Quarterly

NORTH AMERICAN ROCK GARDEN SOCIETY

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Front cover: August in SumerHome garden in Denver, Colorado.
Photo by Kevin Philip Williams

The Rock Garden

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The Rock Garden

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FROM THE EDITOR

AS I WRITE this, we're fully into summer in my Indiana garden. Spring -- for me anyway -- is a time of almost frenzied work in the garden, with a mile-long to-do list every time I get outside. In summer, however, things slow down, and it is when I start evaluating the garden. Are things working? Are plants thriving in their locations? Does the design and layout of my garden create the effect I was aiming for?

Hopefully, you are in the same mindset as you pick up this issue, because it is a design-oriented issue, with a lot of wildly different – and all beautiful – approaches to making gardens.

The first two articles take us to two public gardens in Europe, one in the Netherlands, and one in France; one leaning into the artful, man-made, and the other focusing on trying to recreate alpine landscapes as naturally as possible.

Coming back to North America, we get a tour of a new garden called SummerHome in Denver, Colorado, that takes inspiration not from mountain landscapes but graffiti. The results are exciting, a whole new way to think about designing and creating a garden that focuses on embracing and playing with the dynamism of living plants rather than controlling them.

The wild, flowery meadows of SummerHome could hardly be more different than the cactus-filled crevices created by Wolfram Kircher in Germany, where he has built incredible stone structures that seem to almost have grown out of the house, and are filled with a dizzying array of hardy cacti.

Finally, Kristine Boys shares how she created an almost traditional lawn in Ithaca, New York, but using a rich array of North American native plants rather than the usual lawns based on just a few species of European grasses.

Each of these gardens is in a different style, uses different plants, and is in a different climate and part of the world, and each has ideas and techniques I'm planning to put to use in my home garden. I hope you find inspiration and new ideas in them as well.

NEW BEGINNINGS AT UTRECHT BOTANIC GARDENS

CONNOR SMITH

HAVING CHANGED THE windy hills of Edinburgh, Scotland, for the winding canals of Utrecht, the Netherlands, I am quickly adjusting to the new conditions at Utrecht Botanic Gardens. You may not be as familiar with the garden as others in Europe, despite it being one of the largest rock gardens in Europe at 2 hectares (almost 5 acres). I can assure you it is a treasure trove of rock gardening pleasures.

The Netherlands is a flat country, with its highest point only being 323 meters (1060 ft). So, when the rock garden was constructed between 1967 and 1976, over 2,100 tons of rock were imported from Belgium and used to build the rock gardens. In the years after, alpine troughs were constructed, along with raised beds and later the peat walls. In 1995, the alpine house was constructed and followed the trends of the time, notably a focus on Primulaceae which was being vigorously studied at the time by many botanic gardens.

Utrecht is broadly described as having a maritime climate, like Britain and Central Western Europe, but is more similar to a continental climate some years. In 2020, we had a high of 38°C (100.4°F) and a low of -10°C (14°F). The rainfall is about the same as Edinburgh, clocking in at 0.8 m (31.5 in) per year.

Opposite top and bottom: Images from the construction of the rock garden. Photos courtesy of Utrecht Botanic Gardens.

Opposite center: The current 'Living Walls' by the Alpine Glasshouse, made from recycled concrete.

The urbanite spheres. Photo provided by Utrecht Botanic Garden

The Rise of Urbanite

The garden has always been a space where the gardeners have the opportunity to experiment. Wiert Nieuman (former head of the Rock Garden and Head Gardener) had developed areas of the garden with reclaimed concrete. This was a low-cost method of creating retaining walls, crevice gardens, and living walls in the garden. This method has since grown in popularity with the new Urbanite trend, with many high-profile rock and crevice gardens being made from reclaimed concrete. While I will always prefer natural rock, I admire the innovation and ingenuity used to expand the original methods of alpine growing. There is no better example than the spheres. The three spheres were built in 1995-1996 and are between 1.5 – 2 meters (5 - 6.5 ft) in height. For a complete breakdown of their construction, please refer to 'Cultivating alpines at Utrecht University Botanic Garden' by Wiert Nieuman in Sibbaldia (RBGE's Journal) No.5., 2007.

The spheres perfectly combine the diverse habitats required for alpine cultivation while providing a unique aesthetic that is easy on the eye. While ferns, *Ramonda*, and *Haberlea rhodopensis* have been grown on the lower, shadier sides, *Daphne arbuscula, Saxifraga, Draba, Asperula, Primula allionii*, and *Minuartia stellata* greet visitors as they enter the garden. In an

old photo, I saw a clustered planting with specimens the size of your hand clinging to the spheres. On closer inspection, I noticed they were *Dionysia*, which are seldom grown outside. *Dionysia* are mostly seen under cover in a glasshouse planted in tufa. Unfortunately, growing in these conditions, they are susceptible to pests such as aphids and require a good airflow, though places like Gothenburg Botanical Garden, the botanical garden of the University of Tübingen, and some private collections have seemingly mastered the cultivation of these plants.

Dionysia aretioides and *Dionysia tapetodes* are the species best equipped to grow outside, with others thought to be more challenging. These species are much more tolerant of water, while many of the other species simply die off if watered from overhead. The plants on the spheres persisted for three to five years, usually failing when they got too heavy and broke off, often after heavy rains. Cuttings were then taken and used to replace the lost plants.

The spheres, summer 2020. I am hoping to redo and replant them soon.

The spheres can be difficult to plant in because concrete heats up in the summer but also does not retain heat in the winter and will actually become cooler. This was notably discussed in *The Rock Garden Quarterly* Spring 2019 issue, by Jeremy Schmidt (p. 149), where he recorded temperatures on concrete that were 5°F (2.6°C) colder than the upper levels of soil. Therefore, it may be wise to select tough, cold-hardy plants. Additionally, the spheres are prone to drying out, so drought-tolerant species are required. Irrigation systems are installed in each of the spheres, with a small sprinkler at the top. A second pipe is in the larger sphere which soaks the shady side, keeping the ferns cool and well watered.

Establishing plants is often a challenge in spots that are too wet or dry, especially in small gaps between rocks. While smaller plants are easier to fit into gaps, they will dry out faster so can be a greater challenge to establish if the weather is warm. A method I saw while visiting Sue Simpson in the west of Scotland used small straws planted in with the plants to funnel water directly into the root system. They developed this technique while trying to establish species on their tufa wall.

Southern Hemisphere

Plants from the southern hemisphere are a challenge in our climate. However, the current southern hemisphere bed has been a great success. So much so, that we have decided to expand the area into the old cultivar beds. While cultivars are important in a garden, Utrecht Botanic Gardens is focused on conservation, education, and research. Therefore, we want to expand the collection of hardy species from alpine areas like Chile, South Africa, and New Zealand. This is a good opportunity for students to see a diversity of species not commonly grown outside in The Netherlands.

Gondwanaland was the super continent comprised of the southern hemisphere and India that existed around 300 million years ago. Today, we can see genera that are found on all three continents. For example, a *Nothofagus* is currently planted in the southern hemisphere bed. While this species is from Chile, other species in the genus can be found in New Zealand. With the ability to show both species in the same location we can explain things

Top: The old cultivar beds.

Middle and bottom: Cultivar beds being removed and expanded southern hemisphere beds being constructed.

like evolution, ecology, and distribution. While many of us are familiar with *Fuchsia*, these are mostly selections and hybrids of hummingbird pollinated species from South America. Less familiar are the three species found New Zealand. These species have vivid blue pollen which is eye-catching to both us and the birds that pollinate them. Similarly, the giant *Gunnera manicata* from Brazil is easier to spot than the small New Zealanders, and the African *Gunnera perpensa* is tough and should be grown more often. Additionally, some unrelated genera have evolved independently of each other on opposite sides of the world but have adapted the same morphological characteristics to survive, which allows us to expand the range of teaching both to students and visitors.

High my wish list of potential plants is one species that is far from the most attractive plant, but is one of the most interesting. If you have ever seen the white desert that is Antarctica, you would be forgiven for thinking that nothing could grow there. While the land is home to mosses underneath the ice, it does have flowering plants above surface: a grass (*Deschampsia antarctica*), and an alpine plant (*Colobanthus quitensis*). *Colobanthus quitensis* is native to Antarctica and from southern Mexico down to Chile and Argentina. It is a low-growing cushion, similar to *Silene,* which is adapted to high levels of light and relationships with endophytic fungi. Tromsø Botanic Garden has an excellent video on their Facebook page detailing its cultivation and ecology.

The rocks selected for the southern hemisphere beds were sandstone, giving the feeling of a more desert environment. This is also closer in appearance to the metamorphic rocks (gneiss, quartzite, and schist) seen in southern Africa where I took much inspiration.

The area is split into three beds: South America, Africa, and Oceania. The South American bed is mostly in full sun apart from the lower section. The African plants are in the center of the bed, which is a gradient; the area closest to the visitors will be split into horizontal rock work with overhangs for more succulent species. The upper part then slopes down to the water, with increasingly rich soil with a greater density of clay. This gradient

imitates a mountain, particularly important for the southern African flora that grow well in wet conditions, such as *Wachendorfia, Watsonia*, and *Crocosmia*. The Oceania section is on the corner, which is largely covered by an *Ailanthus* and *Prunus* to provide more shade for the New Zealand plants. Each geographical location will get a crevice garden for the trickier species.

Northern Hemisphere

The next area geographically is North America. This section is mostly in full sun, with only a small section in shade. It is home to national collections of *Penstemon* and *Eriogonum*. The genus *Penstemon* includes around 250 species, all of which are found in America. The western American species from areas such as Oregon, Washington, and even California to Mexico do fairly well as they are adapted to the rain. The species from states like Utah tend to require drier conditions than we can provide in the open garden, with the clay soil contributing to their reduced life expectancy. The winter months are a challenging time, so cuttings are taken each fall from newly planted or short-lived species.

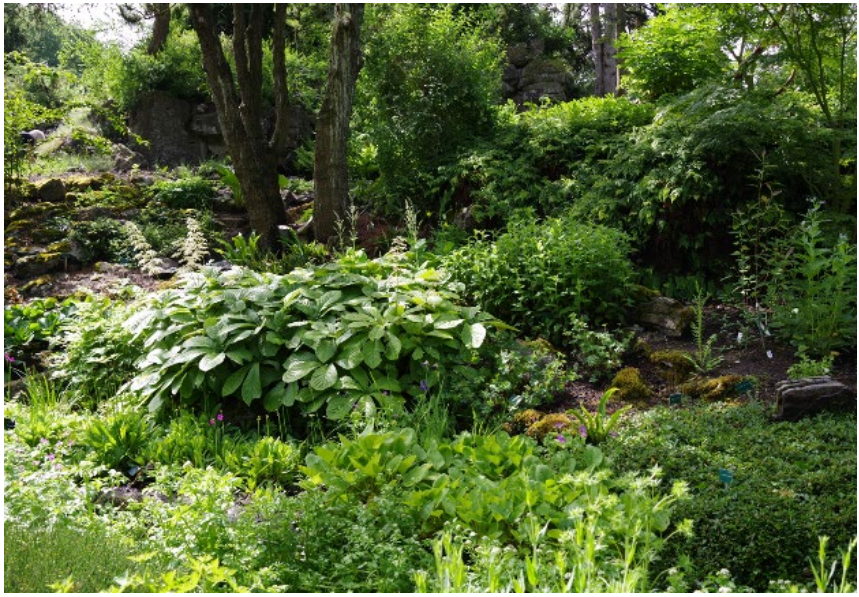
Entrace to the North American garden.

The *Opuntia* in the North American garden is of great interest to visitors who are impressed that this can survive the Dutch weather. The hot red of *Penstemon pinifolius* creeps into the picture, complementing the carpet of *Eriogonum umbellatum* on the other side.

Eriogonum is a taxonomic mire for me as I find them painfully difficult to identify. The genus is characteristic and easy to spot in gardens, flowing over rocks. A high level of endemism is found throughout its distribution, with different species often similar in appearance but growing in diverse conditions like ultramafic soil or highly isolated mountains.

The Asian section is largely covered in woodlands. In early spring, when the weather is changing and the soil warming, the first green shoots and new seedlings begin pushing through the thick layer of mulch.

Europe is the largest part of the rock garden, covering areas of full sun rock garden to shade and deep soil. I am guilty of thinking that our native flora is not as interesting as that of the Himalaya, Andes, or Rocky Mountains. But, as I've learned of the mountains of Montenegro, the chasmophytes of Greece, and the vast flora of Turkey, I've come to better appreciate what I have closer by.



Top: A pine hangs over moisture-loving *Primula* in the Asian garden.

Bottom: *Teucrium*, *Digitalis* and *Veronica* help the great plumes of Aruncus to show off in the European garden.

Peat beds, left upper side, rebuilt winter and spring of 2020-2021 .

Peat Walls

Gardening with peat was originally developed in tandem with the influx of plants coming in from China with the aid of plant hunters in the 1900s. With a new range of species, such as *Rhododendron*, *Meconopsis*, and *Primula*, peat was selected for its acidic pH, water retention, and nutrient content.

