads a few weeks later.

Rooftop Terrace

The McSwain Building was initially topped with an intensive type of green roof in the early 2000s. The flat surface was originally planted with several varieties of low-growing drought-tolerant perennials such as sedum. These plantings did not provide a great deal of visual interest and became infested with



The nodding spring blooms of *Pulsatilla cernua*

the weedy creeping spurge (*Euphorbia maculata*).

In 2007, the roof received a radical re-do. We removed the original plantings (and weeds) and brought in additional soil, predominantly a mix of PermaTill®, along with some sand and



organic matter. The new soil layer ranged from a minimum of six inches in depth, up to berms about 18 inches (46 cm) high. The roof beds have a highly irregular shape, with an overall area of around 2,000 square feet (185 sq m).

The roof plantings are similar to those in the scree bed, but there are some interesting additions. Hailing from Texas is *Diospyros texana*, a small shrubby tree, now about six feet tall. It is deciduous in our area and is developing a wonderful exfoliating bark. *Hesperaloe campanulata*, a member of the Agave family native only to the Mexican state of Nuevo León, has leaves that curve slightly inward on themselves while thread-like filaments peel from the edges. In summer, *Hesperaloe campanulata* puts out long wands adorned with dozens of pink flowers.

Caveat Emptor

A couple of plants in these beds should come with strong warnings in case you get the urge to incorporate them into your garden. *Romneya coulteri* is a member of the poppy family, hailing from the California high desert. Located against the wooden wall in the scree garden, in the spring it's actually an attractive sub-shrub, with blue-gray foliage and large "fried-egg" flowers. But in our humid summers the foliage quickly becomes diseased and unsightly (though cutting it back will provide fresh foliage for a time). Despite not being entirely happy in our climate, *Romneya* will sucker like mad and engulf any nearby plant. You have been warned.

Another overly aggressive plant can be found on the roof: *Hyalis argentea* (syn. *Plazia argentea*). It is a composite with silvery, grass-like foliage and small, pale lavender flowers, and it too can look deceptively appealing. But in winter it turns into a floppy brown mess, and come spring this Argentine native will resume rampant growth and tango right through its neighbors. It might work in a container, or perhaps in a bed where it's the sole plant.



The crevice garden shortly after being first planted.

Crevice Garden

The crevice garden started as a workshop installation presented by Kenton Seth in March 2014. The area, approximately 10 feet by 12 feet (about 3 x 4 m), provides space to attempt many smaller growing plants that need excellent drainage and would get lost in the larger roof or scree gardens. Thanks to a lot of trial and error, the norm for this area, we now have about fifty taxa growing among the tightly placed stones and sand substrate.

Several cacti now have settled in between the slabs. Two forms of *Escobaria sneedii* subsp. *leei*, now only an inch or so across, grow in the gravel mulch on the southwest side. On top of the crevice garden, a brittle *Opuntia fragilis* is taking root. The flat *Mammillaria heyderi* subsp. *meiacantha* hides near the base growing flush with the ground. Higher up the outcrop, little globes of *Pediocactus simpsonii* and *Lobivia aurea* subsp. *leucomalla* are beginning to establish. Walled in between some slabs of stone, an *Echinocereus triglochidiatus* var. *inermis* will flower for the first time this



Physaria arizonica blooms in late winter

year. On the sand slope of the north side, a wheel-like *Parodia sellowii* was unfazed by the 5 F (-15 C) in January 2017. The center of the west face of the crevice garden is the location of an eight-inch mound of *Maihuenia poeppigii*.

Dianthus feels at home in and around the stones, too. Tight, mat-forming *Dianthus arpadianus* var. *pumilus* and *Dianthus erinacea* var. *alpina* defy the summer heat and humidity of North Carolina, despite the loss of *Dianthus* × *arvernensis* and *Dianthus microlepis* in 2016 because of that same weather. Larger-growing *Dianthus callizonus* has formed a small colony of seedlings on the sand bed, sloping up to the rocks.

In some tight spots near the base of the outcrop, *Globularia pseudonana* and *Globularia cordifolia* have begun covering the adjacent stones with their mats of foliage, though only lightly flowering. Rock garden Brassicaceae give us a challenge with the wet summers, but *Aethionema subulatum*, with early pink blossoms, *Draba aizoides*, and *Physaria arizonica*, with late-winter yellow flowers have defied the odds and survived our summers. A mat of *Pteroccephalus depressus*, with pinnatifid foliage, creeps along in the gravel surrounding clusters of stones that give added texture. Halfway up the outcrop, a developing carpet of *Phlox subulata* ‘Herbert’ covers tiny foliage with equally tiny, soft lavender flowers each spring.

The crevice garden provides a place to grow many plants that in cooler areas would prosper in typical rock gardens. However, because of our sustained heat and summer nighttime temperatures in the 70s F (20s C), coupled with summer humidity, many plants do not grow satisfactorily. We will continue to trial additional plants.

The JC Raulston Arboretum owes a debt of gratitude to Tony Avent (Plant Delights Nursery) for plant donations and to Carolina Stalite for providing PermaTill®. NARGS’s Norman Singer Endowment Fund provided grants that allowed enhancements to the rooftop terrace and the addition of hypertufa troughs. Also, we thank Kenton Seth and the Piedmont Chapter of NARGS for funding Kenton’s lecture and crevice garden installation.



Kenton Seth installing the crevice garden



A Natural Garden of Wondrous Diversity in the Carolinas' Sandhills

LARRY MELLICHAMP

GARDENERS LIKE DIVERSITY. They especially like an assemblage of plants with something in common, large and diverse enough to be challenging in getting “them all,” but small enough to fit into a finite space – like collecting butterflies. “Come see my extensive collection of 35 different trilliums,” one might implore a fellow enthusiast. Different flowers, different leaves, varied fragrances, blooming at different times, some related, some not, with various habits, from a variety of habitats ranging all over eastern North America. Of course, such species were brought together from populations scattered across the region, but they may all be able to grow in your own back yard.

But what about high diversity of species in natural habitats, single locations with astounding diversity? There are indeed several situations that may be especially intriguing to rock gardeners. Think of

the many species in the high mountain meadow – similar cushion, dwarf and erect forms, from different plant families, under the same environmental pressure of extremes of cold, thin air, and sunlight intensity in the alpine environment. These meadows are delights to behold and the plants offer a challenge to collect and grow. Other famously diverse extremes (outside of the tropical rain forest) include the



Rhododendron viscosum is one of the many beautiful, unusual plants to be found in the Sandhills.

Kansas tall-grass prairie, with as many as 22 species in a meter-square plot; and southeastern pitcher plant bogs with as many as 40 species in a sample plot. The high diversity in these examples is due (presumably) to a combination of frequent fire, critical levels of moisture, extreme soil factors, and minor variations in habitat structure.

We saw an area with a high diversity of plants on an outing with the North Carolina Native Plant Society in late October 2016 to a special habitat complex near Lake Baggett in the Sandhills region of southern North Carolina near Hoffman. It displayed an unparalleled collection of shrubs and rare wildflowers that we would not have encountered – as a community – anywhere else. I would say that the diversity of shrubs in a small area is not to be found anywhere else in North America. I would be interested to hear from anyone who would propose a similar collection of so many woody species in such a small space. Just as in the cases cited above, the factors of frequent fire, moisture gradient, and low nutrient content, along with physical differences in the terrain, interact to keep any one species from dominating and provide niches for several species to co-exist in close quarters without the aggressive, clone-forming species excluding all others.

The Sandhills region of the Southeast stretches from central North Carolina to west-central Georgia. It is a very narrow band lying between the Piedmont and the Coastal Plain and is the remains of an ancient beach dune, deposited about 20 million years ago. It includes parts of about 30 counties and is considered the interior-most band of the Coastal Plain in these states. It is aptly described by botanist Bruce A. Sorrie in his excellent and unique book *A Field Guide to Wildflowers of the Sandhills Region* (University of N.C. Press, 2011). He says, "Among the significant features that set the Sandhills region apart are its rolling hills, generally poor sandy soil, and abundant creeks and small rivers. Soils...



The rare white wicky (*Kalmia cuneata*) in spring bloom

are generally...acidic, low in nutrients, and droughty." The region is dominated by the longleaf pine (*Pinus palustris*), a unique species adapted to frequent fires, which once dominated the coastal region from Virginia to Texas but is now much reduced. The longleaf pine provided vast quantities of timber, turpentine, pitch, and tar for the British navy and its merchant ships beginning in the early 1700s.

