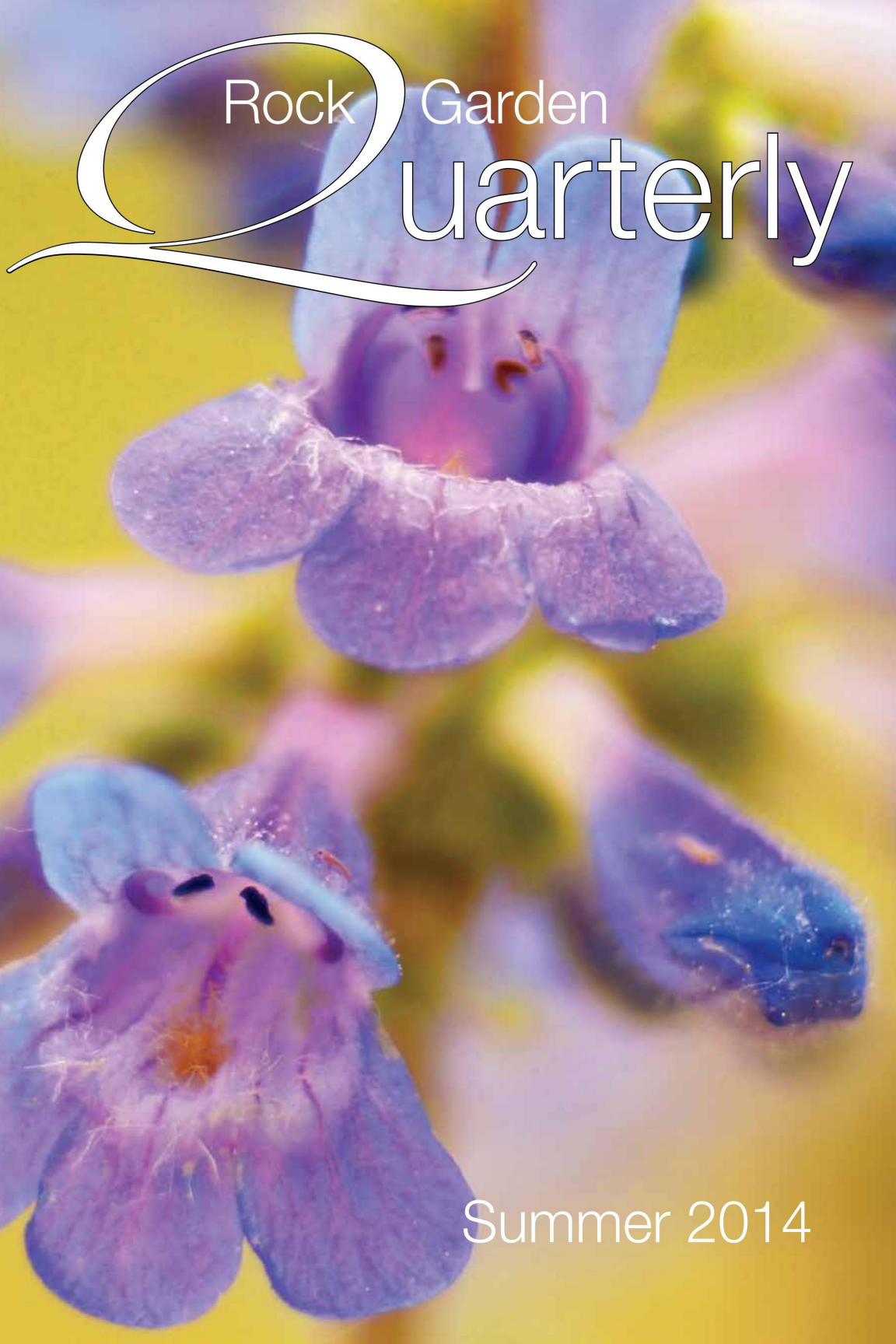
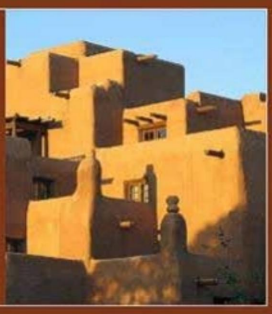

Rock Garden
Quarterly
Summer 2014

AGM 2014
Santa Fe, NM
August 28-30, 2014

www.nargs.org



Speakers will be

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David Salman (Founder & Chief Horticulturist at High Country Gardens)

Dan Johnson (Curator of Native Plant Collections, Denver Botanic Gardens).