Today, we look through new eyes and see peat as not sustainable. It takes years to develop and is quickly disappearing from the world. Unfortunately, no equal alternative has been found as yet, although the garden is working to become peat-free. Currently, Utrecht only uses peat to build the walls, with the rest of the area and garden using peat-free growing media.

In October 2020, when I arrived at Utrecht, the team was working on redeveloping the peat beds. This is done every 10-20 years, depending on the speed of degradation, quality of peat, and conditions like exposure, temperatures, and erosion. I was given *The Peat Garden and its Plants* by Alfred Evans, the most complete book on the subject of peat gardening and, despite being published in 1974, still has valuable insight into this type of gardening.

The first step in making a peat garden is finding the correct situation in the garden. The prime spot is somewhere that is sheltered from prevailing winds, which will cause the rapid degradation of the peat blocks. A shady spot is also important as the sun will dry out the peat quickly in summer. Peat can retain moisture to the point of rot during wet winters, which brings me to the third location tip: put it on a slope to encourage runoff.

Stinzenplanten

The Dutch concept of *Stinzenplanten*, as I understand it, refers to plants that have been introduced so many years ago that they are considered naturalized in areas of the country. These are typically spring flowering plants, often bulbs and corms from eastern or southern Europe and western Asia. Many are woodland species, although some of the species would be better described as alpines. Many *stinzenplanten* are found in churchyards, old manor house grounds, and estates, the most iconic species belonging to the genera *Galanthus, Crocus, Narcissus,* and *Corydalis*.

Stinzenplanten growing on a slope with *Corylus* as the overstory. Photo provided by Utrecht Botanic Gardens.

Utrecht Botanic Gardens has developed a *stinzenhelling* (a slope of naturalized species with tree cover in the summer) in just under 30 years. Seed was collected from various populations throughout the country and sown onto the area. Despite being common species, the range and spectrum of genetic diversity expressed in these populations is large, due to the wide-ranging geographic distribution. This, along with the mixing of different estate populations, creates a tapestry of colors, forms, habits and expression. The Dutch *Galanthus nivalis* comes in two distinct forms: the first shows the typical small leaves and short stature, while the other, named the "French clumping form," is considerably larger and clumps quicker, which is why it was introduced into the Dutch trade. *Galanthus elwesii* is also present, often with some *G. plicatus* blood in it. The *Crocus* come in a range of classic colors including a charming light pink/red form and wine stain venation. Again, some of these clump up readily while others seem to persist in single forms. This beautifully illustrates the range of genetic and phenotypic expressions within a species both historically and geographically, within less than an acre, and achieved in less than 30 years.

Alpine Glasshouse Renovation

The alpine glasshouse had last been reconstructed in the 2003-2004 season. The soil was tired and compacted and plants had grown too large for the area. The glasshouse, at this time, contained large specimens of *Acantholimon*, *Sedum,* and a few other genera (about 20 in total). One of the largest plants in the glasshouse was an *Artemisia tridentata* that came to us in 1999 and was, at the time of removal, pushing the glass. The rock work has been rebuilt with new plants such as *Saxifraga*, *Sempervivum* on the sunny side, and *Androsace* and *Ramonda* on the shadier side.

To rebuild the glasshouse planting areas, the upper layer of the soil was removed as well as all the plants. The metal beams of the glasshouse were painted to a mellow grey as the blue before was a bit garish. Many of the stones were removed, apart from the largest ones in the back.

The first wall was built with planting holes for smaller plants. While the first two layers contain tighter rock work for smaller species, the back terrace

The rebuilt alpine glasshouse.

was built with larger rocks and a bit more space for bigger species including *Plantago arborescens* and *Veronica perfoliata* from Australia, which can grow outside but I'm hoping will give better flowering and color inside. Drip irrigation was installed in back two terraces, with no irrigation at the front as it will get rain. Succulents have been selected for the part by the wall as it will stay very dry. I am also trying a *Begonia* collected in the Mexican mountains in the rock garden. There are many hardy species of begonia out there.

Since Utretcht Botanic Garden is home to one of the world's largest bromeliad collections, I was curious to test some species inside the glasshouse. Our bromeliad taxonomist selected a *Tillandsia* and *Aechmea* to try. I am also hoping the succulent *Bursera fagaroides* from California and Arizona is hardy if kept bone dry in winter.

Thank you for taking the time to read this article and please do visit the garden. Information available at https://www.uu.nl/en/utrecht-university-botanic-gardens

LE JARDIN BOTANIQUE ALPIN DU LAUTARET

WIERT NIEUMAN

AT AN ALTITUDE of 2100 meters (6,889 ft), with a magnificent view of the glaciers of the Meije, the alpine garden of the University of Grenoble is located on the Col du Lautaret in Hautes-Alpes, France. Here, in this land of mountain giants, you will find the dwarfs among the plants in all their beauty.

At the end of the 19th century, alpine gardens arose all over the European mountains in which rock plants were planted for research, for science, and enthusiasts. It was the time of the great plant hunters who imported new species from all parts of the world. In 1899, the first alpine garden was built on the Col du Lautaret. This garden only existed for a short time because, in 1913, the new pass road was built right through the garden. With the help of several large organizations, enough money was collected to realize a new garden, a little higher on the mountain. The Second World War almost meant the end of the garden. The garden manager and the owner of the nearby hotel were killed, and many other people in the area did not survive the war. It was not until 1950 that the rebuilding of the garden began and a new period of prosperity began under the leadership of Robert Ruffier-Lanche.

La Meije with fireweed (*Epilobium angustifolium)* and *Cephalaria gigantea* in the foreground

Ruffier was particularly interested in primroses and *Meconopsis*, as well as the semi-parasites *Pedicularis* and *Castilleja*. After Ruffier's death in 1973, things went bad for a while, but since the 1980s this alpine garden has grown into one of the leading gardens in Europe. There are two main research projects: the impact of climate change on alpine vegetation and the impact of agriculture on biodiversity.

In many alpine gardens in the mountains, you can see a reasonable assortment of alpine flowers that often also have the correct names, but the artificial layout with compartments for each species and the plant beds framed by stones are in great contrast to the beautiful nature around them. The garden on the Col du Lautaret is one of the favorable exceptions. In an area of two hectares (4.9 acres), a garden has been created with plants from the major mountain areas of the world.

Since the garden is at an altitude of 2100 meters (6,889 ft), it is only open for about four months of the year. Depending on the weather, work in the garden starts between mid-April and early May. Usually, the garden opens to the public in the second week of June and the public season

is over by the third week of September. In that period, 20,000 visitors come. It's busy in the garden with the visitors' cameras working overtime. The surroundings outside of the garden are overwhelming. You will see the imposing snow-covered and glacier-covered slopes of La Meije, the garden's "home mountain." This mountain is visible on the way to the garden, but with the well-known fireweed *Epilobium angustifolium* and *Cephalaria gigantea* in the foreground, it becomes the sublime alpine image that we know from romanticized postcards.

The plants are arranged by region of origin, in natural-looking beds and rock formations. In this garden, there is no messing about with pieces of stone that surround the plants like a frame, rather the layout and plants are in harmony with the environment. Here and there are places where human intervention is visible and there is an unnatural appearance. Perhaps these stand out because the rest of the garden seems so artless. Streams run throughout the garden with frequent wider areas, ponds, and waterfalls. All these different humidity levels offer opportunities for a variety of plants.

Yellow *Mimulus* sp. blooming by a waterfall

Cicerbita plumieri blooming in the grassland beds.

Three grasslands, separated by paths, lie in the middle of the garden, with the various geographical divisions located around them. In July, *Eryngium alpinum* is the absolute eye-catcher. In one of the grasslands, there are hundreds of them together and in full bloom. The grasslands are also filled with fireweeds, *Cicerbita plumieri*, *Centaurea* of all kinds, *Achillea*, and *Valeriana* that provide mass as tall plants.

The geographical divisions in the garden are sometimes a small region, such as the Massif Central, or larger areas such as the Himalaya and Tibet or the Caucasus. There are also beds filled with species from a certain genus, such as *Dianthus*. There is a swamp area, a scree slope with the characteristic vegetation, and other special biotope fields. Several groups of conifers and shrubs provide microclimates and depth in the garden. You can never see the garden at once, and that is what it makes so exciting. In total there are 54 different sections, which are usually bisected with paths so that the plants can almost always be viewed close up.

Mimulus sp. blooms at the entrance to the American section of the garden.

In the shallows of the largest pond near the entrance, many *Mimulus* bloom. For the botanist, this signals that you are entering the American part of the garden. This soon becomes apparent when you see specimens of *Castilleja rhexifolia*, perhaps a relic from Ruffier's time. *Castilleja* in a European garden are an absolute rarity, and beautiful specimens are in full bloom here. Plants from South America stand in a newly realized area with lava rock. It is still somewhat new, but there are already some of the largest *Calceolaria biflora* I have seen. *Mulinum spinosum*, which is present everywhere in Patagonia, also blooms profusely here.

In the Himalayan section, we see all kinds of *Primula* and a richly flowering plant of *Codonopsis clematidea*. I saw *Swertia petiolata*, a plant from the gentian family and totally unknown to me; unlike the European *Swertia perennis*, this species has white flowers. In the Southern Hemisphere section, *Helichrysum milfordiae* from South Africa blooms with countless flowers and in perfect condition. *Ononis cristata* (syn. *Ononis cenisia*) is a plant from the southern Alps. The common *Ononis* varieties often produce few flowers, but this variety is nicely compact and the flowers tumble over each other.

Left: *Codonopsis clematidea*
Right: *Helichrysum milfordiae*

Top: *Ononis cristata*
Right: *Calceolaria biflora*

An educational bed in the new école de botanique

In 2012, the ecole de botanique started. Raised beds have been made here from yellow bricks with an area ranging from three to six square meters (32 – 64 square ft). A narrow stream runs through some beds, while others are completely dry. In each bed, an explanation is given about the adaptations of plants to their growing places. The beds with masonry walls look very artificial, but visitors can easily understand the interaction between plants and their habitat.

Something new is constantly being created in the garden, aiming to renovate three to four garden sections every year. The école de botanique is an example of this, but the show beds are also under development. They are table-high beds made of concrete blocks and covered with shade cloth. The beds are filled with lava gravel, with plants growing in pots sunk in the gravel or sometimes planted directly in the lava substrate. In the coming years, the difficult species that have no chance of surviving in the rock garden will come here. The tuff wall for Chalet Mirande is still under development. A one and a half meter (5 ft) high retaining wall has been built here from tuff stones. This wall has also only been partially planted, but a richly flowering *Campanula zoysii* shows that the wall certainly has the potential to become a show element.

More information about the garden is on their website:
https://www.jardindulautaret.com

Delphinium elatum

THE SUMMERHOME GARDEN

KEVIN PHILIP WILLIAMS

IN MARCH OF 2020, I was setting stones just as the COVID-19 shelter-in-place orders were coming down across Denver. Although I jumped a bit as the cell phone emergency alert was pushed through, it wasn't unexpected. The city had felt emptier and more tentative for weeks. Before this time, moments of quiet and isolation in the city were few and far between. Crouching in the corner of the empty lot, surrounded by rubble, trying to put the pieces together and build something new felt post-apocalyptic. I didn't know the coming waves that would transmute the world over the course of the ongoing pandemic, but I felt strongly that a movement was forming on this singular city plot. The desolation spoke to me: Drought tolerant is dead. The future is drought dynamic.

The vision for SummerHome Garden was pioneered by Lisa Negri, a community leader in the Washington Park neighborhood of Denver, Colorado, and a lifelong resident of the city. Lisa had become weary of the development trends that obliterated modest homes with ample front and backyards and replaced them with mini-mansions that devoured the square footage from edge to edge. Resistant to the idea of her home being boxed in by a three-story build and wishing to add to the common greenspace of the city, Lisa bought the uninhabitable home next to hers and knocked it to the ground, collapsing it into its basement and creating a new pocket park for Denver.

Opposite: A natural stone bench set deep in the heart of a bed in SummerHome Garden, flanked by *Monarda punctata* and *Agastache rupestris*.

SummerHome Garden was just an empty lot in February, 2020.

Lisa wanted to create a safe, inspirational, and horticulturally progressive space for the community to enjoy. SummerHome would challenge the stilted design and regionally inappropriate gardens still found throughout the city, especially accompanying new builds.

SummerHome would not be on life support, rather it would support life and serve as a new guidepost for the potential of naturalistic, xeric design in the semi-arid West. Through a partnership with Denver Botanic Gardens that Lisa had cultivated through her philanthropic efforts, and a personal relationship that she and I formed through her years of volunteer work, I was tapped to design, implement and steward the development of SummerHome.