The longleaf habitat is home to the endangered red-cockaded woodpecker, which is making a remarkable comeback. In such diverse habitats that range from very wet to very dry, one expects to find a diversity of species. Sorrie describes and illustrates over 600 species and divides the region into nine natural communities. To be sure, those wishing to cultivate the plants of this region must understand the extreme habitat features that sustain their existence, just as with the alpine meadow.

In visiting the North Carolina Sandhills Game Land location we walked through a sandy longleaf pine site bisected by what are called "wet stream heads." Thus, the moisture gradient from very wet to very dry, frequent fire, and differences in nutrient levels in the soils were

factors leading to the high diversity. I am not saying there were a lot of species in a meter-square plot like you could have with all herbaceous plants, but there were a large number of species in a relatively small area the size of a classroom (say about 30 feet x 30 feet or 9 x 9 m).

The species we saw were the rare white wicky (*Kalmia cuneata*), fairly rare dwarf fothergilla (*Fothergilla gardenii*), Atlantic azalea (*Rhododendron atlanticum*), swamp azalea (*Rhododendron serrulatum*), 2 shrub hollies (*Ilex coriacea*, *I. glabra*), coastal sweet pepperbush (*Clethra alnifolia*), red chokeberry (*Aronia arbutifolia*), titi (*Cyrilla racemiflora*), shadbush (*Amelanchier obovata*), blaspheme-vine (*Smilax laurifolia*), poison sumac (*Toxicodendron vernix*), shining fetterbush (*Lyonia lucida*), staggerbush (*Lyonia mariana*), male-berry (*Lyonia ferruginea*), horse-sugar (*Symplocos tinctoria*), honey-cups (*Zenobia pulverulenta*), sweet-bay (*Magnolia virginiana*), swamp sweetbells (*Eubotrys racemosa*), wax-myrtle (*Morella cerifera*), sourwood (*Oxydendrum arboreum* – technically perhaps a tree), and prickly-pear cactus (*Opuntia humifusa* – technically a woody plant). That's some 20 species of true shrubs, with the heath family (Ericaceae) the most common family represented.



The brilliant red fruit of *Aronia arbutifolia*



Toxicodendron vernix has beautiful -- but itchy -- fall foliage

In addition, three pines (longleaf, pond, and loblolly) were there in close proximity. Since the demarcation of habitats can be very sharp, it is not unusual to find pond pine (*Pinus serotina*) that can grow in standing water within spitting distance of pines of deep, well-drained sands such as loblolly pine (*Pinus taeda*) and longleaf pine (*P. palustris*). In addition, we saw (in flower in late October) some very rare wildflowers:

Pine Barrens gentian (*Gentiana autumnalis*), Carolina asphodel (*Tofieldia glabra*), and a new species of heartleaf ginger (*Hexastylis sorriei*) that grows in sphagnum seeps. The



Gentiana autumnalis in late October peak bloom

latter two are restricted to coastal regions of the two Carolinas (see the amazing useful distribution maps at <http://bonap.org>). In addition, and worthy of note from among the myriad of more common species of asters, goldenrods, grasses, etc., were the interesting grassleaf roseling (*Cuthbertia graminea*), dwarf sandhill iris (*Iris verna*), sweet pitcherplant (*Sarracenia rubra*), and southern purple pitcherplant (*Sarracenia purpurea*). These were locally common, with *Sarracenia rubra* acting as indicator of the perfect ecotone niche for white wicky, azalea and dwarf fothergilla. What a glorious experience!

While enjoying these plants in their natural habitats is a special experience, there are those who would like to cultivate them. While all are not available commercially, many are. The dryland species must have well-drained, sandy soil (plant them in a sand pile). It is easier to add water than to take it away. These include dwarf iris, roseling, cactus, and wax-myrtle. The easiest way to grow most of the other species from this area would be in a bog garden, utilizing a container such as a child's wading pool, wooden tub, constructed bed, or other container that can hold some water but not create a pond. I create such a bog by building a box made of 2 feet x 8 feet (about 0.6 x 2.5 m) treated lumber and lining with a rubber pool liner and punching a few holes in the bottom for drainage. The soil mix is half Canadian peat and half

clean sharp quartz sand (such as sandblasters sand or pool filter sand). This could be in sun or part shade, depending on your location and afternoon sun intensity. The habitat in the wild is under longleaf pines – not full sun but not much real shade. You could add some nutritive organic matter to the mix, such as leaf mold or loamy soil, but keep it mostly peat and sand. These plants do with with limited nutrients. The key is the moist-but-well-drained soil, as in a bog garden. I have had luck with *Kalmia* (formerly *Leiophyllum*) *buxifolia* in such situations. Some of the species, such as *Fothergilla*, *Rhododendron*, *Lyonia*, and *Eubotrys*, can take a more “normal” soil, acidic with extra moisture-holding material or extra water as needed. *Kalmia cuneata* would be the challenge, and (based on failures) I believe the bog “soil” to be the perfect medium.



Eubotrys racemosa with delicate wands of white bell-shaped flowers

At the NARGS national meeting in Raleigh, North Carolina, in November 2017, the two-day pre-conference field trip, which I will lead along with Will Stuart, will visit appropriate sites in the Coastal Plain to see these species and many others of the region.

I would like to thank Brady Beck, staff naturalist with the North Carolina Game Land program and Will Stuart of Matthews, North Carolina, naturalist and excellent photographer (see his photos at <https://www.flickr.com/photos/willstuart/>), for help in finding this unique Sandhills site and helping make it accessible.





Urbanite Outfitters: Installing a Crevice Garden in North Carolina

JEREMY SCHMIDT

INSPIRED BY THE success of Kenton Seth's crevice garden installation in 2014 at the JC Raulston Arboretum in Raleigh, North Carolina, Tony Avent (owner of Plant Delights Nursery, Inc. @Juniper Level Botanic Garden) explored the opportunity of incorporating a crevice garden to enrich what is already one of the great living plant collections (currently over 22,000 taxa). Juniper Level Botanic Garden (JLBG) has been home to hundreds of amazing but now deceased rock and alpine plants that will not survive in JLBG's nutritious, humus-rich, irrigated garden soil; instead, these plants require ultra-coarse soil, with little or no organic matter.

In beginning the project, our first challenge was stone selection and acquisition. We have a limited budget. Fortunately, a demolition project on a newly acquired adjacent property yielded over 70 tons of concrete slabs (a.k.a. "urbanite") between 4 and 6 inches (10 to 15 cm) thick. Since the same amount of quarried flagstone would cost around \$20,000, the repurposing of the broken concrete slabs was an easy decision. Furthermore, concrete disposal costs around \$75/ton; as we had already painfully discovered on our first Waste Industries bill.

When someone asks where we acquired our “flagstone,” we respond, “It is urbanite quarried from the property!”

Although crevice garden “soil” varies from site to site, crevice gardeners agree it should be structurally coarse and deficient in

organic matter. Beyond that, we didn’t find many strong guidelines regarding the chemical properties of crevice garden media. We chose PermaTill® to be the base for our soil mix. PermaTill®, manufactured by Stalite Environmental, is a sterile and inert, expanded slate product that offers consistently coarse texture, pH 8.0, and high CEC (cation exchange capacity). It is pea size, lightweight, and creates pore spaces for quick drainage. We added a trace amount of native coastal plain sand (phosphorous index >60; pH ~4.0) and a trace amount of Raleigh red clay (potassium index >60; pH ~5.5). We also added a small amount of clean, screened gravel (#57 stone) to maintain crevice spacing. Some organic matter was scooped up inadvertently during the mixing process.

The mix:

- 8 parts PermaTill®
- 1 part gravel (#57 stone)
- 1/8 part native coastal plain sand
- 1/8 part native Raleigh red clay
- Trace part organic matter

There was little guidance we could find on how to begin. The urbanite slabs were more consistent in thickness than any Internet “crevice garden” search examples—and very heavy. We turned to crevice garden aficionado Kenton Seth,



Urbanite stockpile ready for construction



Planting mix going in

from Colorado, for advice. We discussed construction, design, “soil,” and even crevice garden wine pairings in a long string of emails and a couple of phone conversations. The first stones were set in January 2017. With the design and installation help of another crevice gardening veteran Michael Peden, from New York, the first phase was completed in late March 2017. We thank both Kenton and Michael for their huge role in making our crevice garden truly amazing!