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Robin Magowan, with his wife Juliet, moved in 2012 from Connecticut, where they had lived for many years, to Santa Fe, New Mexico. Building a new garden has involved learning new techniques for the new location. Robin's most recent book is *Internal Weather* and recently he has adapted *The Garden of Amazement: Scattered Gems from Saeb (1590-1676)*.

David A. Nelson gardens in Richland, Washington, and has long studied and grown *Castilleja* and has written about them previously in the *Quarterly*. He is a retired research chemist with a minor in botany. He has a background in rock gardening, stretching back over 50 years, thanks to his parents. His interest in *Castilleja* is based on the many trips taken to Glacier National Park while he was growing up in Montana.

Loren Russell resides in Corvallis, Oregon, and has been a member of NARGS since the 1980s. His background in entomology is a perfect match to alpine plants – a fascination with all things small and beautiful. Loren writes and speaks on gardening and natural history and has contributed chapters in NARGS books and several previous articles to the *Rock Garden Quarterly.*

Dave Toole lives in Invercargill at the southern tip of South Island, New Zealand. An active member of the NARGS website Forum, he regularly speaks to local groups around the South Island on subjects such as Trilliums, Bulbs From Seed, and Field Trips Into The NZ Mountains. Dave also presented at the 2010 Scottish Rock Garden Club Discussion Weekend as well as being the Travelling Speaker around Scotland.

Front cover: *Penstemon platyphyllus* (detail) – James Mikkelsen

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ROCK GARDEN QUARTERLY

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Sangre de Cristo Mountains near Taos, north-central New Mexico, as seen from US Route 64 (Nicholas A. Tonelli)

From the Editor

EVERY YEAR, ABOUT three months before the Annual Meeting, I start looking at the location and seeing what activities are on offer, how long we can stay on (and what that will mean for the garden and stand-in watering), and what we're going to be able to fit in that time. This year it's northern New Mexico: Santa Fe and the Sangre de Cristo Mountains, the southernmost extension of the Rocky Mountains, with an included fieldtrip during the meeting to visit the mountains above Taos at the Taos Ski Area. And there's the opportunity at the end of the meeting to take the chair lift above Santa Fe into the mountains of the Santa Fe Range.

Panayoti Kelaidis wrote on the NARGS forum about the idea of having the Annual General Meeting in Santa Fe at the end of August: "April and May are not the best season for New Mexico: often very windy and dry. There is not the rich ephemeral spring flora that characterizes so much of the Eastern US or California (which have lots of winter moisture and spring rain). The Chihuahuan desert and its outliers (New Mexico and Southern Colorado included) have a modified monsoonal rainfall pattern where the greatest moisture falls in the summer months. Most years these monsoons start in July and go on to September or even later. They are usually afternoon showers, often quite heavy. I find that late August through September is the most enchanting time to seek out flowers in New Mexico at lower elevations. The Sangre de Cristo and especially the Sandia mountains have the sexy alpines blooming around the 4th of July – but most years the lowland

stuff is still dormant then. There are still lots of delphiniums, aconites, and Asteraceae galore blooming in August higher up, so there are things to see then; but the Rio Grande valley flowers are later: things like *Dalea scoparia* (a big blue broom that is so fragrant), *Houstonia rubra*, *Psilostrophe tagetina*, *Abronia*, *Verbena*, etc. etc....tons of color most years. That said, 2012 was a disaster: spring, summer and fall [were] all very dry. But I'm hoping for great color! I think this is a great idea..."

A guide to how varied the flora is can be seen from the fact that Santa Fe County has almost 1000 species of plants listed while Taos County also has over 950. Exactly what will be found in flower will vary with the exact rainfall pattern but there are some great plants in the list.