My interest in shrub-steppe ecosystems combined with Lisa's love of the xeric plants of the southwest and general inclination for Western American aesthetics steered the design. We decided early on that all species used would be commercially available. If this was to be a truly instructional space, we needed to include plants that anyone could access. That qualifier would allow us to conceptualize new contexts for some plants perceived

as pedestrian or overused. I enthusiastically incorporated *Salvia yangii* (previously known as *Perovskia atriplicifolia*) into the garden knowing that it was easily available and ripe for a more advanced design treatment.

Drought dynamic was a guiding concept of the design. Tolerance conveys endurance, suffering, and rigidity against shifting elements to maintain a static state. Dynamism is about adaptability. I was interested in a multi-pronged approach to produce a garden that would be responsive to its environment and offer an ever-evolving display over time.

The garden was open to all possibilities, a blank slate, literally razed earth. Apart from design considerations to maximize viewsheds, visitor privacy, and access points, Lisa had only one request: a rock garden to grow and display cacti and other succulents. We utilized the hottest, driest corner of the lot and a wall of brick from Lisa's adjoining garage as a further heat sink to both contain and nurture the succulents. The structure for the xeric crevice garden sits at the intersection of the lithe and the horrific. It's a metacarpal arachnid, posing and striking from the corner. A monster, full of spines, glochids, and fleshy protuberances hid in the thicket. With this guiding nightmare, we nestled several tons of Colorado buff sandstone into a fast-draining mixture of sand, expanded shale, and screened compost

The xeric crevice garden in September of 2021

Kinetic sculptures with the free-moving *Artemisia filifolia* and rigid *Euphorbia marginata*

to create a heavily ridged uplift. This feature now contains dozens of selections of cacti and succulents as well as xeric shrubs like *Salvia pachyphylla, Chilopsis linearis*, and *Lycium pallidum*.

I generated preliminary plant lists based on the successes of some of my previous installations and ideated more with Lisa based on her botanical desires. The palette coalesced around stress-tolerant and ruderal species, heavy in shrubs, self-seeding perennials and annuals, and charismatic bunch grasses. Shifting away from mixed-grass prairie motifs, we embraced the shrubby and made *Ericameria nauseosa, Artemisia filifolia, Atriplex canescens, Fallugia paradoxa*, and *Krascheninnikovia lanata* the stars.

Sometimes the curse of the garden is the gardener, and almost always the curse of the design is the designer. In the song "Cruelty Abounds" Spencer Moody yelps, "Does the singer wanna wreck the song? I do not know, but surely sometimes that's just how it sounds." To dissolve contrivances and avoid any sense of heavy-handedness or overt intentionality in designing SummerHome Garden, I created a tool for naturalistic design called Wild Systems Emulation.

Wild Systems Emulation seeks visual examples of surprising actions within a system as the jumping-off point for the arrangement of a design.

They can be the result of intentional or unintentional forces and from either anthropogenic or non-anthropogenic sources. Using these snapshots of constantly changing systems to guide the placement of plants, plant communities, architectural, and hardscape elements has the short-term effect of creating a garden that feels as if it is already in motion and the long-term effect of encouraging a competitive, evolving garden. Using these wild, open-source examples of composition and expression as jumping-off points for planting helps to alleviate the heavy-handedness of the designer and encourage acceptance of wandering and competing plant communities.

The layout of SummerHome Garden was modeled on graffiti captured on a public utility box in Ljubljana, Slovenia. This radical object had been spray-painted, stickered, markered, wheat-pasted, sat upon, scraped, and battered by the elements for years. The result was an urban collage that

The inspiration for SummerHome Garden: a graffiti-covered public utility box in Ljubliana, Slovenia.

Top left: Layout pots before planting. Top right: Seedling emergence May, 2021
Bottom left: The bulb mix. Bottom right: The major stones of the crevice garden.

no singular being, person, or force could have planned. However, despite the seeming chaos, patterns, dots, speckles, drifts, spatters, emotive lines, and harmonious colors emerged. The next step in utilizing Wild Systems Emulation is identifying these dominant and desired elements and applying individuals or groupings of plants to them. In the section of the utility box graffiti-scape that I chose to emulate, I identified ten unique communities to develop. Within each of these areas, a predetermined group of plants was randomly planted, then complimentary species oversown as a seed mixture, creating a thick, vibrant, interstitial layer. I then overlaid a selection of megaflora (graminoids, forbs, and trees) as spatial-visual enhancements.

Additionally, a bulb layer, created by Sonya Anderson, assistant curator of pollinator gardens and Plant Select at Denver Botanic Gardens and a geophyte specialist, was designed to provide flowering during the most botanically inactive months and offer upright props and pops during the early growth phases of the herbaceous plantings.

It was important for us to demonstrate that a successful garden could be created without soil treatments or amendments. Except for the well-draining mix engineered for the xeric crevice garden and some additional soil brought in from adjacent excavation sites in the neighborhood to finish filling the basement of the imploded house, the existing soils of the property were not enhanced. Also, in place of an irrigation system (in the spirit of xeriscaping), four frost-free standpipes were installed on the property, allowing for targeted hand-watering of plants during establishment.

After pathways were carved and small landforms made to define the planting beds, layout and planting were achieved in two sessions, a week apart, in early May of 2020. Bulb planting and overseeding took place in late October, 2020. These were done in concert to take advantage of the disturbance of the expanded shale mulch and topsoil. We sowed about a dozen species of ruderal and stress tolerating forbs to fill the interstitial spaces of the garden including *Linum lewisii, Monarda punctata, Ipomopsis rubra*, and *Eschscholzia californica*.

The late-summer crescendo of Windwalker royal red salvia.

Over the course of 2020, the garden started to pull together, offering varying flowering periods, the promise of structure, and a certain foal-like ranginess that young plants often have. The biggest show came in the first autumn with an unexpected explosion of many of the young Lamiaceae species. Specifically, Windwalker® royal red salvia had a fantastic presence, giving the swelling forms throughout the garden lipstick-red edges. Unfortunately, due to an early freeze and subsequent polar vortex, more than 90% of the Windwalker® royal red salvia population died off. Although many did regenerate the following year, their visual impact was greatly reduced. For the most part, however, we let the garden develop through 2020 without shifting the original palette too much, knowing that it was still young and needed time to begin expressing itself.

2021 brought a radical visual change to SummerHome. Early spring bulbs like *Tulipa* 'Black Parrot', *Tulipa turkestanica*, and *Allium* 'Ambassador' brought successive crests of color to the slowly awakening beds in large, monochromatic threads that unified the thin, post-winter space. The foliar bump of late May and June created masses of rich greens, blues, and silvers with the emerging warm-season grasses and refoliating shrubs. *Fallugia paradoxa* added diaphanous clouds of pink pastels between the cool-toned blades, while malbec-colored cups of *Eschscholzia californica* 'Purple

Top: *Tulipa turkestanica* in April, 2021.
Bottom: *Tulipa* 'Black Parrot' was planted across the property to provide unity

Muhlenbergia reverchonii 'Undaunted' and *Artemisia filifolia* with a speckling of *Monarda punctata* and *Salvia reptans* 'Autumn Sapphire'

Gleam' played in the understory. The summer warmth brought on intense seedling recruitment and we were able to see the future of the interstitial spaces. *Monarda punctata* became a major player, taking advantage of the wide-open gaps and disturbed edges. As the summer heat set in, the verdancy faded to hues of olive and army green. *Daucus carota* 'Dara', *Euphorbia marginata*, and *Verbena bonariensis* hovered throughout the plumes of young seedheads and *Agastache rupestris* blessed the senses. As the three-fold stress of autumn drought, daytime heat, and evening cold touched Denver the rabbitbrush (*Ericameria nauseosa*) exploded in a show of yellow flowers as the rest of the garden withdrew in reds, oranges, and purples. Not to be overlooked, the xeric crevice garden overflowed with plump and succulent little creatures, fringed by the softest runs of *Aristida purpurea*. Through one of the driest summers and falls on record for Denver, drought dynamism was working.

It's an error to believe that, as gardeners, we ever build something. I had no idea what this garden would become from its inception through its realization. And I have no idea where it's going to end up. In its nascent state, the garden is nothing. Just tiny beings shoved into the rubble. If we're lucky, it becomes a revelation, an uncovering of potential and hidden designs, aspirations, and genetic programs tempered by environmental fluctuations. The City of Denver recognized this potential and in early 2021, SummerHome Garden received an open space-conservation zoning permit, a progressive designation for a privately owned property in the middle of the city. This zoning change recognizes that the lot now provides unique vegetation and wildlife habitat for Denver. It also provides more access for visitors than a residential permit would and makes it harder for the property to revert to a residential lot, making the property less desirable for development. This makes the gift of SummerHome and what it stands for, a promise for both the human and non-human community. We hope that it will all lead us somewhere unexpected and beautiful.

SummerHome Garden is located at 651 S Vine St, Denver, CO 80209. It is open every day from 9 a.m. to 6 p.m. and beyond with permission. More information can be found at summerhomegarden.com.

The slow burn of autumn in November 2021 with contrasts of *Schizachyrium scoparium* 'Twilight Zone' and *Symphyotrichum lateriflorus* 'Lady in Black'

CACTI IN A GERMAN CREVICE GARDEN

WOLFRAM KIRCHER

The vertical crevice garden with *Ruschia pulvinaris* in the foreground.

PLANTING CACTI IN cold Germany? Most plant enthusiasts associate this with low-growing opuntias only. Being easy to propagate and resistant to the wet, cold, Central European winters, several species of this genus are widespread in German gardens, especially in the dry areas of Thuringia and Saxony-Anhalt. On wall tops and in troughs, without any artificial watering, they withstand severest weather conditions.

Opuntia phaeacantha, O. polyacantha, O. humilis, and *O. fragilis* are the most commonly planted species. They can withstand harsh winters in USDA zones 7, 6, or even 5. Their glochids are notorious: micro-spines which form dense clusters in the areoles. The slightest contact usually results in bunches of these miniature-barbed spines in your skin. They can only be extracted with tweezers and an extra measure of patience.

In late spring, opuntias enchant with large, bright flowers, but mature clumps often die off after a few years. To guarantee healthy plants, you should periodically take cuttings for re-propagation. In a rainy climate, the fruits that remain after blooming should be removed because water can collect at their base long enough to trigger rot.

Yellow blooming *Opuntia fragilis* in front of *Opuntia phaeacantha* in a raised gravel bed at Anhalt University, Bernburg.

The closely related genus *Cylindropuntia* comprises cacti with cylindrical stems. The tallest frost-tolerant species is *C. imbricata*, which reaches more than two meters (6.6 ft) in height, even in German Zone 5 regions. *Opuntia* and *Cylindropuntia* are the most famous members of the cacti subfamily Opuntioideae. The steeper a rock garden, the less suitable it is for these genera, as pads could fall down and become an injury risk, though using them in dry stone walls may be an option to discourage undesired guests.

However, the Cactaceae family comprises also a considerable diversity of frost-resistant members outside the Opuntioideae. These are mostly ball- or egg-shaped species, and though spiny, they are free from troublesome glochids and so they are less hazardous if planted in steep crevice gardens.

North American Species

Many dry areas in western North America are counted as hardiness zone 7a or below. This means average minimum temperatures of 0 °F (-17.8 °C) or even less occur in their natural habitats. Cacti from such regions can be used outdoors in many areas of Central Europe, at least if protected from rain during winter. The genera *Echinocereus* and *Escobaria* in particular include suitable species.

Echinocereus species have oval or elongated bodies, which often develop into little groups through basal sprouting. They bloom in early summer, often in red or pink, sometimes in yellow or green. *Echinocereus reichenbachii* is densely covered in brownish or white spines which give the plants an attractive appearance even without flowers. *Echinocereus reichenbachii* subsp. *baileyi* has protruding thorns while subsp. *caespitosus* usually has only radial spines, flatly attached to the plant body.

Echinocereus triglochidiatus has an immense variety of shapes and spinations, but consistently produces cup-shaped, bright red flowers which are responsible for the species' common name of claret cup cactus. Its natural distribution stretches about between eastern California, Nevada, Colorado, and Arizona. Often very differently spined specimens grow just beside each other. *Echinocereus coccineus* was described as its own species

Top: *Echinocereus reichenbachii* subsp. *caespitosus* in a clay bowl.
Bottom: *Echinocereus triglochidiatus* var. *mojavensis* forma *inermis*

by Engelmann, but W.T. Marshall and T.M Bock (authors of *Cactaceae: With Illustrated Keys of All Tribes, Sub-Tribes and Genera*) categorized it as a variety of *E. triglochidiatus*. The light red-flowered *E. triglochidiatus* var. *octacanthus* is often listed as *E. roemeri*. Very popular claret cup types are the minimally spined var. *gonacanthus*, var. *monacanthus* with mostly only one thorn per areole, and the completely thornless form var. *mojavensis* forma *inermis*. Seeds of forma *inermis* produce seedlings both with and without thorns.