The first phase covers roughly 400 square feet (37 sq. m) with several compost-based soil pockets built in. By early April 2017, about 200 plants were planted or transplanted into the crevices and pockets, including a 10-foot-tall (3 m) *Nolina*.

As the project moves forward, we will continue trialing more rock and alpine plants in the crevices, including about 100 taxa germinated from the 2016 NARGS seed exchange. Our focus is on trying (and re-trying, and re-re-trying) hydrophobic plants from hot climates like Chile, Argentina, Turkey, and the Mediterranean. We also hope the coarse, stone-based soil will reduce the foliar disease pressure on pubescent-leaved plants.

By mid-to-late fall 2017, we hope to have extended the crevice outcropping about 200 linear feet (60 m) down a cut bank with some alkaline seeps included. Come see the crevice garden at the upcoming annual NARGS meeting, November 17-19, 2017.



Crevices under construction.



NARGS

HIVE MIND

Taken together, you, the members of NARGS, know just about everything. Our society is full of experts on any and every plant, technique, tool, or skill relevant to rock gardening. I want to bring that combined knowledge of our organization together in a new feature I'm calling NARGS Hive Mind.

The first of these will appear in the winter issue of the Quarterly, and will be on making troughs. I'm starting with troughs because I talk to a lot of you, and I know everyone has their own method of making these containers. Some of you make them out of styrofoam boxes, others use hypertufa or papercrete, and some of you actually carve them from stone. I want to get all of these different trough-making techniques together, try them all out, compare them, and compile the results into the ultimate guide to trough building.

To do that, I need your help. Take a moment, please, and send an e-mail to me at gsparrowgardens@gmail.com telling me how you make troughs. Tell me your hypertufa recipe, how you transform styrofoam into something beautiful, or however else you personally like to make troughs. If possible, include tips, mistakes you've learned from, or anything else you think might be useful or interesting for other members of the Society.

I'll take all your recipes and techniques, and put them together in the Quarterly so we can all learn from each other and create a bunch of really amazing containers for our alpine treasures.

Joseph Tychonievich, Editor



The World of Crocuses

Jānis Rukšāns

2017, Latvian Academy of Sciences

ISBN: 978-9934-19-125-1

Hardcover: 568 pages, 1700+ color photos
21.0 x 29.7cm

€70.00

GIVEN Jānis Rukšāns' stature in the world of bulbs, I opened this book with very high expectations. Not only did it not disappoint, it exceeded my hopes. The book is an A to Z listing of every species of crocus (Yes, I mean EVERY species) written by a man who is a very accomplished academic botanist as well as a gardener and nurseryman.

The description of each plant starts off deeply technical, including every detail of morphology. If you are an academic botanist, this book will be an invaluable resource.

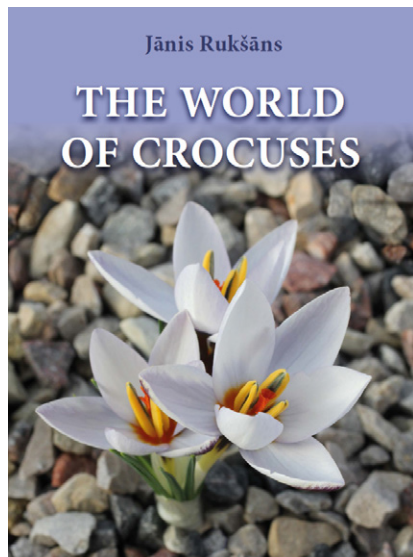
If you, like me, are very much not a botanist but just a gardener with a hunger for cool unusual plants, this book is for you as well. Alongside the technical details there is all the information a gardener could ever want: photos of the species in the wild

and in gardens, information about how it grows in the wild, notes on hybrids and named forms that you might be able to find, and Rukšāns' own experience with cultivating the species in his garden and nursery in Latvia.

If you would ever want to take a trip to see crocuses in the wild, each species' description also tells you exactly where it grows, what habitat, and when it flowers.

Taken together, this is a book that any lover of crocuses -- be they a botanist, gardener, or both -- will enjoy.

Joseph Tychonievich



2017 NARGS Annual General Meeting

Rock Gardening in the Southeastern U.S. – Past, Present, and Future
November 17-19, 2017

The 2017 Annual General Meeting (AGM) of NARGS will be in Durham, North Carolina, and is being hosted by the Piedmont Chapter. The AGM will explore the past, present, and future of rock gardening in the southeastern and mid-Atlantic regions of the U.S.

The AGM will include a welcome reception and presentation on Friday evening, November 17; a full day of presentations on Saturday, November 18; and tours to three gardens in the Triangle area on Sunday, November 19. The conference fee is \$325 per member. Additional activities include an optional pre-conference, two-day guided tour of botanically interesting natural areas in North Carolina's Coastal Plain on November 15 and 16, and visits to public and private gardens in the Triangle area on November 17 (the pre-AGM activities on November 15-17 are dependent on the number of persons who sign up).

Additional information on the meeting as well as an on-line registration form are available on the meeting website (www.piedmontnargs.org). Registration will be limited to 120 participants. We hope you will join us!

AGM Details

Speakers on Friday evening and Saturday are listed below. Additional information on the presentations is on the website.

Tim Alderton – Horticulturist at the JC Raulston Arboretum

Tony Avent – Internationally known plant explorer, hybridizer, and speaker; owner of Plant Delights Nursery and Juniper Level Botanic Garden

John Grimshaw – Internationally known plantsman, author of *Snowdrops: A Monograph of Cultivated Galanthus*, and director of the Yorkshire Arboretum, Castle Howard, England

Larry Mellichamp -- Author of *Native Plants of the Southeast*, former Director of the UNC- Charlotte Botanical Garden, and President of the North Carolina Native Plant Society

Jeremy Schmidt – Grounds and research staff, Juniper Level Botanic Garden

Andrea Sprott – Curator of the Elizabeth Lawrence Garden in Charlotte, N.C.

Joseph Tychonievich – Author of *Rock Gardening: Reimagining a Classic Style*, editor of *NARGS Rock Garden Quarterly*

Bobby Ward – Author of multiple books, including *Chlorophyll in His Veins: J. C. Raulston, Horticultural Ambassador*.

Gardens to be visited on Sunday Include:

Montrose is nationally known for the multiple woodland and sunny gardens that Nancy Goodwin has developed at this historic site. The mail-order nursery that Nancy operated specialized in hardy cyclamen and other unusual perennials closed in 1993, but she still propagates plants for sale to garden visitors. Of special note for AGM participants is the collection of fall-blooming bulbs and perennials, especially the large drifts of *Galanthus elwesii* var. *monostictus*, (the bloom time varies depending on the weather).

Plant Delights Nursery is one of the best known mail order nurseries in the U.S. Critical to PDN's success are the plant research and propagation activities at Juniper Level Botanic Garden, where over 22,000 plant taxa are being evaluated for garden worthiness. Many of these taxa are the result of Tony Avent's numerous collecting trips and plant hybridizing activities, and include almost 500 taxa suitable for rock gardens. Of specific interest to NARGS members are the multiple display gardens, one of which is a recently planted, 250-foot-long crevice garden.

JC Raulston Arboretum at North Carolina State University is nationally acclaimed for its large and diverse collections of plants that are suitable for landscape use, primarily in the southeastern U.S. The mission of the arboretum is to introduce, display, and promote plants that diversify the American landscape. Of specific interest to NARGS attendees is the crevice garden and troughs that are part of the roof-top garden and the xeric scree garden funded partially by NARGS's Norman Singer Endowment Fund.

Other activities during the meeting include plant and book sales. Although there will be no plant sales at the host hotel, participants will be able to purchase plants at Plant Delights Nursery and Montrose during the tours on Sunday. Plant Delights will also be open for sales on Friday prior to the meeting (hours to be announced). In addition, there have been a number of books written on the flora of the southeastern U.S. that are of interest to attendees. The authors of several of these books will be available during the meeting to sell and sign their books. We are also planning to have a raffle and/or silent auction of plants, books, and other garden related items during the meeting.