Obviously one of the signature plants of Santa Fe is the Santa Fe phlox, *Phlox nana*, and although its normal flowering time is late July and early August, it will occasionally flower to late August if conditions are right. But other species that are pretty much confined to New Mexico and Arizona are likely to be found, including *Ipomopsis multiflora*; while the slightly more widespread *I. longiflora* is also a species likely to be found. At higher altitudes *Gentiana affinis*, *G. parryi*, *Primula parryi* and various delphiniums may be found in flower. *Delphinium alpestre*, *D. robustum*, and the local endemic *D. sapellonis*, with yellowish or purple flowers, are possible targets. Some species are confined to gypsum-rich habitats, among them *Mentzelia todiltoensis* and *Abronia bigelovii*. Obviously the extent of flowering will depend very much on the precise rainfall in the month or two before we arrive but it will be intriguing to see.

For birders there are around 200 species that can be seen in the area in late August and early September. Apart from migrant species, Lewis's woodpecker, Williamson's sapsucker, and pinyon jay are all species that would be on most birders target lists and all birds that can be seen in the area. If birding is your thing then the Sangre de Cristo Audubon Society website <www.newmexicoaudubon.org/sdcas/> has a link to the North Central NM Birding Guide (which has details of many birding sites in the area) and Birding Santa Fe Canyon.

For those with more adventurous tastes there is ballooning along the Rio Grande valley at Taos and whitewater rafting! There are numerous Native American sites, long abandoned or, like the pueblo at Taos, still inhabited. Then there are Los Alamos, Bandelier National Monument, and Valles Caldera National Preserve, and so much more.

There are full details in this issue of program, speakers, registration, accommodations, and the like, as well as an article by Robin Magowan on the challenges to the gardener of moving to Santa Fe.

I'm certainly going to be exploring the area a little although there is so much on offer that a week can give no more than a taste. I'm looking forward to the whole event: three great speakers, plant sales, garden visits, old friends and new, and mountains in the American Southwest – it sounds good to me.

NARGS 2014 Election & Voting Procedure

The publication of the combined list of candidates on the following pages in this issue of the Quarterly precedes the online election (July 15-30) prior to the late August AGM. The Nominating Committee presents the following slate of nominees for the 2014 election:

CANDIDATES

President	Matt Mattus
Vice-President	Elizabeth H. Spar
Board of Directors (in alphabetical order)	
	Brian Carson
	Panayoti Kelaidis
	David White

"From the Floor" nomination for Board of Directors

Dave Brastow

On the following pages you will find pictures and biographies of all those who have been nominated as Officers and Board members for the 2014 election.

The election will take place July 15-30, 2014 and all active members may vote by logging on to <www.associationvoting.com/nargs> or by usinge the link provided under "2014 Election" on the NARGS website <www.nargs.org>.

If you do not have access to a computer, contact Bobby Ward at
PO Box 18604, Raleigh, NC 27619-8604, USA
and a mail-in ballot will be sent to you.

The votes will be tallied by <www.associationvoting.com> and the preliminary results will be announced on the NARGS website in early August, certified at the Annual Meeting on August 29, 2014, and published in the Fall 2014 *Quarterly*.

CANDIDATE for PRESIDENT

MATT MATTUS

A life-long plant enthusiast, Matt has been a member of NARGS for over ten years. Gardening on two acres in central Massachusetts, (which sits between two local NARGS chapters, the New England and Berkshire chapters), he frequently speaks at both locations about his passions. His blog *Growing With Plants* <www.growingwithplants.com> explores his favorite gardening travels and adventures, as well as his favorite plants which include South African bulbs, camellias and alpines.



Matt keeps many troughs, containers and various alpine gardens on his property. As a designer, you can frequently see Matt's contributions on the NARGS website on banner, logos and other visual treatments. Matt is very active in the American Primrose Society, and was the editor of their quarterly. Professionally, he is the Imbedded Innovator-Futurist at Hasbro.

CANDIDATE for VICE-PRESIDENT

ELIZABETH H. SPAR (BETTY ANNE)

A Brooklyn girl who made good, prior to my career change to Horticulture at 47 years old, I was affiliated with a market research company for 17 years, CBS News, and the United Nations Development Programme.

I've worked as a propagator for a commercial nursery, and assistant to the curator at The New York Botanical Garden T. H. Everett Rock Garden, Bob Bartholomei, who became my mentor. I am forever grateful. After relocating to Washington, DC, I began as a gardener at the United States Botanic Garden and retired two years ago as the Chief Administrative Officer.