Rather small, but also very frost resistant, is *Echinocereus viridiflorus*. Its greenish-yellow flowers appear in a ring around the apical zone of the plant. The tiniest *Echinocereus* is E. *viridiflorus* var. *davisii*, which is sometimes considered its own species, E. *davisii*. Depending on their particular provenance, forms of *E. engelmannii*, *E. stramineus*, *E. fendleri*, *E. dasyacanthus*, *E. relictus*, and *E. adustus* can be quite winter hardy.

Echinocereus viridiflorus

Escobaria missouriensis blooms with the fruits from the year before still present

Escobaria species are globe-shaped or elongated, with separated podarias (tubercles), not grown together in ribs but sticking out from the plant body as warts. The distribution of *Escobaria vivipara* reaches northward to southern Canada. Some types are even referred to USDA hardiness zone 4. *Escobaria missouriensis* (syn. *Neobesseya missouriensis*) forms shallow spherical cushions. They often show flowers and fruits simultaneously.

Escobaria sneedii develops thriving, multi-branched cushions with a dense, white spination. Usually, it withstands frosty German winters even without rain protection. Its little pink flowers appear in late summer. The more compact subspecies *leei* is a slow grower, which seems to be sensitive to limestone substrates.

Escobaria orcuttii forms thick, cylindrical stems up to 15 cm (6 inches) or taller. They are covered with dense white spines. In my garden, it also had no problems with frosty winters even without rain protection.

Top: *Gymnocalycium gibbosum* var. *chubutense*
Bottom: *Lobivia silvestrii* blooms in June in protected crevices

A few representatives of *Mammillaria, Coryphantha, Ferocactus*, and *Epithelantha* are worth trying in protected outdoor plantings, if they are descendants from adequately winter cold provenances. Rarer, and usually also more difficult in cultivation, are species from the genera *Pediocactus*, *Sclerocactus*, and *Navajoa*. Though mostly resistant to deep frost, they are very prone to rotting if kept only a bit too moist. They're easier to grow if grafted as young seedlings on hardy *Echinocereus, Cylindropuntia imbricata*, or *C. kleiniae*.

South American Species

Argentina, from Mendoza Province southward, is home to several cacti which can withstand frosty German winters outdoors, at least under a rain protection cover. *Austrocactus* species may be of great interest to plant enthusiasts; unfortunately, they are not often available in nurseries. A few *Gymnocalycium* species, as well as the two *Maihuenia* species *(M. patagonica* and *M. poeppigii*), which form their own subfamily, and the Opuntioideae members *Tephrocactus* and *Pterocactus* occur here and are quite cold hardy.

Furthermore, in the high altitudes of the central and northern Argentinian Andes, more cacti grow which could be hardy, at least in milder regions of Central Europe. In my own garden, *Lobivia silvestrii* (Syn. *Chamaecereus silvestrii, Echinopsis chamaecereus*) thrived for four years. The 2020-2021 winter with minus 22°C (-7.6°F) temperatures destroyed some in very exposed locations, but plants in protected crevices with completely dry substrate survived. This species occurs at 2,500 to 3,500 meters (8,200 – 11,500 ft) above sea level in Salta Province in northern Argentina.

Hardy Cacti in Troughs and Pots

The great advantage of planting cacti and other succulents sensitive to winter rain in troughs or pots is that they can be transferred under a roof during the cold season. Plants which are not fully hardy can be covered with a fleece or conifer twigs, but no moisture must occur under such materials. Or you can store them in a glass house, garage or any cool and not too dark room. *Echinocereus triglochidiatus* and *E. reichenbachii* withstood minus 27°C (-16.6 F) under rain protection in little clay bowls.

Rhyolite crevices over the cellar entrance

Succulents in Crevices

In 2014, I framed my veranda with a steep crevice garden built from quarry rough slabs of rhyolite, a reddish granite variant, which is mined nearby Halle in Saxony-Anhalt. The 10-meter (33 ft) long veranda's floor rises about one meter (3.3 ft) above the garden plane, but this difference in level increases up to 2.5 meters (8.2 ft) at the eastern part because of a depression which leads to a cellar entrance below. The stones were set upright with a slight angle eastward so that plants placed directly behind receive some rain protection.

I used pure silicate sand (0.063-2 mm) as backfill substrate. Directly between the stone slabs, I added rhyolite gravel (0-8 mm) to let the neighboring stone flags visually melt together and appear as a unified rock massif.

A nearly vertical, partly protruding stone set above the eastern cellar entrance adds an extra dramatic effect. Here, the stones are backfilled with concrete for safety reasons. Between the upright rhyolite slabs there are 10-20 cm (3.9-7.9 in) deep gaps for cacti and other hardy succulents. The

substrate for these planting niches consists of six parts sand, two parts rhyolite grit, three parts coarse peat, and one part trass cement powder. A minor addition of brick dust ensures the desired reddish hue to match the rhyolite rock. Trass is a special term for volcanic tufa. As a component of cement, it guarantees that no lime efflorescences will disturb the visual quality. This substrate must be moist when the plants are set to ensure stable positioning. It can be tightly pressed around the roots because its coarse structure will ensure proper aeration after the cement's hardening.

As director of the campus gardens of Anhalt University, Bernburg, I tested this planting method successfully in a trial at a dry stone wall with several rock garden plants. After a few years, the fixing effect of the cement decreases, but then the roots take over the stabilization.

In the steep wall, diverse *Echinocereus triglochidiatus* varieties thrive. They were inserted as over ten-year-old multi-branched plants and bloom well every year. Smaller specimen of *Echinocereus reichenbachii* provide attractive contrasts with their light-colored spination.

Echinocereus triglochidiatus and *Delosperma sutherlandii*


Left: *Aloinopsis spathulata* Right: *Stomatium mustellinum*

Well-proven companions are *Sempervivum arachnoideum, S. calcareum, Orostachys spinosus*, and *Duvalia calcicola*. They all survived the severe temperature of minus 22°C (-7.6°F) in the winter of 2020-2021. So did the Aizoaceae members *Stomatium mustellinum, Delosperma sutherlandii* and *D. basuticum* (syn. *Malotigena frantiskae-niederlovae*), while *Aloinopsis spathulata, Bergeranthus jamesii, Hereroa calycina*, and *Titanopsis calcarea* failed completely. In the years before, those last four species had withstood minus 15°C (5°F), so this seems to be about their tolerable minimum. Maybe provenances from higher altitudes are hardier.

The cellar entrance faces a small patio, framed south and eastward by a steep rhyolite crevice garden to bridge the garden and cellar levels. The north side of the patio is the basement wall of the house. Steep stairs run along the house wall and separate the crevice garden from the house façade, which is partly clad with rhyolite flags analogous to the stone setting above the cellar entrance. Here, smaller cacti such as *Gymnocalycium gibbosum, Echinocereus viridiflorus, Escobaria dasyacantha, E. missouriensis* and *E. sneedii* grow well.

Escobaria sneedii var. *leei* was the only species that did not accept the substrate-concrete mixture. Meanwhile, I changed to a substrate mix of sand, rhyolite gravel, and peat moss, which had a significantly better appearance. Peat moss seems to be a proper alternative to cement because it stabilizes even fine-grained substrates well.

Experiences on Wall Crown and in the Gravel Bed

The wall crown above the cellar entrance overtops the veranda floor. It is backed from a mortared wall and forms a balustrade along the veranda's east margin. The wall crown is covered with a 10 to 15 cm (3.9 - 5.9 in) layer of rhyolite grit and fine-grained expanded slate. On this very exposed site, several *Echinocereus* and *Escobaria* plants grow. The bed stretches along the house façade, protected by the protruding roof. Here, more sensitive species such as *Pediocactus simpsonii, Mammillaria heyderi, Gymnocalycium andreae, G. bruchii, Epithelantha micromeris, Austrocactus bertinii, Ferocactus cylindraceus* and some grafted *Sclerocactus parviflorus* were planted. They all survived even the frosty winter of 2020/21. However, *Epithelantha* and *Ferocactus cylindraceus* appeared stressed enough to transfer them into the glasshouse.

Escobaria sneedii

Wall with *Escobaria missouriensis, Aloinopsis spathulata* and *Escobaria sneedii*

At the east façade of the house a steep gravel garden, stabilized again by rhyolite stone slabs, was built. An east-facing slope is quite suitable for many succulents, especially since they often grow below taller shrubs or between rock boulders in nature. The substrate was initially pure rhyolite grit (1-8mm, 0.039-0.315 in). Though hardy agaves, *Yucca nana*, a few opuntias, and diverse *Escobaria* and *Echinocereus* species established there, I would recommend using a substrate with finer particles. Sand, or even a bit of clay or loam, should be mixed into the grit. This would also increase the thermal conduction from below and keep the plants' base better protected from frost damages in winter.

It is very important, especially for opuntias, agaves, and *Echinocereus triglochidiatus*, to feed them regularly with a normal flower fertilizer (N:P:K = 12:6:8 or similar) from spring till the end of June on such a permeable substrate with a low nutrient storing capacity.

Winter Protection

From November to March, the planting is covered with transparent corrugated plastic sheets to protect the plants from winter rain. After removing the temporary construction in spring, the first intensive watering plus dilute liquid fertilizer is given as soon as the daily temperature exceeds about 15°C (59°F). After a few days the wrinkly desiccated bodies swell and look lush again. In May and June, most *Echinocereus* species and pediocacti bloom, followed by escobarias and gymnocalycias. *Escobaria vivipara* often produces bright pink flowers till late summer, followed by tasty fruits.

Winter view below a temporarily roofed crevice garden. *Ferocactus cylindraceus* anticipates spring in the foreground

CORNELL BOTANIC GARDENS' NATIVE LAWN

KRISTINE A. BOYS

MY ENCHANTMENT WITH the forest ecosystem of northeastern America has taken me from gardening at the Brandywine River Museum and Conservancy outside Philadephia, Pennsylvania, to the Cornell Botanic Gardens' Mundy Wildflower Garden along Fall Creek, a protected waterway in Ithaca, New York. For the last 21 years, I have been working with volunteers and students removing invasive species, collecting local seeds, and propagating native plants for gardens, plant sales, and natural areas restoration. I love establishing all manner of native plants in the existing landscape.

I have been fascinated with our native grasses since the early days of my career when F.M. Mooberry, Coordinator of Horticulture at the Brandywine River Museum, introduced me to the riparian species of the Brandywine Valley in Chester County, Pennsylvania. When I became the gardener in the Mundy Wildflower Garden, I was introduced to the native grasses of the New York flood plain forest by our staff botanist Robert Wesley. I was hooked on growing as many grasses as possible. I collect local seeds and propagate them, primarily to establish in areas where invasive species have been removed. My excitement over native grasses has never waned; I consider them extraordinarily beautiful and incredibly useful plants.

Each fall I lead a seed collecting walk for the Finger Lakes Native Plant Society. On one of these seed collecting walks many years ago, I noticed a tiny little grass growing on the edge of a seasonal road in Cortland County, New York. The entire plant was no more than three or four inches (7.6 – 10

The characteristic curls of *Danthonia spicata*.

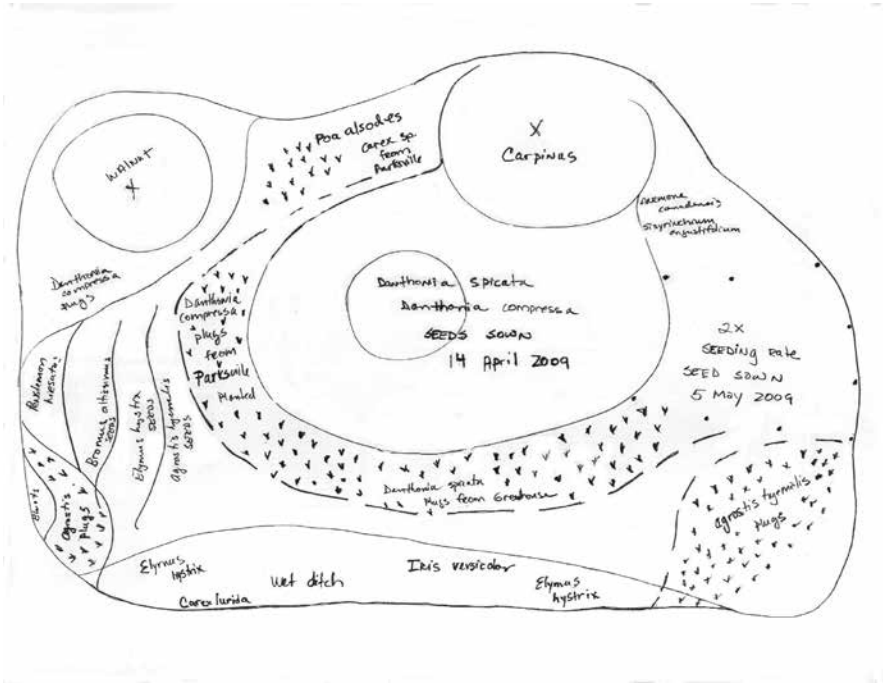
cm) from the ground. I was immediately attracted to two characteristics the plant displayed: it was blue, and it was curly! I was excited to learn it was the native poverty oat grass (*Danthonia spicata*), found throughout North America. I had read a fascinating article by Jen Weijer on his work using short native grasses from the Pacific Northwest as an alternative to conventional turf grasses.[1] The idea of creating a lawn with my tiny new plant friend *D. spicata* was never far from my thoughts.