Schedule Overview

Friday, November 17

- 10:00 am NARGS AdCom Meeting
- 12:30 pm Registration desk opens
- 1:00 pm NARGS Board of Directors Meeting
- 3:00 pm Chapter Chairs Meeting
- 7:00 pm Reception and Book Signing (heavy hors d'oeuvres, cash bar)
- 8:00 pm Welcoming Remarks and Presentation

Early arrivers can go on your own to any of the gardens listed on the Open Gardens page of the website. Rather than arranging your own transportation and tours, you may want to sign up for the shuttle bus to local gardens described below.

Saturday, November 18

- 7:30 am Continental Breakfast (coffee, tea, breads and pastries)
- 8:15 am to 4:30 pm Speaker Presentations (break for included lunch)
- 6:00 pm Reception and Book Signing (cash bar)
- 7:00 pm Dinner
- 8:15 pm NARGS Announcements and Awards
- 8:30 pm Presentation

Sunday, November 19

- 7:45 am Coffee and Tea
- 8:15 am Depart for Garden Tours (boxed breakfast included)
- 12:00 am Lunch (boxed lunch included)
- 4:30 pm Return to hotel (transport to airport provided)

More detailed schedule information will be provided to registrants by early September.

Pre-Conference Activities

We are planning a small-group tour of native flora in North Carolina's Coastal Plain on November 15-16 and garden tours on November 17.

On Wednesday and Thursday (November 15 – 16), a pre-conference tour of native plant communities will be led by Dr. Larry Mellichamp, who has lead multiple botanic tours throughout the Carolinas (including the tours of the Appalachian Mountains following the 2004 and 2013 AGMs). Dr. Mellichamp is nationally known for his knowledge of the flora of the southeastern U.S., was Director of the University of North Carolina at Charlotte Botanical Gardens for 39 years, and has authored several books, including *Native Plants of the Southeast* published by Timber Press in 2014.

Locations to be visited during the tour include the Green Swamp Reserve, Lake Waccamaw State Park, Carolina Beach State Park, and Jones Lake State Park. Flora that we will expect to see include Coastal Fothergilla (*F. gardenii*), Coastal Azalea (*Rhododendron atlanticum*), Swamp Azalea (*R. viscosum*), Honeycups (*Zenobia pulverulenta*), Coastal Summer sweet (*Clethra alnifolia*), Dwarf wax-myrtle (*Morella pumila*), Southern Sheepkill (*Kalmia carolina*), Pyxie-moss (*Pyxidantha barbulata*), Long-leaf Pine (*Pinus palustris*), and many other coastal shrubs of pocosins, wetlands and forests. We should see late flowering Pine Barrens Gentian (*Gentiana autumnalis*), several ferns, various pitcherplants (*Sarracenia spp.*) and Venus Flytrap (*Dionaea muscipula*). The flowering season will be over, but the specimens will still be quite evident, especially their habitats

and associations. There will be opportunity to collect seeds from “not-in-preserves” roadside habitats as well, if there is interest.

Enrollment in the tour is on a first-come basis and is limited to 24 participants. The tour will leave from the host hotel on Wednesday morning and will return on Thursday evening. All of the locations are relatively flat and hiking conditions are relatively easy, but depending on weather conditions may be muddy. Bothersome insects should be at a minimum. The cost of \$300 per person includes transportation, snacks and drinks during the tour, and overnight lodging (based on double occupancy, \$345 for single occupancy). Meals will be at local restaurants, with food selection and payment by each participant. You can register for the tour using the AGM registration form.

On Friday (November 17), we will operate shuttle buses for NARGS attendees who are interested in visiting Juniper Level Botanic Garden & Plant Delights Nursery, Sarah P. Duke Gardens, and the North Carolina Botanical Garden. The buses will run in the morning (8:30 – 12:00) and afternoon (1:00 – 4:30). The buses to Juniper Level and Plant Delights will allow participants to spend roughly 3 hours on-site. The buses to Duke Gardens and NCBG will allow participants to spend roughly 1.5 hours at Duke Gardens and 1.0 hours at NCBG. The fee is \$25 per person for morning or afternoon transportation or \$40 for both. The service depends on having at least 10 people sign up for each trip. We are considering a tour of private gardens in the area; see the website for additional information.

Additional Information

The Sheraton Imperial Hotel will serve as the host for AGM activities. It is located midway between Durham and Raleigh, North Carolina, at 4700 Emperor Blvd., Durham, NC 27703. It is located on I-40, exit 282 (Page Road). It is approximately 150 miles northeast of Charlotte, NC and 270 miles south of Washington, D.C.

Airline and Train Service

Raleigh/Durham International Airport (RDU), is served by 9 airlines. It is located 4 miles from the Sheraton Imperial Hotel. The Sheraton shuttle provides free transportation service from the airport to the hotel.

The conference has been designed to minimize the need for a rental car. However, if you want to do some independent sightseeing in the area, car rentals are available at the airport.

Amtrak train service is available from Charlotte to Raleigh on the Piedmont Line and from New York to Raleigh on the Carolinian Line. The Sheraton Imperial Hotel is 18 miles from the Raleigh Amtrak station and 10 miles from the Cary Amtrak Station. You will have to hire a taxi to get to the Sheraton Hotel.

Accommodations

Sleeping accommodations have been reserved at the Sheraton Imperial Hotel at a block rate of \$109 for a single king bed or two full beds (excluding taxes). Rooms may be reserved at this rate from 1 day prior to the meeting (check in November 16) and 1 day after the meeting (checkout on November 20). Unreserved rooms may be released back to the hotel on October 16. Rooms are also available on Tuesday night (November 14) for participants on the pre-AGM native plant tour for \$149. Hotel reservations should be made on-line using the website link or by calling the hotel at 919-941-5050 or Sheraton’s Central Reservations at 800-325-3535.

Meals

The conference registration fee includes receptions on Friday and Saturday night, a continental breakfast and lunch on Saturday and Sunday, dinner on Saturday, and snacks on Saturday and on Sunday during the tours. The Friday reception and Saturday dinner will highlight local food specialties. Wine, beer, and mixed drinks will be available for purchase during the evening receptions and dinners, but are not included in the registration fee. Additional information about meal options is provided below. Please indicate your food preferences on the registration form.

Saturday Lunch

The Saturday lunch has two entrée options:

Salad with grilled chicken or
Vegetarian lasagna

Saturday Dinner

On Saturday night, three entrees options are available:

Grilled marinated turkey tenderloin with sweet potatoes and seasonal vegetable,

Roasted pork loin with garlic roasted red potatoes and seasonal vegetable,
or

Napoleon of grilled vegetables and brown rice pilaf.

Breakfast

Two breakfast options will be available each morning. The meeting registration fee includes a continental breakfast on Saturday consisting of muffins, bagels, banana bread, and coffee or tea. Continental breakfast items will also be provided on Sunday morning while boarding the tour buses. If you want a wider variety of breakfast options (e.g., made- to-order omelet, bacon or sausage, waffle), the hotel's restaurant is available for purchase.

Sunday Lunch

On Sunday, a lunch consisting of a sandwich, fresh fruit, cookies, and a drink will be provide. Snacks and water will also be provided during the Sunday tours.

Additional Information

Listings of books and reference materials you may want to read prior to the meeting and of other things to do while in the area are available on the website.

If you have questions, send an email to administrator@piedmontnargs.org or a letter to David White, 3 Ontario Ct, Durham, NC 27713.

Registration Form - NARGS 2017 Annual Meeting

If you have access to the internet, please register by completing the on-line registration form on the website (www.piedmontnargs.org). If you do not have access to the internet, please complete the following form and send it along with your check in U.S. Dollars made out to Piedmont NARGS to the Conference Registrar at Bobby Wilder, 2317 Elmsford Way, Raleigh, NC, 27608-2065. There is a \$25 cancellation fee until October 15, 2017. There are no refunds after that date. If you have questions, send an e-mail to administrator@piedmontnargs.org.

Personal Information:	First and Last Name	For name tag
Member 1:		
Member 2:		
Dinner Guest:		

Street or Mailing Address:		City:	State/Province:
Zip Code:	Country:	Phone:	E-mail:

May we list you and your contact information in the list of attendees?