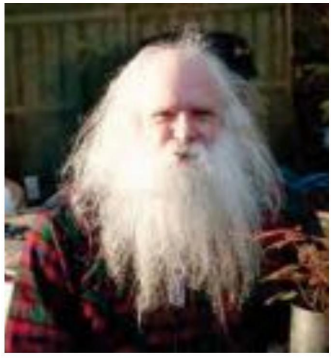
I joined NARGS in 1991, but was affiliated with the local Hudson Valley and Manhattan chapters. I joined the Potomac Valley Chapter in 1993 and I have held the positions of Chair, Secretary, Hospitality and Program Specialist, the latter for six years. I've assisted with two Potomac Valley Chapter NARGS Eastern Study Weekends, and the current Seedex distribution.
In terms of NARGS, I've attended at least 15 Annual General Meetings; chaired the NARGS Awards Committee since 2012; and for past three years developed and chaired the Book of the Month reviews. Since 2012 I currently serve as NARGS Director-at-Large on Adcom and Board Director.

I rarely say "No" to extra responsibility. Ask anybody.

For BOARD of DIRECTORS (in alphabetical order).

The Nominating Committee's slate for Board of Directors is Brian Carson, Panayoti Kelaidis and David White. Dave Brastow is a "From the Floor" candidate.

DAVE BRASTOW



"I've been an active member of the Northwestern Chapter for roughly 14 years, national slightly more. I've enjoyed helping with plant sales, seed packaging, organizing Study Weekends, bylaws revisions, and being chapter president. Plants have fascinated me all my life, in gardens and the wild. Most of my plants are from seed, and container grown, with an emphasis on species geophytes from around the world.

I feel strongly that we need to continue looking for ways to retain members, and interest new people, especially the young ones. My 15-year-old daughter is a member and participant, and while she enjoys the current members, others closer to her age would be nice. Some of our "tried and true" practices are in need of scrutiny and revamping (look at the lack of national meetings for example). I feel that there needs to much more communication between NARGS and its chapters, and between the chapters themselves. Also, some of our new endeavors in the technological arena are at the stage where they need to be evaluated. As a former computer analyst and programmer, I believe I would be able to contribute to this.

We, NARGS, have an incredible core of knowledge and talent; we just need to find additional ways to tap into what we have in such a way that members become eager to share (as many already are)."

BRIAN CARSON

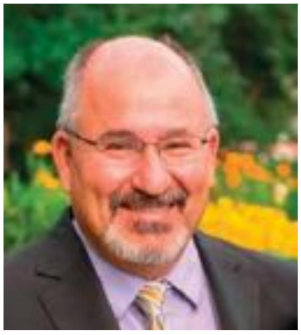


Brian's career trajectory includes farming, market gardening, underwater salvaging, masonry contracting, geophysics, and mine supervision. As an enthusiastic gardener, prolific plant hunter, and avid grower he enjoys entertaining and astonishing fellow gardeners with his floral treasures. In the Ottawa region he lectures frequently, leads field trips and conducts workshops. His current obsessions, plant hunting and photography, have brought international recognition to the Ottawa Valley for its double trilliums and many marvellous mutations.

He has been a stalwart member of several local garden clubs running their plant sales, library and serving as president. For the past decade he has been a member of numerous rock garden and general horticulture

societies in Canada, the US and Britain. For the next decade he looks forward to more travels with his wife, treks with his dachschunds and rereading NARGS Quarterlies on his iPad . . . in a hammock.

PANAYOTI KELAIDIS



Panayoti is currently Senior Curator and Director of Outreach at Denver Botanic Gardens (DBG) where Panayoti has worked since 1980. He began his career as curator of the Rock Alpine Garden which is a signature garden at DBG: the showcase of thousands of plants from around the world, many introduced to horticulture by Panayoti through Plant Select.

An avid lecturer and superb plantsman, he has received numerous honors including the Scott Medal of Swarthmore Arboretum and the Liberty Hyde Bailey award of the American Horticultural Society. As a long time member of NARGS, he has received many of its high honors: the Marcel LePiniec, Edgar T. Wherry, Award of Merit and Geoffrey Charlesworth awards.

Panayoti has dedicated his professional life to abetting gardeners with the best plants, and supporting the art of the spade. He believes home gardening is the noblest and most honorable of pursuits—not so much a hobby as a sacrament whereby we humans explore and come to a profound appreciation of the enormous power of biodiversity and the importance of human's harmony with Nature.