The year was 2008, and the Cornell Botanic Gardens was engaged in an envisioning plan. Volunteer Rosemarie Parker, intern Leigh McGonagle, and I put together a proposal for a native lawn. We wanted to use the *Danthonia* to replace the existing European lawn to counter the negative impacts of traditional lawns. According to the U.S. Fish and Wildlife Service, Americans use about 100 million tons of fertilizer and 80 million pounds of pesticides annually on their lawns; 30% of the water consumed on the East Coast in the summer is for watering turf.[2] The goal was to have high biodiversity, low water use, low mow, unfertilized, pesticide-free, and an aesthetically attractive

lawn. We wanted to provide for a thriving insect-plant community. By the fall of 2008, we removed the European turf with a combination of spraying with glyphosate and scraping with a skid steer.

There is no doubt in my mind that the success of this project was due to the help I received from *Danthonia* researchers Scott Warnke[3] and Nadia Navarette-Tindell[4] about how to establish *Danthonia* from seeds. Based on their suggestions, we set out to collect as many seeds as possible from the wild populations we could legally access, particularly from power line cuts and old roadsides. The seeds were cleaned to remove awns, using the Brush Machine & Clipper Cleaner at the NYS Plant Materials Center in Big Flats, New York. We developed a short grass/forb mix using the *Danthonia* seeds and other locally collected species. The mix included short-lived grasses as placeholders until the *Danthonia* spp., sedges and low-growing forbs grew in.

We moist-cold stratified the seeds for 60 days before broadcasting them by hand in mid-April of 2009. Within two weeks there was germination, and we



Initial planting plan for the native lawn.

were growing a native lawn, albeit slowly. By 2010-2011 we were meeting our goal to demonstrate a viable alternative to a traditional lawn using locally native species of grasses and forbs in sun and shade. Not everything worked as anticipated. Even though the site was sloped, the soil had too much silt to drain well. Adding sand helped somewhat; to increase the drainage overall we are planning to add expanded shale. Among the species that suffered from the soggy conditions were pussytoes (*Antennaria* spp.), moss phlox (*Phlox subulata*), and bluets (*Houstonia caerulea*), while some unwanted species were able to move in.

In shadier edges we used Pennsylvania sedge (*Carex pensylvanica*), grove blue grass (*Poa alsodes*), and northern oat grass (*Danthonia compressa*); all

Top: Watering in the first seeding in April, 2009. Photo by Todd Bitner.
Bottom: The lawn in 2011.

are more shade tolerant than the *Danthonia spicata* used in full sun. In one moist corner, we planted prairie dropseed (*Sporobolus heterolepis*), and it has formed an ornamental patch by the path. A low wet area by the road served as a border of iris (*Iris versicolor*), wetland sedges (e.g., sallow sedge, *Carex lurida*), starry Solomon's plume (*Maianthemum stellatum*), and great blue lobelia (*Lobelia siphilitica*). Shaved sedge (*Carex tonsa*) is a low-growing native sedge that was interspersed throughout and has proved to be a competitive addition to the *Danthonia* base. Asters have moved in and are a welcome colorful display in the fall. They are kept short by the second mowing in late August or early September. The first mowing is at the end of May to control early-blooming non-natives and allow the *Danthonia* to set seed and disperse. If the annual rainfall is abundant there could also be a mowing in July. An initial species list is given in below.

If I were to make a new native lawn, I would investigate the soils further, replacing silt with expanded shale or small gravel. Turf removal by smothering with a fabric cover, followed by scraping (if you have heavy clay or silt) is sufficient, the herbicide was not needed.

I think that any new construction plan or geothermal installation should include a native lawn. It can be beautiful, easier to maintain, and better for the environment. You must plan at least a year ahead to establish the site conditions and obtain your seeds and plants, preferably from a local or regional source. You will enjoy the color, texture, and wildlife that it will bring to an otherwise barren part of your yard.

Native Lawn Initial Species List:

Forbs	**Initial placement**
Anemone virginiana	part shade
Antennaria plantaginifolia	full sun
Aquilegia canadensis	throughout
Geranium maculatum	part shade
Houstonia caerulea	sun
Mitella diphylla	part shade
Opuntia humilis	full sun

Penstemon hirsutus	throughout
Phlox subulata	sun
Sisyrinchium angustifolium	throughout
Tiarella cordifolia	part shade

Grasses & Sedges	**Initial placement**
Agrostis hyemalis	throughout
Bromus altissimus	placeholder
Carex tonsa	sun
Carex pensylvanica	part shade
Danthonia spicata	mostly sun
Danthonia compressa	mostly part shade
Elymus hystrix	part shade & road border
Poa alsodes	part shade
Sporobolis heterolepis	sun, moist corner

Species for wet road border only:

Carex lurida

Iris versicolor

Lobelia siphilitica

Maianthemum stellatum

References:

1 Weijer, Jan, University of Alberta, Edmonton, Canada. "*And I Will Send Grass in Thy Fields….*" Recreation Canada, March 1989, Canadian Parks/ Recreation Association.

2 Slattery, Britt E., Kathryn Reshetiloff, and Susan M. Zwicker. 2003. *Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed*. U.S. Fish & Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD. 82 pp.

3 Warnke, Scott, U.S. Department of Agriculture, Agriculture Research Service USDA-ARS.

4 Navarrete-Tindall, Nadia E., Native Plants Program, Cooperative Research and Extension, Lincoln University, Jefferson City, MO.

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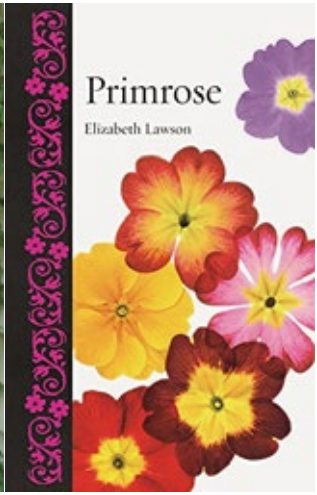
NARGS AWARDS

Award of Merit: Jeremy Schmidt, Raleigh, North Carolina
Nominated by Bobby Ward

Jeremy is part of the movement of young NARGS members who are bringing new perspectives and philosophy to the art and science of rock gardening. His mega-project was the creation, in 2016, of a 300-foot-long (90 m) crevice garden constructed entirely from recycled concrete at Juniper Level Botanic Garden in Raleigh, funded in part by a grant from the NARGS Norman Singer Endowment Fund. He has installed several crevice gardens in private homes in the Piedmont region of North Carolina and one in Atlanta, lectured at the NARGS annual meeting in 2017, and appeared on two NARGS Zoom webinars during the COVID pandemic. Jeremy has written articles for the NARGS *Rock Garden Quarterly*, given several presentations to east coast NARGS chapters, and is one of the participants in the planned installation of a crevice garden, funded in part by a NARGS Singer Grant, in Portland, Oregon. He is clearly one of the young bright stars in the NARGS firmament.

Carleton R. Worth Award: Vojtěch Holubec, Prague, Czech Republic
Nominated by Bobby Ward

Vojtěch has been a member of NARGS since he was a teenager; his NARGS membership, and that of others in eastern Europe under Soviet rule, was sponsored by Norman Singer. Vojtěch took plant hunting trips to the Caucasus beginning in 1977, culminating in his book, co-authored with Pavel Krivka, *The Caucasus and Its Flowers* (2006). The first of several trips to Central Asia and the Tian Shan in 1994 resulted in a book, co-authored with David Horak, *The Tian Shan and Its Flowers* (2018). Both books, supported by NARGS' Norman Singer Endowment grants, opened doors to botanical and horticultural wonders of these regions, rarely visited by North Americans. Seed collections by Vojtěch have introduced new plants via the NARGS Seed Exchange and his seed business, Wild Collected Seeds. The two books are rich in photographs, detailed plant descriptions, taxonomic references, habitat, and cultivation possibilities. He has participated in several NARGS traveling speaker tours and lectured at annual meetings and study weekends over three decades to NARGS chapters in the U.S. and Canada.



Carleton R. Worth Award: Elizabeth Lawson, Ithaca, New York
Nominated by Mary Gilliland

Elizabeth Lawson's *Primrose* (2019) is one of the outstanding rock garden books of its year—of any year! It is thoroughly researched, sumptuously illustrated with over 100 splendidly reproduced illustrations: botanical paintings of individual plants, photographs, herbarium sheets, electron micrographs, handwritten letters with line drawings, portraits of primrose breeders and historians, and posters from popular culture incorporating the flower.

In addition to her highly praised book, Elizabeth offers, at elizabethwinpennylawson.com/, engrossing reflections on botany, gardening, various plant species, and landscapes changing with the season. For the online audience, Elizabeth Lawson's blog is a delight. She says there: "Although 'natural history' is defined, narrowly, as the observational study of plants and animals in their natural environment, I take the broader view that all history is natural, all species worthy of attention, and a writerly approach the most valuable method of archiving ephemeral, irreplaceable, and non-repeatable details of appearance, behavior, and relationships." Her stunning prose is complemented by her stunning photographs. Lawson has been composing and posting on this site since February 2012.

Norman Singer Endowment Grant 2022

The 2022 Norman Singer Endowment Grant was a joint application from Jeremy Schmidt (North Carolina), Sean Hogan (Oregon), Kenton Seth (Colorado), and Paul Spriggs (British Columbia). The application requested funding for the installation of the first public crevice garden in Portland, Oregon, at Rancho Cistus Botanic Garden. The garden will be installed over several days in June 2022 during the annual meeting of the American Public Gardens Association, whose members will visit and see the installation.

Marcel Le Piniec Award: Darrell Probst
Nominated by Mark McDonough and Rosemary Monahan

We are honored to nominate Darrell Probst for the Marcel Le Piniec award. Anyone familiar with the nursery that he founded, Garden Vision Epimediums, knows Darrell is the epitome of everything this award is intended to recognize: a propagator, hybridizer, and plant explorer who has extended and enriched the plant material available to all gardeners in temperate climates, including rock gardeners. Established in 1997, this central Massachusetts mail order and retail nursery could be called the Epicenter of Epimediums. Since it will close this year, there is no better time to recognize these achievements.

The nursery grew out of Darrell's passion for collecting and studying epimediums and other Asian woodland flora. He conducted and sponsored plant collecting trips to China, Korea, and Japan, and brought back garden-worthy plants and new species that now grow in gardens around this country and beyond. From the beginning, the mission of the nursery has been "Preservation through cultivation." Epimediums are over-collected

in their native habitats for medicinal use and the nursery has served as a means to preserve them by ensuring their cultivation. Darrell's intent has been to meticulously sort confused species and cultivar nomenclature and to introduce numerous new species, selections, and hybrids that greatly enrich the range of hardy woodland plants available in horticulture.

Darrell has continued to work with taxonomists in China and Europe with defining the genus and describing new species discovered during his collecting trips. He has dedicated years to researching the genus, doing extensive fieldwork and herbarium studies, acquiring new clones and discovering new species, verifying identity by working with taxonomists, trialing and propagating plants under nursery conditions, and providing availability to fellow collectors, propagators, gardeners, and horticulture at large.

It is rare indeed that a plant group can make the jump from a little-known genus to a major element in today's gardens, through the efforts of one person. For this alone, Darrell deserves the gratitude of all gardeners and would be a most worthy recipient of the Marcel Le Piniec Award.

Epimedium 'Pink Champagne', a favorite hybrid created by Darrel Probst.

Geoffrey Charlesworth Writing Prize: Kathy Purdy

Joseph Tychonievich

The Charlesworth Prize, awarded each year to the best piece of writing in *The Rock Garden Quarterly*, was given to Kathy Purdy for her article in the Fall, 2021 issue, *Colchicums 101*. The piece is clear and engagingly written, and a thorough introduction to the wide diversity and pleasure to be found in the genus *Colchicum*. Perhaps the simplest way to sum up how effective the article was is to say that I started reading it as a gardener with exactly zero colchicums in my garden and no interest in growing any, and by the time I had finished I had a long list of colchicum species and varieties added to my plant shopping wish list. This award is well deserved, and I'm thrilled that Kathy has won it!

Linc and Timmy Foster Millstream Award

This year, the awards committee received an unusual number of nominations for the Millstream Award. As the photos and descriptions reveal, the three prize-winning gardens are quite distinct. What they all share is a foundation of superlative design, married to plantsmanship and impeccable maintenance, resulting in three magnificent, personal gardens. It was an honor and pleasure to learn about these NARGS member gardens, ranging across the North American continent, from British Columbia to the Adirondacks and Carlisle, Massachusetts. A huge thank you to the gardeners, and to those who nominated them for this award!