No listing		No telephone		No e-mail address	
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Meal Choices:	Member 1	Member 2	Guest
Saturday Lunch			
Salad with Grilled Chicken			
Vegetarian Lasagna			
Saturday Evening Dinner			
Marinated Turkey Tenderloin			
Roasted Pork Loin			
Napoleon of Grilled Vegetables			
Sunday Lunch			
Turkey			
Vegetarian			

If you have special dietary requirements, please explain here:

Fees:	1	2	\$
Registration (current NARGS member)	\$325/person		
Registration (including 1-yr NARGS membership)	\$365/person		
Pre-Conference Trip on Nov 15-16 - \$300/person double occupancy room			
Pre-Conference Trip on Nov 15-16 - \$345/person single occupancy room			
Shuttle to Plant Delights on morning of Nov 17 - \$25/person			
Shuttle to Duke and NCBG on afternoon of Nov 17 - \$25/person			
Both shuttles on Nov 17 - \$40/person			
Guest: Friday reception and presentation - \$40/person			
Guest: Saturday banquet and evening program - \$55/person			
Total Payment			



Bulletin Board

summer
2017

volume 75 | 3

President's Letter

Today, millennials speak about being involved. Travel must be an experience, and we must be embedded with cultural experts in wonderful places. But to do this costs about \$5,000 for six days. Heck, NARGS has been offering this for a decade for a lot less. We should be successful, right? Well, we are but not necessarily solvent. I believe we lost sight of the kernel from which NARGS grew. In Steamboat Springs, Colorado, we were all reminded and invigorated by the enthusiasm of the attendees at the Annual General Meeting.

Why this enthusiasm? Because we are in a relationship. However, like all relationships, you have to feed it to maintain it. Yes, the Chapter experience is invaluable: trips, plants, garden visits, seeds, seedlings, and speakers are all great. The “mother ship” of NARGS enables the chapters to offer this ability to form lifetime relationships not only with plants, but also with each other. Not everyone comes to meetings for the speakers, although grand, or the trips, which are even better, but also to see old friends and I mean friends from twenty or thirty years ago. Or perhaps it was someone you met last year and enjoyed sharing plant knowledge and a glass of beer.

When Larry Thomas, founder of the Manhattan Chapter, introduced me to NARGS in 1990, he promised me I would form lifetime relationships with people that I might see only once a year. He was right and I’m still sharing a room with some of those folks. I treasure those moments in the Beartooth Mountains, learning at the knees of members like Anne Spiegel and the late Midge Riggs. This is what NARGS offers us—camaraderie on the local, national, and international level. Plus the benefit of extraordinary speakers who help us shape the future of our planet such as Doug Tallamy, Peter Korn, Ger van den Beuken, Alan McMurtrie, Mike Kintgen, and Panayoti Kelaidis. One trip and you, too, will be smitten.

So what do I bring to the table? A hard worker is a given. But I have a good grasp of administration and follow through, and I also believe in transparency. We need to keep NARGS functioning and with some visionary appeal. I am currently brainstorming with Don LaFond, Matt Mattus, Elisabeth Zander, Panayoti Kelaidis, and others to forge new

avenues of relevancy for NARGS to exist. Creativity and positive change are my areas of excellence. My knowledge of plants? Well, others do it better. Writing skills? Don LaFond is your man. But regarding respect for this organization and its members, then you have me 100 per cent. I am available, and I will answer you by email if you have a concern. We need to work together and all of you are available to me.

I want more traveling speakers (local and international) to our chapters, more tours and trips for our membership, and more hands-on experiences for all members. Chapters are invaluable to our Society. They are our representatives to the world. In the coming months prior to the Annual General Meeting in Raleigh, November 17-19, 2017, we hope to promote some concepts about which we would like and need your feedback either through the chapter chair or yourself. Let me hear from you.

Always,

Betty Anne Spar

Email: bettyannespar@gmail.com

Upcoming NARGS Meetings for your CALENDAR

**NARGS Annual Meeting
and Board Meeting
November 17 – 19, 2017 - Raleigh-Durham, North
Carolina**

Contact: David White

NARGS Annual Meeting
and Board Meeting
July 6 – 8, 2018 - St. John's, Newfoundland
Contact: Todd Boland

Editor's Note: Our new president Betty Anne Spar asked me to reprint this excellent article by our former president Peter George. It is certainly worth a re-read to remind us all that NARGS is not just about alpiners, but cool plants of all kinds! --JT

What is NARGS?

PETER GEORGE

Ever since I joined NARGS in 1996, I have observed that many members (and even more non-members) have an extremely narrow, and therefore fundamentally mistaken, concept of what the organization represents. A lot of people think of NARGS as an "alpine plant" society. Others believe that if something grows more than a foot tall, it's "not a NARGS plant." I have heard that chapters in the South and the Midwest are convinced that their members cannot grow "rock garden" plants, so they increasingly view themselves as garden clubs focused on hardy "perennials." Of course, this leads to fewer and fewer chapter members joining NARGS or, having joined in the past, keeping their memberships active.

So, what's the truth about NARGS and rock gardening?

Our Web site describes NARGS as an organization "for gardening enthusiasts interested in alpine, saxatile, and low-growing perennials. It encourages the study and cultivation of wildflowers that grow well among rocks, whether such plants originate above tree line or at lower elevations." I looked up "saxatile" and found that it means "growing on or living among rocks." We all know what alpine means, and no one can misunderstand "low-growing." Thus, we are an organization of people interested in perennial plants that grow well among rocks and that are relatively short. That sounds pretty inclusive to me, and it certainly doesn't in any way imply that the plants must be alpine, or tiny, or even particularly rare. It certainly does include plants that are native to every region of the world. For example, I grow *Townsendia* native to Kansas, *Campanula* native to Turkey, *Epimedium* native to China, a *Calceolaria* native to South America, and alpine plants from the Alps, the Rockies, the Caucasus, and the Adirondacks among others. I have lime lovers, ericaceous plants, and plants that ask only for some sun, some water, and a bit of soil. I also grow all over my property tall plants, such as *Echinacea* and asters and bushy plants like *Buddleja*. So what am I? Well, my major interest is growing plants that

like to live among rocks, which makes me a rock gardener as far as I'm concerned.

Why are so many people convinced that *Draba* are real rock garden plants and that *Epimedium* are not? Or that *Salvia* and *Hellebores* are forbidden because they are not included in some mythical list of approved "rock garden plants"? Far too many of us seem to think that, because the British named their organization the Alpine Garden Society, this limitation somehow applies to us. It does not. We are the North American Rock Garden Society, and our approach to what we love and what we grow is inclusive, not exclusive. We understand with absolute clarity that many gardeners cannot grow *Astragalus utahensis*, but that almost all of us can grow *Gentiana acaulis*, or *Penstemon ovatus*, or *Sedum kamtschaticum*. And those, among literally thousands of rock garden plants, can be grown in all climates, at almost all altitudes, and on virtually every continent.

Furthermore, for most of its history, NARGS has published a journal that has focused on plants that far too many of us may have considered inappropriate for rock gardens. Before sitting down to write this, I pulled out two old issues of the NARGS publication at random, just to see what they contained. The spring 1991 issue was dedicated to primulas, and the lead article is entitled "Primulas for the Southeast," by Nancy Goodwin. Nancy is from Hillsborough, North Carolina, a part of the United States not commonly associated with rock gardening. The second issue I selected was the fall 1985 issue, which featured an article called "Native Plants of Vermont." Anyone who is not familiar with the botanical wealth of New England, and who subscribes to the narrow view of what a "rock garden plant" is, will be surprised to learn that the article focused on what we call "woodland" plants, including *Claytonia caroliniana*, *Erythronium americanum*, *Trillium erectum*, *Asarum canadense*, and *Asplenium ruta-muraria*. Are these rock garden plants? Some would say they are not, but I vigorously disagree, and – more to the point – so does the NARGS journal.

So please, let's keep NARGS as inclusive as possible. To be sure, we are not simply a garden club (we are not interested in growing vegetables, annuals, roses, etc.); but neither are we an elite group of the wealthy and powerful who want to keep their organization small and exclusive. We are a large, geographically diverse body of people who simply love gardening with rocks. Let's focus on that, and work a bit harder to find commonality in purpose; by doing so, we will strengthen our organization and enhance its ability to provide valuable services to rock gardeners.