DAVID WHITE



"I started gardening 30 years ago as a weekend hobby that got me away from work (I was an engineer by training and profession), but over time found myself obsessed with reading gardening books, visualizing landscapes, and digging and filling holes. I joined the Piedmont Chapter in 1999, was the chapter chair from 2007 to 2013, have been on the NARGS Bylaws Committee since 2010, and chaired the 2013 National Meeting in Asheville. I have a small rock garden (mainly sedums, alliums, and crocus), but my main interests are visiting public and private gardens throughout the world, talking to gardeners about the technical and aesthetic aspects of gardening, and finding opportunities to enjoy gardening as both a creative process and a social outlet. If elected to the board, my goal will be to work with the other board members to solve problems."

Hose Lengths: Creating a Rock Garden in Santa Fe

Robin Magowan

AFTER GARDENING IN northwest Connecticut for twenty years, I relocated to a steep, rocky property, elevation 7800 feet, overlooking Santa Fe, New Mexico. Not an easy building site. Even before the house footprint could be leveled out of the decomposed granite hillside, an access road had to be widened to accommodate a theoretical fire truck. Originally, it was the abundance of towering rock outcrops that gave me the notion of building a small serpentine house and surrounding it with a garden – a home built literally on top of a pile of very old, weathered, existing rocks.

Back east, with the help of Josef Halda, I had constructed a pair of Czech-style crevice gardens featuring large, interestingly fissured limestone boulders selected from a nearby quarry. Halda aligned the first strata of boulders in the south-facing garden so they ran parallel to a natural, three-meter high granite outcrop. Against the backdrop of the surrounding lawn, the rockwork created the illusion of a miniature mountain range. A variety of seedlings and young nursery plants, inserted in almost soilless declivities, gave our creation the allure of an intensely planted exuberance. Deeply creviced rockwork provided the drainage that many alpine plants require if they are to withstand the wet of a New England winter. As much a sculptor as gardener, I felt less involved with the material than with the visual issues of scale and placement.

Abandoning my garden – in May at its most floriferous – was not easy; nor, for that matter, was bidding farewell to my cohorts in the Berkshire chapter whose knowledge had long sustained me. But gardeners thrive on challenges and the prospect of creating a dryland garden featuring plants ungrowable in the northeast did not seem too preposterous; not an illusion of scale, but the real thing, nature enhanced.

The reality confronting me when we arrived in mid-May, 2012, to take possession of our still unfinished house was something else. Throughout the mountain states of the West mammoth wildfires were raging, set in motion by poor forestry practices, years of drought, a dry, almost winterless winter and record heat. 2012 would turn out to be the

warmest year ever recorded in New Mexico and, far more troubling, the second driest, with only 8.1 inches of rain recorded up to December. Of the thousands of bulbs I inserted – didn't they hail from similarly arid steppe conditions? – only several handfuls deigned to appear. To presume to establish a garden in such uncertainty could seem the kind of folly that only a recently arrived rube from New England might attempt.

Water, the desert reminds us, is nothing less than life itself. In northwest Connecticut it descended with something approaching rainforest generosity. Even then, the type of gardening I was attempting, in the topmost cracks of boulders, was possible only because I possessed a sprinkler irrigation system which could be turned on for as much as forty-five minutes a night; a way of approximating the virtually daily fog or thunderstorm the same plants would receive on their native heights.

With an average rainfall of 14 inches a year – the same as Colorado and Wyoming – northern New Mexico is not considered desert. But the sun at our much higher elevation is such that much more precipitation evaporates. Had I not been surrounded in trays of plants summoned from several nurseries, I would have done better to wait out the record-toppling June heat and begin planting in early July after the first monsoons had cleared the air. These late afternoon outbursts rarely dispense more than a veil or two, but the atmospheric change that six weeks of overcast skies brings about is enough to induce a nicely staggered pre-autumnal flowering. Gardening past nine in the morning becomes rewarding.

For those first weeks I was not without water. We had installed two thousand-gallon cisterns to catch the winter run-off from the roofs. To augment the thin scattering of highly porous clay, I acquired a truckload of composted water-retaining earth – 70% wood chips. On terrain not as yet saturated by daily soakings from the hose, it was not enough to insert a plant in a composted hole, topping it off with an encouraging sprinkle from the watering can. Not surprisingly, much of what I planted, even in half-shade, bit the dust.