Bill Stark and Mary Stauble – Alpine Rock Garden

Two views of the Bill Stark and Mary Stauble garden. Photos by Kathy Purdy

Nominated by Kathy Purdy

Built near Ithaca, New York, by a pair of inspired gardeners, Bill Stark and Mary Stauble, this garden was created by carving the earth down to bedrock and filling in with a rock garden, following the natural cut of the ravine.

All the stone in the gardens was found on site except for the tufa, most of which came from Ilion, New York. Bill has an eye for possibilities and impressive technical know-how to achieve his vision. Massive boulders were moved and placed in a way to mimic glacial formations. Pride Rock, at 39,000 pounds (17690 kg), was one of the largest rocks they've moved.

Their troughs are exceptional as well, thanks to Bill's polystyrene trough building method, which enables him to make complex multi-level containers. This technique by itself is a significant contribution to rock gardeners everywhere.

Lining the ravine below is another garden full of candelabra primroses, hostas, ligularias, and other moisture-loving plants, it's a serene and restful counterpoint to the outsized scale of the rock garden.

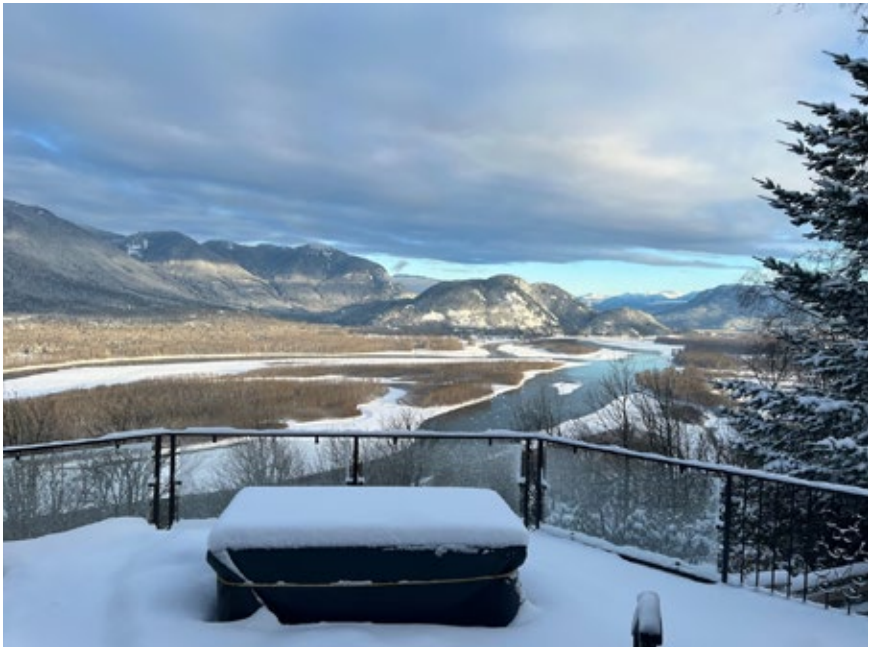
For extraordinary vision, technical wizardry, sympathetic planting, and years of exhausting, tedious, hard work resulting in unparalleled beauty, this garden is a worthy recipient of the Millstream award.

Chris and Jane Byra, Alpine Rock Garden
Nominated by David Sellars

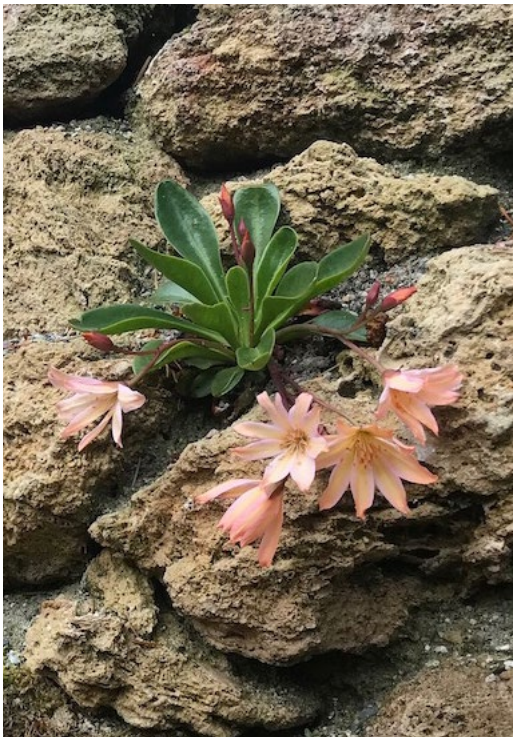
In Chilliwack, British Columbia, you will find the ultimate rock and alpine garden, beautifully situated on a wide rocky bench halfway up a steep mountainside. An immense river crosses the floodplain below, emerging from a valley ringed by snow-capped mountains extending into the far distance. The garden, characterized by ridges and gullies, rocky outcrops, steep banks, and hidden glades, contains a magnificent waterfall, splashing into a pond with a stream winding its way through boulders and channels. A huge talus slope provides niche habitats for special plants, crouching among the large rocks for protection.

This ideal garden existed only in the minds of Chris and Jane Byra in 2001 when they bought their 2.5-acre undeveloped property on a mountain overlooking the mighty Fraser River. The site is now transformed into a wonderland of alpines, perennials, rhododendrons, and trees, all carefully situated to take advantage of the variety of habitats they have created. Many of the alpines that they grow will not thrive at lower elevations on the British Columbia coast. At every turn, there are new delights for the eye in all seasons of the year. The views across the Fraser River to the Coast Ranges of British Columbia are stunning, especially from the newly constructed boardwalk overhanging a very steep slope below the house.

Tufa blocks had been stockpiled until Chris and Jane had the idea of creating a tufa cliff on the end of a ridge that had a natural rock outcrop. The tufa blocks were built up against the cliff and backfilled with coarse sand. The cliff is so steep that some blocks were cabled into the bank. With a height of about 3.5 m (11.4 ft) and a total width of 12 m (39 ft), access



View of the Fraser River from the Byra garden.



Left: *Lewisiopsis tweedyi* in tufa wall Right: Flowering *Saxifraga longifolia*

for planting had to be incorporated into the design. A narrow tufa path was built into the formation about halfway up the cliff. Using this narrow path makes you feel like you are back in the Dolomites. The Byras have been planting on the tufa cliff since 2020, drilling holes in the tufa for some plants and using natural crevices for others. Porophyllum hybrid saxifrages, including 'Ganymede', 'Peach Melba', and 'Sissi', thrive on the cliff, along with many plants of *Saxifraga longifolia*, their magnificent rosettes sitting flat on the vertical rock. *Lewisiopsis tweedyi* is happily growing in crevices high up the tufa wall.

This is a very special private garden lovingly created over 20 years with thousands of hours of dedicated work. The result is a garden of incredible variety notable for both the creativity of the landscaping and the exquisite, rare plants.

Jan Sacks and Marty Schafer, Special Garden

Nominated by Mark McDonough and Rosemary Monahan

Jan and Marty have gardened for about 30 years in Carlisle, Massachusetts, a wooded rural town north of Boston. Marty and Jan are known throughout the gardening world as leading iris hybridizers and a portion of their property is devoted to trialing and growing the results of their breeding program. These plants are sold through their mail-order nursery, Joe Pye Weed's Garden, which specializes in Siberian irises, versicolor irises, and interspecies hybrids. The remaining land is host to spectacular gardens that have prompted this nomination.

Exceptional gardens are an artful blend of design, good maintenance, and superior plantsmanship. The Sacks/Schafer garden exemplifies all three.

The hillside garden in spring bloom.

Left: Marty making iris croses Right: Rhododendrons in peak bloom.

Their love of color in the sunnier parts of the garden starts at the house, which is surrounded by a riotous display of azaleas that virtually require sunglasses to view when in bloom, and moves on to the largest, and most spectacular garden, which is located on the sandy hillside below the house. This hillside garden is home to a host of rock garden plants, irises, other perennials, and an arresting array of annuals they grow from seed. Many of the plants are their own hybrids and selections. At all times of the growing season, this garden is full of color, scents, and texture. The woodland gardens nearby are stuffed with treasures including hepaticas, anemones, epimediums, primulas, sanguinarias, and woodland Irises. Every plant in the garden is grown to a perfection that is born of many years of careful observation and tending.

It is the plantsmanship that sets these gardens apart. Jan and Marty are deeply experienced, with a sharp eye for new plants of horticultural merit, tracking down new and promising plants like a pair of bloodhounds. Their noteworthy generosity to friends has resulted in many reciprocal gifts of exciting new plants for their garden. No matter how knowledgeable you think you are, you can't visit this garden without finding lovely plants you have never seen before and wish you had growing in your own garden.

Marvin E Black Award: Carol Eichler
Nominated by John Gilrein, seconded by Terry Humphries and Marlene Kobre

Carol Eichler has been an active member of the Adirondack Chapter NARGS in Ithaca, New York, for over 20 years. She has served in the most active chapter officer positions, including Chair, Treasurer, Program Chair, Newsletter Editor, and Plant Sales Coordinator. She currently is the Plant Sales Coordinator and shares the Newsletter Editor position. Carol is one of the most dynamic chapter members and continues to promote membership in both the Adirondack Chapter and NARGS itself.

Throughout Carol's time as a member of the chapter, she has exhibited leadership over and above what is required by her officer positions. She is the most active person in our chapter promoting participation in the NARGS seed exchange, and is always one of the chapter volunteers packaging seeds for the exchange, as well as writing articles for the chapter newsletter to encourage others in the pursuit of growing plants from seed. Carol has planned many trips to tour other gardens, to attend talks organized by other chapters, and organized the chapter's annual tour of multiple gardens. For several years, she has organized workdays to maintain the Adirondack Chapter's Wurster Memorial Rock Garden in Ithaca, as well as multiday work trips to maintain the Heutte Rock Garden at White Pine Camp in Paul Smiths, New York, which is maintained solely by the Adirondack Chapter.

Carol's crowning achievement, to date, is being the driving force behind initiating, promoting, and organizing the NARGS 2020 AGM in Ithaca, New York, which was canceled due to COVID, and the revived 2022, AGM. A well-organized planner, Carol did the lion's share of the work in 2020 and 2022, dedicating countless hours to making all the details of the AGM a success.

Francis Cabot Award: Wave Hill

Nominated by Michael Riley, Judi Dumont, Lola Horwitz, and Rosemary Monahan

We are pleased and excited to nominate Wave Hill for the Francis Cabot Public Garden Award in the Special Garden category. This extraordinary public garden was dear to the heart of Frank Cabot and his family, who have been deeply involved with the Friends of Horticulture at Wave Hill for many years. We believe he would wholeheartedly support giving this award named in his honor to one of his favorite gardens.

Located in New York City's Riverdale neighborhood, Wave Hill sits high above the Hudson River with panoramic views of New Jersey's spectacular Palisades. Wave Hill was the former estate of George W. Perkins, a notable conservationist, and other wealthy New Yorkers. In the past, houses on

Troughs at Wave Hill

the property hosted residents the likes of Theodore Roosevelt, Arturo Toscanini, and Mark Twain. Just 28 acres in size, the estate became a public garden in 1965 and is intended to provide beauty, serenity, and horticultural knowledge for the people of New York. In the past fifty-seven years, it has been transformed from a private estate with a rose garden and small greenhouses to the diverse and spectacular garden that it is today. The intent has always been to retain the original residential scale so that visitors feel they are visiting a personal garden while providing a gorgeous array of plants suitable for New York City gardens and exciting displays of tender and rock garden plants. Among the most visited gardens on the property are the flower garden, a pergola that frames views of the Hudson River, an aquatic garden, and the wild garden, all of which are stunningly planted and maintained.

Tucked in amongst these gardens is a treasure of an alpine house that is surrounded by troughs overflowing with choice rock garden plants. As Tom Christopher said in his book, Nature into Art: The Gardens of Wave Hill, "[t]he experience is like a museum visit. You stand before the crystal case, admiring the small, exquisite objects carefully arranged inside. But this is no trip to a gallery in Manhattan: it's a foray to the Bronx to visit Wave Hill's T.H. Everett Alpine House." The family of staff who have maintained the alpine house and terrace have been, not surprisingly, NARGS members, and many of the plants therein were raised from NARGS seed. A small coterie of volunteers augments the astute staff of horticulturists, and the John Nally Intern Program ensures that the momentum and quality will never cease.

Much of the transformation from a 19th-century private estate to stunning public garden was overseen by Marco Polo Stufano, the Founding Director of Horticulture, who has been tireless in encouraging serious horticulture and hands-on gardening, and whose plantsmanship has been responsible for much of the garden design and many of the choice specimens that populate the gardens. Extraordinary attention has been devoted to the alpine house and terrace and to spreading the gospel of rock gardening. As part

Treasures in the alpine house at Wave Hill

of its educational mission, Wave Hill offers classes on the creative ways that alpine plants can be grown for display in pots, sand beds, handmade troughs, and even in crevices of an old stone retaining wall. They also offer popular workshops on making and planting hypertufa troughs.