Timber Press Discount on Books

Like the North American Rock Garden Society, Timber Press works to connect gardeners with the information they need to grow healthier, more productive plants.

In appreciation of this work, NARGS members in the U.S. and Canada can now enjoy a **35% discount** when shopping on the Timber Press website. Timber Press is home to authors such as Piet Oudolf, Michael Dirr, Tracy DiSabato-Aust, Ruth Rogers Clausen, and NARGS' own Joseph Tychonievich. Timber Press publishes books on subjects from garden design to growing vegetables, from building green roofs to creating, yes, rock gardens. There is no expiration date to this offer, so use it as often as you like.

Go to www.timberpress.com and use coupon code "**NARGS**" at checkout.

NARGS Chapter Challenge Grant

The Rocky Mountain Chapter of NARGS has announced a challenge grant of \$10,000 to other NARGS chapters. Rocky Mountain Chapter will match dollar for dollar donations made to NARGS during the calendar year 2017 by other NARGS chapters (not by individuals) up to \$10,000. We thank the Rocky Mountain Chapter and its board for this challenge grant.

NARGS Donations

Donations between February 1 and April 30, 2017: \$3,945

Designated for the general fund, Seed Exchange, Rock Garden Quarterly, and in memory of Verna Pratt, Helga Andrews, and Harvey Wrightman.

- Sierra Chapter – NARGS
Rocky Mountain Chapter – NARGS
Wasatch Chapter -- NARGS
Accardo, Marlene (Colorado)
Adler, Lee Howard (New York)
Allard, Sherill (Ontario)
Ayton, Alan (Australia)
Bennett, Teri L. (Virginia)
Blade, Robert Logan (Washington)
Bouffard, Vivien (Massachusetts)
Brown, Alison A. (Maine)
Buch, Carl Johan (Denmark)
Cass, Maxine (Oregon)
Clark, Mary (Minnesota)
Cook, Scott (United Kingdom)
Dupey, Jeannette (Washington)
Dussler, Barbara (Germany)
Egan, Betty (Washington)
Ferree, Louisa (Massachusetts)
Fischer, Manfred (Germany)
Franklin, Catherine W. (Alaska)
Friberg, Shirley (Minnesota)
Gentling, Peter (North Carolina)
Gonzy, Michele (France)
Gray, Gail K. (Colorado)
Haas, Joan T. (Pennsylvania)
Hall, Steve (Oregon)
Hampton, Sandra Kay (Illinois)
Hemingson, Joyce (Connecticut)
Hiltz, Starr R. (New Jersey)
Huggler, Carol M. (Alberta)
Irving, Craig (Australia)
Kantor, Joseph A. (Iowa)
Kinlen, Lois (Wisconsin)
Knapp, Joann and Fred (New Jersey)
Larsen, Finn (Norway)
Laskiewicz, Terry (Washington)
Leggatt, Anna (Ontario)
Levi, Lika (New York)
Lewis, Mary (New Hampshire)
Loeffler, Ann R. (New Hampshire)
Matheson, Ellen (Massachusetts)
McInnes, Laurie (Australia)
Mitchell, Colleen (Michigan)
Moore, Nancy J. (Massachusetts)
Mosetti, Paula J. (New Jersey)
Muggli, Michael (Minnesota)
Normann, Oystein (Norway)
Norrback, Kaj (Finland)
Ogden, Lauren Springer (Colorado)
Open, Michael (France)
Plankeel, J. W. (Netherlands)
Rhee, See Jong (Republic of Korea)
Robertson, John (Illinois)
Salatino, Sarah (Vermont)
Schulze, Robert (Massachusetts)
Scott, Caroline (Alberta)
Sharpe, Jim (Nova Scotia)
Smith, Carole P. (Ohio)
Stafford, Russell D. (Massachusetts)
Stireman, Jr., John O. (Utah)
Tarrant, Georgina (Nova Scotia)
Toit, Helen du (Massachusetts)
Tou, Vello (Ontario)
Tucker, Jeff (Massachusetts)
Turunen, Michael (Finland)
Whitehead, Diane (British Columbia)
Whyman, Steven (North Carolina)
Wiersdalen, Inger Lise (Norway)
Wysocki, Raymond (New Jersey)
Zander, Elisabeth B. (Connecticut)

New Members

*Welcome to all those who joined between
February 1 and April 30, 2017*

Amherst Garden Club, POB 694, Amherst, NH 03031-0694
Andrews, Kismet, 1507 Broadway, Vancouver, WA 98633
Arnow, Jonathan, 57 Home Fair Dr., Fairfield, CT 06825-2726
Beck, Kathy, N6357 1323rd St, Prescott, WI 54021-7004
Boley, Linda, 150 S. 35th St, Boulder, CO 80305-5435
Bolton, Sharon, 4599 W. 37 Pl, Denver, CO 80212-2395
Brigden, Austin, 2625 Florida St, Longview, WA 98632-2028
Brown, Patricia, 8677 State Route 125, Russellville, OH 45168-8717
Clark, Mary, 1072 S. Race St, Denver, CO 80209-4613
Cox, Anita, 2860 S. Monroe St, Denver, CO 80210-6544
Eick, Geeta, 84270 Allen Rd, Cottage Grove, OR 97424-9600
Evans, Cherylene, 8061 W. Grand Ave, Littleton, CO 80123-1229
Fearon, George, POB 1, Union Springs, NY 13160-0001
Flanigan, Alan, 2091 Eudora St, Denver, CO 80207-3810
Fowler, Mary, 2345 S. Adams St, Denver, CO 80210-5538
Gaul, Susan, 8 Crescent Ct, Midland, MI 48640-3310
Gonzales, Ray, 303 Cary Pines Dr, Cary, NC 27513-3127
Grant, Ann, 4321 E. County Rd 48, Fort Collins, CO 80524-8739
Guest, Kathleen, 8399 Zimmerman Rd, Hamburg, NY 14075-7143
Hiltzik, Lee, 19 Garnett Pl, Melville, NY 11747-4257
Hinchliff, Cody, 19836 NE 174th St, Woodinville, WA 98077-8861
Kennedy, Ellen, 82 Millett Rd, Swampscott, MA 01907-2159
Lee, Karen, 7432 S. Clermont Dr, Centennial, CO 80122-2245
Levi, Liki, 21 Lockwood Rd, Scarsdale, NY 10583-5301
Loveall, Linda, 1816 Wales Dr, Walnut Creek, CA 94595-2472
Lowe, David, 917 SE Vine St, McMinnville, OR 97128-6338
Mahar, Marion, 10 Pleasant Hill Ln, Sterling, MA 01546-2517
Maltby, David, 11 Nelson St, Brantford, ON N3T 2M6, Canada
Matheson, Ellen, 53 Hubbard St, Concord, MA 01742-2506
Mower, Amy, 5 Waring Ln, Greenwood Village, CO 80121-1609
Pennington, Tony, 1 Yew Tree Terrace, Lower Ansford, Castle Cary,
Somerset BA7 7JZ, United Kingdom
Powell, Joanne, 2239 Rosendale Rd, Apt. 1, Schenectady, NY 12309-
5429
Robertson, Amy, 10541 S. Monaco Way, Traverse City, MI 49684-
6817
Schnare, Susan, 373 Elbow Pond Rd, Andover, NH 03216-3707
Schotters, Nancy, 2420 S. Columbine St, Denver, CO 80120c-5424
Shecter, Rick, 5503 S. Richfield Way, Centennial, CO 80015-2526

Shenk, Ann-Marie, Ann's Horticultural Svs., 815 Merrybell Ln, Kennett Square, PA 19384-2707

Spar, Edward, 5051 N. Grey Mountain Trl, Tucson, AZ 85750-5942

Stephens, Jane, Rossway, Ledbury, Herefordshire HH8 1NX, United Kingdom

Tucker, Jeff, 45 Spencer St, Millis, MA 02054-1435

Vermeeren, Danny, Liersesteenweg 121, Sint-Katelijne-Waver 2860, Belgium

Wilkins, Wally, 16618 Rose Bay Trl, Cypress, TX 77429-4934

Wynn, Emma, 6170 Rouge Dr, Reno, NV 89511-6510

Zale, Peter, Longwood Gardens, 409 Conservatory Rd, Kennett Square, PA 19348-8191

Patrons

The following recently became NARGS patrons for 2017:

DUPONT, ELISE R. W. (DELAWARE)

GOODMAN, GAY (NEW MEXICO)

LOVEALL, LINDA (CALIFORNIA)

YOU CAN HELP KEEP NARGS SOLVENT!