In transposing tundra plants to lowland conditions, gardeners become inured to a certain level of failure – how else, in scree so crammed, do we find niches for new arrivals? But at 7800 feet that couldn't be my excuse. By now my repeated failures, different plants expiring in the same hole, had me questioning my vocation as a gardener. What was I not doing?

The first step toward enlightenment came about during a lunch that Bill Adams, the proprietor of Sunscapes Nursery in Pueblo, Colorado, convened in the hope of organizing a northern New Mexico chapter of NARGS. While looking around my garden the previous evening,

he must have realized the kind of greenhorn I was. Turning to me, he explained that, when planting, it was not enough to sprinkle a plant with water. Not the plant's leaves, but its roots are the ones that require a moisture into which they can delve. Not only must I dig a hole and fill it with water, but I must then wait for the water to drain before filling it once again. Only then could I presume to insert the plant. No one at the table of veteran Southwest gardeners demurred. Their silence could not have been more impressive.

During the next weeks I called on several of these tablemates. It behooved me to understand what other rock gardens in this land of little water looked like and what kinds of plant material graced it. I was impressed by the small check dams shoring up a plant so that nature's bounty did not immediately run off, and the several inches of stone mulch that helped keep the soil relatively cool. I learned, too, about positioning. A crevice garden on a north- or east-facing site could be viable; whereas the steeply plunging western site would be better served by a rose garden.

To the east of our house, above the parking lot, I found two promising sites. One, a dry waterfall staircase, would need considerable rejiggering: smaller, less perilous stones slanted inwards to retain water instead of siphoning it away. The other, near the house, allowed for a garden tapering off of a stone-set staircase connecting the parking-lot entrance with the steep land to the north of our house. The niches were already available, waiting to be filled with buns, spilling plants and hovering giants.

The piñon-shaded walls enclosing the encircling flagstone terraces offered a further range of crannies; suitable for plants requiring semi-shade, once saturated by intermittent sprinkling. On their far side, at an easily apprehended waist level, were raised beds calling out for a garden to replace the construction debris. The xeric plant material came from a trio of superb local nurseries. In what seems now a very short time I had the rudiments of a garden.

In a climate as moisture-dependent as Santa Fe, gardening will always be a challenge. No more than one out of every two plants will survive. Even at 7800 feet it's not possible to simulate the moist tundra conditions prevailing five thousand feet higher. But weeds, for instance, are not the instant menaces that they represent to the tiny plants of an Eastern rock garden. Nor is there a daily gauntlet of life-threatening ticks to be faced. All the same, translating the legion of seedlings I have sown into a highly exacting garden does perplex me. How, without a greenhouse, do I go about it? Even xeric plants need to grow tendrils long enough to reach consistent water. I would like to think that such plants, once settled in, will proliferate on their own.

Gardening and travel have long supplied the two poles of my life outdoors. It may well have been the prospect of making a garden one day that spurred me to spend time in other lands. At the age of 22, the gardens of the Alhambra spoke to me in a way that nothing else among Europe's many marvels had. My curiosity about the culture that could foster such astonishment brought me twice to Iran's garden cities, and eventually to Samarkand and Khiva. Further garden-related trips followed, to Kyoto and Bali. To me, the beauty of Bali is one man-made. So, I would argue, is that of the Auxois in Burgundy where I resided for five years. Both are products of thousands of years of sustained human intervention with the landscape. And what else is Britain, where I spent another thirteen years, but a nation of absolutely possessed gardeners?

This lifetime of peregrination culminated in the garden I built in Connecticut. It brought stability to a restless man, the coming home I had always longed for. By rooting me, the garden brought into being a remote alpine world not otherwise easily accessible. In return, I had to learn how to listen to what my plants were trying to tell me and cultivate them accordingly.