As Marco Stufano said in a recent video about Wave Hill, "[l]ife can be beautiful, the world can be beautiful, and Wave Hill is unique – it really is the people's garden"

Francis Cabot Award: Wurster Memorial Garden, Ithaca, New York
Nominated by John Gilrein, seconded by Rosemarie Parker

The Wurster Garden is an alpine rock garden on the property of Cooperative Extension in the City of Ithaca, and is open to the public. The Adirondack Chapter built the garden in 2000/2001 using a Norman Singer grant from NARGS and private donations in memory of Al Wurster. Al Wurster was an enthusiastic Ithaca gardener who was very involved in several local garden organizations, including the Adirondack Chapter. Robin Bell was largely responsible for the design.

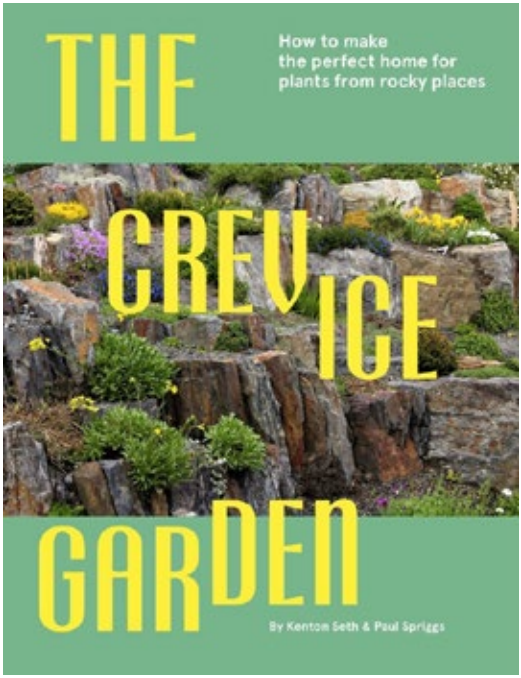
The garden was built up from a flat lawn area and slopes down from a dry-stone wall at the highest point to a small garden pond; it is meant to be a teaching garden. Different parts of the garden represent a Czech-style crevice rock garden, a planted wall, a sand bed, an English rock garden, and a small bog area. Peak bloom is in late May. There is also a hypertufa trough added to the garden several years after it was built.

The Wurster Garden continues to be well maintained through the efforts of members of the Adirondack Chapter. Every year there are several weeding and maintenance sessions and at least one planting event. One of the most remarkable things about this garden is that many of the plants survive, though the garden rarely receives any supplemental irrigation. Survival is aided by the superb drainage, which is so important in this wet climate. The Wurster Garden continues to be an inspiring local resource for our chapter and the community. The garden was described in the Winter, 2019/2020 issue of *The Rock Garden Quarterly*.

Three views of the Wurster Memorial Garden

Bookshelf

The Crevice Garden



The Crevice Garden
Kenton Seth and Paul Spriggs
Filbert Press, 2022

I'll be honest. Despite being an avid gardener, a lover of books, and writing about gardening for a living, I have a pretty small library of gardening books. Lately, that collection has been shrinking, not growing. There are lots and lots of beautiful books about plants and gardening out there, many that I have read once with pleasure, but there are less than a dozen gardening books on my shelf that I actually refer to time and time again.

The Crevice Garden has instantly joined those ranks.

I would recommend this book to a novice who has never made – or even seen – a rock or crevice garden before. I also whole-heartedly recommend it to the many members of this society who have been making these types of gardens for years. The clear prose – wonderfully assisted by beautiful and informative photos and illustrations – takes the reader right from the very basics into advanced details of constructing gardens, placing stones, and cultivating plants. It is no small feat to write a book that won't lose beginners or bore experts, but Seth and Spriggs have managed it.

I particularly appreciate that there is equal emphasis placed on making a crevice garden that is a good home for plants to thrive and creating one that is aesthetically pleasing and beautiful. Much of the advice I've heard or read on placing rocks amounts to "make them look natural," without very many specifics on how to actually do that. This book, however, gives specific advice and guides the reader through thinking through every detail of the material -- size, shape, and placement of each stone -- and how those factors impact the look of the garden and how plants will grow in it.

The book is arranged in ten chapters, starting with three chapters on the basics of what a crevice garden is, the natural inspiration for this style of gardening, and its history. Chapter four, How a Crevice Garden Works, is one of my favorites, giving a clear conceptual grounding to all the practical information that follows in chapters five through eight as they detail every step of planning, creating, and maintaining the crevice garden.

Chapter nine is a tour of over a dozen different crevice gardens, showcasing a huge range of styles, types of stones, climates, and settings for these gardens. If you are a crevice garden novice or skeptic, I'd recommend starting here, as the gorgeous photos clearly communicate the enormous appeal of this style of gardening. I particularly appreciate the diversity of gardens featured. Whatever your gardening situation, you'll find ample inspiration in this chapter.

The final chapter, plant profiles, is a good introduction to rock garden plants for a beginner, but probably has the least interest for more experienced rock gardeners.

Throughout the book, the photography is consistently gorgeous and informative, complementing the points made in the text. Even more useful are the frequent drawings by Kenton Seth, which quickly illustrate everything from how root systems grow through crevices to the aesthetic impacts of different stone-placement choices.

The Crevice Garden is an instant classic and an essential addition to any rock gardener's library.

Joseph Tychonievich

NORTH AMERICAN ROCK GARDEN SOCIETY

Bulletin Board

summer
2022

volume 80 | 3

President's Message

COVID-19 isn't the only "bug" in the air. No matter how vaccinated you may be, you're probably not immune to the crevice garden bug. I, too, wasn't overly fond of the repetitive stratigraphy of many crevice gardens: remember, they do come in many flavors! On a recent visit to Berkeley I was dazzled by a stunningly executed crevice masterpiece of metamorphic schist reminiscent of a Paul Klee canvas, studded with hundreds, maybe thousands, of perfectly grown succulents and wildflowers. Of course, attending an International Conference in the Czech Republic would melt the heart of the sternest crevice critic: we hope to have a tour in April of 2023 which will do just that.

The two arenas where crevice gardens reveal their power is with growing high alpine plants at lower elevations. Anyone who's struggled with certain androsaces and saxifrages in traditional gardens and then watched them take off among crevices will become an instant convert. Practically all steppe and dryland plants prove far easier to grow with crevice culture. Anyone who has seen the images of African succulents thriving in the crevices of the Stireman brothers in Utah will be sold on crevices—instantly.

Kenton Seth and Paul Spriggs' *The Crevice Garden* tome is a landmark monograph on the subject: members of NARGS chapters have the potential of obtaining this pre-publication at a significant discount. I expect that this volume will expand the demand for these gardens, and especially for the compact alpines that they show off so well. In Colorado we have lost our two premier purveyors of true alpine plants. Obviously, there is an enormous potential market and demand for crevice garden plants that some enterprising young nurserymen will pursue.

What do we do in the meantime? I'll tell you what: Now more than ever it is time for members of NARGS to hone our skills at propagation! I have never had more seed pots germinating in my cold frames than this spring: with seven tons of angular, lichened granite being assembled into a steep crevice garden wrapping around the Southwest corner of my house, I shall need hundreds of gems to fill it—more than my pocketbook can afford to purchase. By Jove, I'll grow them myself!

A large proportion of these propagules will come from you, fellow members of the NARGS seed community. I am thrilled to know that this or that gem I'll be growing was lovingly collected by a friend in Sweden, Connecticut, or Arizona. Perhaps, you who are reading this will have donated a plant that I'll be pricking out tomorrow. I gathered the first pinches of *Townsendia* seed a week ago—and by the time you're reading this, myriad plants will be ripening seed. Go get 'em!

I request, I challenge, I plead—even if you've never harvested seed before, the crevice gardens of the future are yearning for your collections. From 1988 to the end of the last millennium I co-operated Rocky Mountain Rare Plants seed company—a glorious epoch in my life. The incredible magic contained inside those tiny packages has never ceased to amaze me. The NARGS seed exchange is a pillar of our Society that provides the only donor indexed seed offerings in the world. I, for one, love to look up the donors of seeds of plants I've yearned to grow, and I have made note of the lucky soul who has had the forethought to grow and then collect the seed of the treasure I've wanted!

I hope your name will be the one I see this coming December as I scan the 2022-2023 Seedlist! I thank you in advance!

---Panayoti Kelaidis

NARGS Donations

Donations to NARGS between February 1 and April 30, 2022.

To support the General Fund, Seed Exchange, *Rock Garden Quarterly*, Educational Trips, Traveling Speakers Program, Website Development; in memory of Barrie Porteous and Bill Plummer; in honor of Janet Novak; and the NARGS Circle of 100 Challenge.

Anonymous (Colorado)
Hardy Plant Society—Mid-Atlantic Group
Addison, Betty Ann (Minnesota)
Adler, Lee Howard (New York)
Alway, Ted (Washington)
Andres, David (California)
Atkinson, Kristine (Massachusetts)
Baker, Patricia (Colorado)
Barbour, Michael (Colorado)
Barrett, Karen (Maryland)
Bartlett, John (Pennsylvania)
Bell, Gary (Nebraska)
Beuker, Ivan (Saskatchewan)
Boninti, Frances (Virginia)
Bouffard, Vivien (Massachusetts)
Breyfogle, Ross (Colorado)
Brown, Alison (Maine)
Carlton, Hawken (Colorado)
Dearing, Michael (Wisconsin)
Duncan, Charlene (Nevada)
Engle, Mary E. (California)
Enns, Caroline (Oregon)
Evans, Timothy A. (California)
Fabian, Daniel (Pennsylvania)
Ferree, Louisa (Massachusetts)
Franklin, Catherine W. (Alaska)
Gannon, Griffin (New York)
Gentling, Peter (North Carolina)
Geurtz, Sarah (Arkansas)
Hall, Stephan (Portland)
Hampton, Sandra Kay (Illinois)
Hansen, Gene (Minnesota)
Heffner, Leslie (New York)
Hickey, Dale (Washington)
Hinchliff, Cody (Washington)
Hogenson, Gordon (Washington)
Houdek, G. Robert (Ohio)
Huggler, Carol (Alberta)
Irwin, Lindsey (Arkansas)
Jorling, Mimi (New York)
Kaza, Ravi (Connecticut)
Koch, Helen G. (Maine)
Kongsjorden, Aiden (Alberta)
Leggatt, Anna (Ontario)
Lenkoski, Peter (Massachusetts)
Lewis, Mary (New Hampshire)
Lindsey, Irwin (Arkansas)
Lockhart, Bruce (Massachusetts)
Loeffler, Ann R. (New Hampshire)
Lutes, Roderick (New Brunswick)
Magowan, Robin (New Mexico)
Maksymowicz, Alex & Lillian (Oregon)
Marsolo, David (Ohio)
McGrigor, Albert (New Jersey)
Midgley, Jan (Colorado)
Milde, Leslie (New Hampshire)
Moamar, Amal (Massachusetts)
Moscetti, Paula J. (New Jersey)
Neal, John (North Carolina)
Nimmo, Fran (New Zealand)
Norton, David (Massachusetts)
Olmsted, Amy (Vermont)
Pacholko, Helen (Alberta)
Peachey, Harold (Maine)

Place, Alison (Ontario)
Plankeel, J. W. (Netherlands)
Pounds, David (Ontario)
Pradhan, Alnasir (Connecticut)
Rafferty, Sean (British Columbia)
Reid, Louise (Ontario)
Rembetski, John (New Mexico)
Remphrey, Steven (Pennsylvania)
Rieder, Corina (California)
Robinson, Nancy (Tennessee)
Rodahl, Allyson (Colorado)
Sanderson, Amy (British Columbia)
Saucier, William J. (Wisconsin)
Schneider, Paul H. (New York)
Schramm, Nancy (California)
Shaw, Beverly (Colorado)
Shepard, Cecile (California)
Shramek, Joseph (Washington)
Simpson, Carol (New Hampshire)
Simpson, Franklin (New Hampshire)
Smith, Anne (Colorado)
Spiers, William (Michigan)
Spriggs, Paul (British Columbia)
Stehouwer, Steven (New Brunswick)
Swick, Kathleen (Alaska)
Thompson, Paula (Michigan)
Thrasher, Allen W. (Virginia)
Tomczak, Mark (Wisconsin)
Tou, Vello (Ontario)
Vaxvick, Linda (Alberta)
Whitehead, Diane (British Columbia)
Whyman, Steven (North Carolina)
Wrightman, Esther (New Brunswick)
Yales, Michael (Michigan)
Yatko, John (Ohio)

The following recently became NARGS Patrons:

Donovan, Catherine (Illinois)
Dumont, Judith O. (New York)
Gerace, Alex C. (Colorado)
Grissell, Edward Eric (Oregon)
McIntosh, Kevin (Maryland)
Schmidt, Jeremy (North Carolina)
Tonnesen, Alex (Colorado)
Tsutakawa, John (California)
Vaananen, Mary F. (Kentucky)