Circle of 100 Challenge

Be among the 100 NARGS members willing to give \$300

DONATE AT NARGS.ORG

SEED EXCHANGE

We have many people to thank for the success of our most recent seed exchange. Naturally, we appreciate all our seed-donating members, without whom there could not possibly be an exchange.

We are certainly grateful to the many volunteers who handled the two rounds of seed distributions. The Main round was outstandingly coordinated by Val Myrick - despite inheriting problems from the packaging phase - with a big assist from Diane Williams and the volunteers of the Sierra Chapter. The Surplus round was handled by Jane McGary (a former Seedex director herself) and members of the Columbia-Willamette Chapter. We are indebted to them for their many hours of work.

In addition to the many wonderful donations of seeds, NARGS members also responded with financial donations. Thanks to that help, the seed exchange was able to complete this year's distribution in the black for the first time in a very long time - despite a substantial jump in postage rates for shipments outside of the U.S. Many thanks to all our supporters.

Overall, it has been the masterful hand of Laura Serowicz - recorder of the seeds, keeper of the taxonomy, wizard of the electronic ordering system - that has guided the seedex and our members through another successful season.

I hope you have been enjoying great gardening weather, and summer droughts are a thing of the past. If, like most gardeners, you are generous and want to share your bounty, you needn't dig, divide, or otherwise disrupt your plants. Simply save the seeds this summer and fall, then clean and send them to the NARGS seed exchange in time to reach Laura by the end of October:

Laura Serowicz
15411 Woodring Street
Livonia, MI 48154-3029 USA

The form and instructions for donating seeds are included with this issue of the Rock Garden Quarterly. Our Canadian and overseas members have also received a copy of the Permit and mailing label that are necessary for us to import small lots of seed. If anyone is missing any of these documents, immediately contact Laura at the above address or at seedintake@gmail.com She will send

replacements. You can also contact Laura if you live outside the U.S. and wish to send more than one shipment; she will be very happy to send additional permits and mailing labels.

Always feel free to contact Laura or myself if you have any questions about the types of donations, the process for using the import permit, or any questions at all about the seed exchange.

Those of you who generously share your seeds (at least five different kinds) will be rewarded with priority in having your orders filled, in addition to receiving an extra ten packets of seed. You do not have to wait until all your seeds are ready, but you may send your seeds over the course of the season.

Just to satisfy your curiosity, some of the most requested seeds this year were: *Aquilegia jonesii*, *Arisaema sikokianum* silver-centered lvs, (plus other *Arisaema* species), *Clematis columbiana v. tenuiloba*, *Corallodiscus lanuginosus*, *Edraianthus pumilio*, *Eranthis hymalis* 'Schwefeglanz', *Erythronium* 'Ruapuna Dawn', *Paeonia delavayi* (ex-Halda; Yunnan, China), *Paeonia daurica ssp. mlokosewitschii*, *Glaucidium palmatum* white flowered form, as well as moist-packed seeds of *Eranthis pinnatifida*, *Helleborus hybridus* 'Eco Dragon's Blood', *Hepatica nobilis*, and *Jeffersonia diphylla*. We hope that more members will offer seeds of the spring ephemerals packed in slightly moistened vermiculite, which greatly enhances germination of these recalcitrant plants.

Please note: Your seeds must reach Laura by no later than November 1 if you wish to have them listed in the Seed List. Mail them by October 25 within the U.S., and by October 15 from Canada or abroad.

The fall issue of the Quarterly will contain information and instructions about ordering seeds, either through our website or by mail.

Until then, I wish you a gratifying gardening season,

Joyce

Joyce Fingerut, Director
NARGS Seed Exchange
537 Taugwonk Road
Stonington, CT 06378 USA
alpinegarden@comcast.net
860-535-3067

NARGS Award Nominations

Due August 1, 2017

Nominations are due to Panayoti Kelaidis, chair of the Awards Committee, by August 1, 2017. Electronic nominations only, please. Email to: telesonix@outlook.com

Award of Merit

Established in 1965, this award is given to persons who have made outstanding contributions to rock and alpine gardening and to the North American Rock Garden Society. In addition, the recipients will be people of demonstrated plantsmanship. The recipient must be an active member of the Society.

Marcel Le Piniec Award

Established in 1969, this award is given to a nursery person, propagator, hybridizer, or plant explorer who is currently actively engaged in extending and enriching the plant material available to rock gardeners. This may be a joint award if two people have worked closely together. The recipient need not be a member of NARGS.

Edgar T. Wherry Award

Established in 1973, this award is given from time to time to a person who has made an outstanding contribution in the dissemination of botanical and/or horticultural information about native North American plants. The works must be scientifically sound, but may be written for popular readership and do not have to be specifically about rock garden plants. Generally, the award recognizes a body of work or a lifetime of literary effort rather than a single work (see the Carleton R. Worth Award). The recipient does not have to be a member of the Society.

Carleton R. Worth Award

Established in 1985, this award is given to an author of distinguished writings about rock gardening and rock garden plants in a book or in magazine articles. The Award may also be based on an Editor's body of work for a Chapter Newsletter. The recipient does not have to be a member of the Society.

Marvin E. Black Award

Established in 1990, this award is given to a member of the Society who excels at promoting membership in NARGS; organizing study weekends, national, and international meetings. They should also be involved in such activities as planning trips to study plants and to meet other plant people. The emphasis shall be placed on a member who has helped other people to reach their potential in the plant world. The recipient must be a member of the Society.

Linc & Timmy Foster Millstream Garden Award

Established in 2006, this award is for an outstanding contribution to the North American Rock Garden Society for creating a superior garden. This is not meant to be a competition, but to recognize members' great gardens across the various styles and regions of the United States and Canada. Since there is such a wide range of possibilities in style and climate regions, it has been decided there needs to be four categories of gardens. They are: the Container Garden, the Alpine Rock Garden, the Woodland Garden and the Special Garden. Any of these gardens must be a private garden to eliminate unfair institutional advantages. This award is meant to reward the creation of gardens, which meet a wide standard set by the North American Rock Garden Society, and reflects well on that society. The Millstream award should be submitted with a short one-page essay (300-500 words--that can be published in the Rock Garden Quarterly) with 3-7 images (preferably sent at 1 MB, but with higher resolution backup available if the garden is to be featured in the Quarterly). The recipient must be a member of the Society.

Norman Singer Endowment Grants for 2017

The NARGS Board has approved Singer Endowment grants recommended by committee members David White, Phyllis Gustafson, Bill King, Linda Nishikawa, and Anne Spiegel as follows: Jeremy Schmidt, Raleigh, North Carolina: \$5,000 for construction of dry crevice and lime seep garden using recycled concrete slabs to evaluate plants that normally die in Southern gardens. And Susann Nilsson: Mariannelund, Sweden. \$2,500 for multi-year field study of *Pulsatilla* for field work in Asia and preparation of monograph.



CHINA TOUR IN 2018

Watch this space!

Details are still being worked out, but a NARGS tour of China is in the works for 2018. Full details will be on www.nargs.org and in the fall issue of the Quarterly.

NEW NARGS By-Laws

The NARGS By-Laws Committee proposed changes to the society's by-laws and the NARGS Board approved the revisions on April 27, 2017.