In Connecticut I could, with much work, create an artificial alpine community, something on the order of a child's stamp collection, a gentleman's cabinet of curiosities. In northern New Mexico's xeric conditions, I see no other solution than a garden that aspires to naturalness. In such a spacious landscape, where the sky is an over-riding presence – Mount Taylor, over a hundred miles away, is distinctly visible from my desk – the walls that create an enclosed paradise lose their visual effectiveness. One can still tilt plant selection towards tiny gems and to making visible the otherwise overlooked, but such triumphs of scale seem harder to achieve. Instead of a garden of distinct specimens such as I had in Connecticut, I need considerable numbers, colonies, if the miniature is to make any visual impression. A garden defined by the lengths to which a hose can spray makes, perforce, for a different set of values: intense, close to the house; more relaxed, farther away. How specifically this plays out remains to be seen. But I look forward to putting the explorative part of my life back into gardening.





Designing, Building, and Planting the "PlayPen," an Alpine House in Western Oregon

Loren Russell

ALPINE HOUSES ARE thin on the ground in North America, even though they are the worst-kept secret in alpine gardening. We know their utility in growing difficult alpines. In articles in sister publications, and in slide lectures by visiting speakers, we have seen what they can do: row upon row of rare alpines grown in clay pots, all of them perfect cushions covered in bloom. So why aren't there more of them in private gardens in the US and Canada? It may in part relate to a lack of a plant-show culture in North America, but in my opinion price and availability are more significant. It would certainly be difficult and expensive to have a traditional glasshouse for alpines built, and most do-it-yourselfers would find such a project would require skills well beyond their skill set.

But even as glass-paned greenhouses have become a vanishing breed, we have a resurgence of "hobby greenhouses" as a wide variety of inexpensive kit greenhouses and hoop houses enter the market. Designed to start vegetables or perhaps to overwinter geraniums, these kits don't have enough ventilation to allow year round use for alpines. But they can at least keep alpines in pots dry in the winter, and I do see alpine enthusiasts using kit greenhouses in this way.

In the spring of 2011, I was close to purchasing and assembling an aluminum/polycarbonate kit for this purpose. It's fortunate that my energy and attention were diverted at that point when Emma Elliott organized a tufa buy. For the next few months my tufa-wall project (*Quarterly* 71(3): 212–221) took precedence. By the time my wall was completed and planted, I had completely rethought the alpine house project. Starting with the time-honored doodle on a restaurant napkin, I made plans for a stick-built alpine house that would fit my skill set and limited budget.

Opposite: Collection of *Primula marginata* and other *Primula* cultivars (plus saxifrage and *Pleione*). *Primula marginata* can be grown outside but the farina on the leaves is seen to its best effect when protected from the rain.

I used several resources in designing the PlayPen. The inspiration and model for my project was David Sellars' so-called Alpine Shed. I had seen pictures of it in David's slide shows of his Surrey BC garden (see photos in the *Quarterly* 71(4): 352). David built his alpine house as a pole structure, with polycarbonate glazing and open walls on three sides, providing excellent light, ventilation, and protection from persistent winter rains. I was especially taken by David's sand plunges. These were 6 inches (15 cm) deep, framed with pressure-treated timber held together with heavy lag bolts. The sand plunge is provided with an automated irrigation system, minimizing daily attention to the plants and allowing David to get away during the summer. I combined these features with the layout illustrated in Royton Heath's *Collectors' Alpines*: an 8 x 16-foot house with U-shaped benches accessed by a narrow center aisle, a design that optimized usable bench space. Other features of my structure, in particular the framing of the walls and the steep gabled roof, were based on the design for a "modified A-frame greenhouse" in Ortho's *All About Greenhouses* (Meredith Books, 2001, Michael McKinley, editor). For installation of the polycarbonate roof panels, I used the manufacturer's online information as well as suggestions from the local supplier.

Construction: I've used hand tools since childhood, but this was my first serious carpentry project – or rather, the first that I've done on my own and taken at all seriously. This would go beyond "measure twice, saw once"… I would think, draw, calculate and sleep on the design, then check my math again before measuring. Before starting, I took care to check the local building codes. Like most municipalities, Corvallis posts these regulations on its building-inspection website. I found that I could build a "temporary accessory structure" for which no building permit or city inspection is required. This category is defined as free-standing, lacking a permanent foundation, covering less than 200 square feet and no more than 10 feet at the highest point. In fact, permitting and inspections are not onerous (note however that larger structures may require complex storm water diversion), but staying within these limits did give me freedom to alter my design on the go. My structure did not involve electrical or permanent plumbing connections (irrigation to my PlayPen as well as my tufa wall is provided by a half-inch drip line from an outside faucet, controlled with battery-powered timers). If I ever add permanent connections, they will need to be done to code, with city inspections.