New and Rejoining Members

Welcome to all those who joined or rejoined between February 24 and April 30, 2022

Adams, James, Pittsburgh, PA
Alway, Ted, Peshastin, WA
Anderson, Dawn, Calumet, MI
Barge, Edward, Boise, ID
Bentley, Jarvie, Trenton, MI
Bittner, Liz, Richmond, CA
Carlton, Hawken, Greenly, CO
Casey, Racile, Montgomery, AL
Coonrod, Aline, Brush, CO
Dubesky, C. V., Waterloo, ON
Exter, Hillary, Chestertown, NY
Friedman, Bonnie, Anchorage, AK
Gannon, Griffin, Cobleskill, NY
Guerrero, José M. A., Kent, WA
Gupta, Vinni, Sammamish, WA
Hedges, Barbara, Fruita, CO
Heslop, Timothy, New York, NY
Huala, Eva, Palo Alto, CA
Humphreys, Bryan, Missoula, MT
Jacob, Alex, Far Hills, NJ
Johnson, Dan, Englewood, CO
Jones, Heidi, Mountain View, MO
Kouzes, Ross, Portland, OR
Larson, Will, Falmouth, ME
Loeffler, Ann R., Manchester, NH
Macura, Michael, Roxbury, CT
Maitland, Anne, Sacramento, CA
McCleary, Joe, Centennial, CO
Mills, Julie, Great Falls, VA
Millspaugh, Linda, Twain Harte, CA
Mlynczak, Bern, Williamsburg, VA
Mockel, Alex, Nielsen, Germany
Morrell, Edward, Morrison, CO
Myles, Eleanor, Damariscotta, ME
Neiman, Gail, Southeastern, PA
O'Brien, Jenna, Becket, MA
Oakes, Summer Rayne, Brooklyn, NY
Partridge, Margaret, Wilson, NY
Posey, Cynthia, Baton Rouge, LA
Radell, Marc, Lederach, PA
Rose, Scott, Cuyahoga Falls, OH
Schuyler, Andrew, Yonkers, NY
Shih, Hoy, San Jose, CA
Smith, Margaret, Oregon City, OR
Smyth, Mallory, Pottstown, PA
Titus, Jennifer, Ferndale, WA
Tweedle, John, New York, NY
Wegner, Michael, Black Mountain, NC
Zubrowski, Stanley, Prairie River, SK

Help NARGS and new rock gardeners grow.

Give a gift membership to the North American Rock Garden Society and introduce someone to a world of passionate gardeners.
Give access to the seed exchange, *Rock Garden Quarterly*, tours and adventures, meetings and study weekends.

Recipient information:

First Name: _____
Last Name: _____
Email: _____
Phone: _____
Address: _____
_____

Membership (Circle one):	US/Canada	International
Household	$70	$75
Individual	$40	$45
Student	$15	$15

Mail with check payable to the North American Rock Garden Society to P.O. Box 18604, Raleigh, NC 27619-8604

Or visit nargs.org/join

Seed Exchange

We thank the Great Lakes Chapter for responding to our call for help with the Seed Exchange's Surplus Round and their willingness to handle it for a third year, which is beyond the original stint they signed on for. This will bring the two distribution phases of the Seedex into synch. Their volunteers will once again fill your orders, in March, 2023. Our Surplus Round is a great way to acquire all those seeds that you really do like, but weren't able to fit into your limited order in the Main Distribution; you can purchase up to 100 packets of seed for a mere $10/20 packets. Where else can you find such exceptional seeds at such bargain prices?!

Reading, in this issue of the *Quarterly*, the very impressive list of generous members who have made donations to NARGS, I am reminded of our Seedex Consignees, those NARGS members in countries that now require phytosanitary certificates to accompany all imported seeds: Japan, the UK, countries of the EU – and, now, Australia. Since it would be prohibitively expensive and time-consuming to obtain a phyto for every member in those countries who orders seeds, we need to secure one phyto for all the seed orders in each country and ask a single member to receive and re-mail those orders to their fellow members. I hope that those of you who receive these seed orders offer a Thank-you to the Consignee who has donated the time and the funds to make it possible. We are very grateful for their continuing help each year!

And you can help the Seed Exchange, too, by donating your time and your seeds. While it seems that everyone wants someone else's natives, and wild-collected seeds are always at a premium, seeds from your garden-grown native, woodlander, and rock garden plants are equally welcome. Please contribute your efforts to collect – and clean! – your garden and wild-collected seeds. Cleaning your seeds of chaff and debris is becoming ever more essential, as more countries are becoming more exacting about the seeds that they allow to enter.

Take note of the Donation form and instructions that have been included with this issue; our Canadian and overseas members also receive a copy of our import permit for small lots of seed, as well as the green-and-yellow mailing label to send their seed donations. If these items are not within your copy of the *Quarterly* – or you plan to send more than 50 packets of seed (wonderful!) – contact:

Laura Serowicz
15411 Woodring Street
Livonia, Michigan 48154-3029

The last date for Laura to receive your donated seeds is **November 1**. To meet that deadline, members in the U.S. need to mail them by October 20, and Canadian and overseas donors should post their seeds no later than October 15.

If you have plants whose seeds ripen later in the year, do include their names on the list when you send your other seeds before November 1; and then be sure to mail the late-ripening seeds so that they reach Laura by **December 1**.

If you would like a print copy of our Seed List and order form, contact me by December 1:

537 Taugwonk Road
Stonington, Connecticut 06378-1805
alpinegarden@comcast.net

I hope that your weather is cooperating (for once) and you are having an enjoyable and satisfying season in your gardens.

Joyce Fingerut

Director, Seed Exchange

NARGS Traveling Speakers Program

With travel opening up as the pandemic recedes and with a continuing donation from our generous, but anonymous donor, NARGS chapters are once again able to enjoy hearing speakers from afar at meetings this year. Our current schedule is listed below, and we expect to announce more speakers as plans develop.

Northeast Region:
Kenton Seth, Colorado and Paul Spriggs, British Columbia

- Saturday, June 11, Berkshire Botanical Garden, West Stockbridge, Massachusetts. Morning program: Kenton Seth, Modern Crevice Gardens: Past, Present, and Especially Future. Afternoon: Paul Spriggs, My Favorite Crevice Garden Plants.

Western Region:
Tom Freeth, Royal Botanic Gardens, Kew.

- Tuesday, July 13, Sonora, California. Early Flowering Flora of Spain
- Saturday, July 16, San Francisco, California. The Alpine and Rock Garden Living Collections
- Monday, July 18, Salt Lake City, Utah. The Bulbous Collections
- Thursday, July 21, Grand Junction, Colorado. Rock Gardens at Kew
- Saturday, July 23, Durango, Colorado. Rock Gardens at Kew
- Tuesday, July 26, Vail, Colorado. Rock Gardens at Kew
- Friday, July 29, Denver, Colorado. Rock Gardens at Kew

Western Region & Northeast Region:
Kaj Andersen, Bangsbo Botanical Garden, Denmark
Tentative schedule:

- Tuesday, September 27, Santa Fe, New Mexico.
- Friday, September 30, Durango, Colorado.
- Sunday October 2, Grand Junction, Colorado
- Wednesday October 5, Vail, Colorado
- Saturday, October 8, Denver, Colorado
- Saturday, October 15, Berkshire Botanical Garden, West Stockbridge, Massachusetts
- Sunday, October 16, New York area, Tri-State meeting.

Southeast/Mid-Atlantic Region:
Linda Cochran, Port Ludlow, Washington. Plans for a fall 2022 tour are being developed.

Northwest Region & Midwest Region:
Harry Jans, Jans Alpines, Netherlands. Plans for a fall 2022 tour of these two regions are being developed.

Contact your local NARGS chapter for times and locations of these presentations. Information about Traveling Speakers also will be posted on the NARGS webpage as well as in this Bulletin Board as plans are finalized.

Rosemary Monahan, Chair
Email: rosemonahan@comcast.net

Book of the Month

Do you like to read about rock gardening and horticultural subjects? Please share your useful insights with other members and get a free review copy of the book for your efforts. Reviewers are always sought for the NARGS website Book-of-the-Month feature. In return for submitting a 300-400-word review of the book of your choice, the book will be sent to you free of charge. Select your own title for review or suggestions can be provided.

Please contact Steve Whitesell at elysium214@aol.com for more information.

NARGS 2023 Rocks, Plants, Habitats

Dalhousie Agricultural Campus, Truro, Nova Scotia
June 8 to 11

Come to see our varied habitats, plants and rocks. Local sites include coastal barrens, gypsum deposits, woodland walks, and varied gardens. The meeting will include speakers on Mi'kmaw legends, local flora, rock gardens, and specialized plants.

Full program will be in the Fall NARGS *Quarterly*.

For information on travel to Nova Scotia visit novascotia.com

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

Lydon, Patrick, Sheffield, Massachusetts
MacIntyre, Alan, Chapel Hill, North Carolina (age 100)
Maker, Mary, Neffs, Ohio
Patton, Joe C., Beaverton, Oregon (age 101)
Porteous, Barrie M., Richmond Hill, Ontario
Zemach, Mary, Durango, Colorado

NARGS Chapters (meeting place/area) and Chairpersons or Co-Chairs

Adirondack (Ithaca, NY)	John Gilrein
Alaska (Anchorage & Mat-Su Valley)	Florene Carney
Allegheny (Pittsburgh, PA)	Nancy Knauss
Berkshire (Stockbridge, MA)	Joyce Hemingson
Calgary Rock & Alpine Garden Society (Calgary, AB)	Patti O'Keefe
Columbia-Willamette (Portland, OR)	Jane McGary
Delaware Valley (Philadelphia, PA)	Louise Clarke
Fells (Newbury, NH)	Thelma Hewitt
Gateway (St. Louis, MO)	Mariel Tribby
Great Lakes (Southern MI)	Julia Caroff
Hudson Valley (Westchester Co, NY)	Don Dembowski
Long Island (Oyster Bay, NY)	Donald Ohl
Manhattan (New York, NY)	Judith Dumont
Mason-Dixon (Norrisville, MD)	Marika Sniscak
Minnesota (Minneapolis/St. Paul, MN)	Rick Rodich
New England (Waltham/Boylston, MA)	Estelle James
Newfoundland (St. John's, NL)	Todd Boland
New Mexico (Santa Fe/Albuquerque, NM)	Robin Magowan
Northwestern (Seattle, WA)	Kendall McLean
Nova Scotia (Halifax & Truro, NS)	Roslyn Duffus
Ohio Valley (OH & surrounding states)	Joan Day
Ontario (Don Mills, ON)	Jeff Mason
Ottawa Valley (Ottawa, ON)	Rob Stuart and Jane Lund
Piedmont (Raleigh, NC)	Cyndy Cromwell
Potomac Valley (Alexandria, VA)	Barbara Rose
Québec (Montreal, QC)	Pierre Morrissette
Rocky Mountain (Denver, CO)	Panayoti Kelaidis
Sierra (Sonora, CA)	Nancy Piekarczyk
Siskiyou (Medford, OR)	Jean Buck
Wasatch (Salt Lake City, UT)	Tony Stireman
Watnong (Far Hills, NJ)	Roxanne Hiltz
Western (San Francisco Bay area, CA)	(vacant)
Wisconsin-Illinois (Madison-Chicago)	Dave Collura

NARGS Structure

The officers of the North American Rock Garden Society consist of a president, a vice-president, a recording secretary, and a treasurer. The officers are elected by the membership.

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.

Officers

President	Panayoti Kelaidis 1244 S Quince St, Denver, CO 80231-2513
Vice President	Todd Boland 81 Stamp's Lane, St. John's, Newfoundland & Labrador A1B 3H7
Recording Secretary	Sarah Strickler 2436 N Utah St, Arlington, VA 22207-4030
Treasurer	Richard Lane 4904 Hermitage Dr., Raleigh, NC 27612-2762
Director-at-Large	Vacant
Immediate Past President	Betty Anne Spar 5051 N Grey Mountain Trl, Tucson, AZ 85750-5942

Directors of the Board:

2020–2023	Ed Glover, Mount Horeb, WI Susan E. Schnare, Andover, NH John Willis, Frederick, MD
2021–2024	Tony Avent, Raleigh, NC Mariel Tribby, St. Louis, MO Peter Zale, Kennett Square, PA
2022–2025	Cyndy Cromwell, Cary, NC Christine Ebrahimi, Columbia City, OR Kiamara Ludwig, Oakland, CA

Managers

Executive Secretary	Bobby J. Ward (919) 847-6374 P.O. Box 18604, Raleigh, NC 27619-8604
Quarterly Editor	Joseph Tychonievich 1629 Sunnymede Ave. South Bend, IN 46615
Seed Exchange	Laura Serowicz 15411 Woodring, Livonia, MI 48154-3029
Webmaster	Elisabeth Zander 127 North St, Goshen, CT 06756-1202

Back Cover: Mountain death camus *(Zigadenus elegans),* Emily Griffoul

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