The by-laws are located at www.nargs.org

NARGS annual dues beginning October 1, 2017:

- Member-US & Canada(Single): \$40
- Member-Other Countries(Single): \$45
- Household- US & Canada(Two): \$70
- Household- Other Countries(Two): \$75
- Patron(Single): \$100
- Patron(Household): \$150
- Student(Single): \$15

We have learned of the death of the following NARGS members:

Betty Lowry, Bellingham, Washington
Jean R. Worthley, Finksburg, Maryland, age 92

NORTH AMERICAN ROCK GARDEN SOCIETY

2016 Financial Review Report

Matthew Mattus, President
North American Rock Garden Society 26 Spofford Rd.
Worcester MA 01607

Dear Mr. Mattus:

I have examined the NARGS financial records for calendar year 2016 maintained by the Treasurer, Richard Lane. The records include the following:

- Balance Sheet and Profit and Loss Statement as of 6/30/2016

- Balance Sheet and Profit and Loss Statement as of 12/31/2016

- Account reconcilements for each of the NARGS bank accounts for the period ending 6/30/2016

- Account reconcilements for each of the NARGS bank accounts for the period ending 12/31/2016

- Account reconciliation of the Fidelity Investment Money Market Fund as of 6/30/2016

- Account reconciliation of the Fidelity Investment Money Market Fund as of 12/31/2016

- Samples of several disbursement records

After reviewing these financial records, I find that the year-end Balance Sheet and Profit and Loss Statement accurately represent the financial status of the North American Rock Garden Society as of December 31, 2016. All bank accounts and the Fidelity Investment Cash Account have been consistently and correctly reconciled and are accurately recorded in the financial statements. However, the Fidelity Exchange Traded Products Funds had not been formally reconciled and, therefore, a posting error at year-end was not detected and the NARGS financial records did not reconcile with the 12/31/2016 Fidelity Investment Account Statement. The posting error has been corrected but it is recommended that the Fidelity Exchange Traded Funds be formally reconciled at the end of each statement period to prevent errors in the future. The examination of several sample of disbursements records found that the appropriate documentation and/or authorization was obtained to support the disbursement.

In conclusion, the review found no significant issues of concern.
Sincerely Yours,

William Adams
330 Carlile Ave. Pueblo, CO 81004

Treasurer's Report Introduction and Summary

Thanks to the generosity of our members, the activities of NARGS in 2016 resulted in a profit of \$30,803. A deficit of \$12,989 was projected in the 2016 Budget. The areas primarily responsible for this net profit are as follows:

- Donations to the society totaled \$29,683 versus a budget of \$10,000. An appeal late in 2016 resulted in \$24,000 in donations in December 2016. You were generous beyond our wildest dreams in response to our annual donation appeal.
- The Rocky Mountain Chapter contributed \$12,719 to NARGS of their profits from the Steamboat Annual General Meeting. This was the largest AGM contribution to NARGS in many, many years. NARGS also incurred a small amount of related expenses reducing the overall net profit from the Annual Meeting.
- Web maintenance in support of the AGM and Seed Exchange were charged to those programs in 2016. General internet services in support of our website declined somewhat in 2016.
- The Norman Singer Endowment Grant for 2016 of \$5,000 was not disbursed in 2016 but will be in 2017 reducing 2016 expenses and increasing 2017 expenses by \$5,000.

A major factor in our annual deficit is that our membership revenue continues to decline year-over-year as fewer members renew their membership each year.

As of 12/31/2016, all Bank Accounts and Investments have been recorded into our QuickBooks accounting system and all accounts have been balanced to the appropriate year end statements.

Below, I have listed those areas of Net Income and Net Expense that have a significant impact on our operations. Net Income in this table is the net of total income minus total expense for each program to more clearly show each program's impact on our finances. The formal NARGS financial statements as of December 31, 2016 follow:

Net Income:	2015	2016	Change
Memberships	64,683	55,007	-9,676
Donations	29,683	39,866	10,183
Interest & Dividends	4,965	7,718	2,753
Advertising	1,950	1,491	-459
Book Serice	826	462	-364
Amazon Payments	1,114	945	-169
Seed Exchange	1,195	-4,187	-5,382
AGM and Tours	0	11,983	11,983
Total Net Income	106,431	115,301	8,869
Net Expenses:			
Bank Fees	3,868	1,903	-1,965
Speaker Tour	1,595	0	-1,595
Internet Services	14,810	5,803	-9,007
Quarterly	63,168	58,073	-5,095
Grants/ Awards	1,000	198	-802
Administration:			
Exec. Sec.	14,689	14,515	-174
Insurance	1,691	1,633	-58
Other	864	2,373	-1,509
Total Net Expense	101,685	84,498	-17,187
Net Profit & Loss	4,746	30,803	26,056

Respectfully submitted January 18, 2017
Richard Lane, Treasurer

North American Rock Garden Society
Profit & Loss
January through December 2016

Ordinary Income/Expense Income	
4 · CONTRIBUTED SUPPORT	
Total 4000 · Memberships	55,007.04
Total 4070 · Donations & Special Requests	39,866.21
Total 4 · CONTRIBUTED SUPPORT	94,873.25
5 · EARNED REVENUES	
Total 5300 · Interest	10.33
Total 5360 · Dividends	7,707.49
Total 5450 · Advertising revenues	1,490.82
5500 · Program Revenue	
5520 · Book Services	475.37
5531 · Amazon Pmts.	945.34
Total 5540 · Seed Exchange	12,956.09
Total 5580 · AGM and Study Weekends	16,309.51
Total 5500 · Program Revenue	30,686.31
Total 5 · EARNED REVENUES	39,894.95
Total 5700 · Tour Income	7,060.50
Total Income	141,828.70
Expense	
Total 7000 · GRANT & AWARDS	198.02
Total 7500 · BANK FEES- S/C & MERCHANT	1,902.81
8500 · ADMINISTRATIVE EXPENSES	
Total 8505 · Executive Secretary	14,514.65
8515 · Legal & Filing Fees	40.49
8520 · Insurance - non-employee	1,633.00
8540 · Postage, shipping, delivery	19.20
Total 8575 · Annual Elections	299.00
Total 8500 · ADMINISTRATIVE EXPENSES	16,506.34
8700 · PROGRAM SERVICES EXPENSES	
Total 8705 · Annual General Meetings	3,600.74
Total 8710 · Tours	7,785.81
Total 8720 · Book Service	12.83
Total 8740 · Seed Exchange	17,143.22
Total 8760 · Internet Services	5,803.28
Total 8790 · Quarterly	58,073.13
Total 8700 · PROGRAM SERVICES EXPENSES	92,419.01
Total 7 · EXPENSES	111,026.18
Total Expense	111,026.18
Net Ordinary Income	30,802.52
Net Profit and Loss	30,802.52

North American Rock Garden Society
Profit & Loss
January through December 2016

Assets	
Current Assets	
Total 1000 · CASH IN BANKS	125,881.62
Total 1201 · Accounts Receivable - WI-IL Study Weekend	1,000.00
Other Current Assets	
1500 · INVESTMENTS	
1570 · Norman Singer Endowment	
1570.1 · Fidelity - Cash - NSE	12,639.48
1570.2 · Investment Account - NSE (MKT)	
1570.21 · Investment Bal - NSE (Cost)	149,838.36
1570.22 · Unearned Capital Gain/Loss - NSE Total	(9,170.96)
1570.2 · Investment Account - NSE (MKT)	140,667.40
Total 1570 · Norman Singer Endowment	153,306.88
1590 · Adjustment Unearned Capital	9,170.96
Total 1500 · INVESTMENTS	162,477.84
Total Other Current Assets	162,477.84
Total Current Assets	289,359.46
TOTAL ASSETS	289,359.46
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
2040 · Capital One SPARK Business	436.58
Other Current Liabilities	
Total 2303 · 2017 Wyoming Tour	6,000.00
Total Current Liabilities	6,436.58
Total Liabilities	6,436.58
Equity	
3010 · UNRESTRICTED (ret. earnings)	97,600.52
3200 · RESTRICTED FUNDS	
Total 3210 · Norman Singer Endowment Fund	149,906.34
3220 · Robert Senior Award Fund	1,275.72
3230 · Carleton Worth Award Fund	3,337.78
Total 3250 · President's Discretionary Fund	0.00
Total 3200 · RESTRICTED FUNDS	154,519.84
Net Income	30,802.52
Total Equity	282,922.88
TOTAL LIABILITIES & EQUITY	289,359.46

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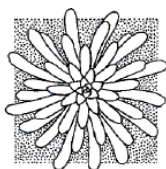
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The Board of Directors of NARGS consists of the four above-named officers, the immediate past president of NARGS, and nine elected directors.

The affairs of NARGS are administered by an Administrative Committee (called AdCom) consisting of the president, vice-president, recording secretary, treasurer, and one director-at-large, selected annually by the NARGS officers from among the nine elected directors.

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Director-at-Large	Panayoti Kelaidis, 1244 S Quince St., Denver, CO 80231 <telesonix@outlook.com>

Immediate Past President	Matt Mattus <mmattus@charter.net> 26 Spofford Rd., Worchester, MA 01607
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