Location/orientation: The site that I had reserved for the alpine house was initially a tight squeeze, exposed to the northeast wind and with more shade than I preferred. In golfing parlance, I improved my lie

by removing an old cherry tree in the summer of 2011. Moving a short distance to the south, I now had a site that was better protected from damaging winds and could accommodate my desired 8 x 16-foot structure in a north-south orientation. Further, large deciduous trees provide high shade for much of the day during the growing season, while allowing nearly full sun from November through April.

I broke ground in December 2011, and finished framing and installation of the roof over a 3-week period of unusually dry weather. I first marked out a site with about 2 feet (60 cm) clearance on all sides, cleared sod and roots and removed the upper 6–10 inches (15–25 cm) of soil. After laying down ground fabric, I filled the excavation with builders' sand. The sand, later topped with 2 inches (5 cm) of pea gravel, provides excellent drainage under the benches and eaves. After locating corners and the positions of the 15 4 x 4-inch support posts (5 on each side, one either side of door, one extra at center of closed end, and one on each side to support plunge bed), post holes were excavated to about 20 inches (50 cm) with a rented handheld auger. The 13 outside posts were set in sand, using a hand level to check vertical alignment. Temporary cross members were used to align the posts in both horizontal directions; the posts were then leveled and tamped in place. At this point, I determined the final heights for the 13 outside posts and cut the posts to this level.

Setting the outside posts in place, supporting them with temporary cross members, and cutting the posts to their final heights.





The 2 x 10-inch ridgeboard is first raised on temporary supports (above) before three pairs of rafters are put in place and the ridgeboard lowered onto them and secured. Remaining rafters are then secured in place.



Framing the plunge beds: I positioned the 2 x 8-inch pressure-treated rails on temporary cleats, making repeated checks with level and tape measure to bring the structure into very close alignment before attaching them to the vertical support posts with 3/4 x 4-inch lag screws. (As noted above, I copied David Sellars' design closely here and I thank him for his advice throughout this project.) The base framing was completed with longitudinal sills and side plates that were secured to the upright posts with brass screws and polyurethane glue.

Framing the roof: Rafters were pre-cut at 45 degrees and three pairs of the rafters were pre-assembled with cross braces to be used as trusses to receive the ridge board. The 2 x 10-inch ridge board was first raised into position on temporary 2 x 4-inch supports, then lowered onto the three trusses, and secured with glue and screws. The remaining rafters and blocking were installed to complete the framing. At this stage, all untreated wood was given two coats of preservative stain.

Glazing: The roof used eight panels of 6 mm twin-wall polycarbonate, secured with H-channel aluminum extrusions and roofing screws with neoprene gaskets. My supplier had 4 x 24-foot panels in stock, and cut these into 6-foot lengths for me. (This material can be cut with a utility knife and straight edge, but no cuts were necessary in my project.) With a 45-degree roof pitch, this left a 3–4-inch (7–10 cm) overhang

Polycarbonate roof panels is secured in place.





The frame for the U-shaped plunge is put in place with cleats every 18 inches.

The plunge floor is now in place, seams sealed, and the drip tubing is being installed



when installed. Polycarbonate is a forgiving material, but it is necessary to follow instructions in installation. It's particularly important to allow for thermal expansion, approximately ½ inch (12 mm) for a 4-foot panel for a 100°F (55°C) range of temperature. Additionally, it's necessary to drill oversize holes for the roofing screws and avoid over-tightening the fasteners, since the polycarbonate will crack if it is compressed. It's also necessary to seal wooden surfaces in contact with the roof panels since softwood resins will damage the polycarbonate. The protective wood stain should suffice, but on the advice of my supplier, I applied a silicone lubricant (Armorall) to all wood surfaces in contact with the polycarbonate panels for additional "float." Finally, I used roof screws and silicone sealant to install the custom-formed metal flashing on the roof ridge.

Finishing the plunge beds and drip irrigation: With the roof on, I could finish the plunge benches at my leisure. The plunges are heavily built since they can hold more than 3 tons/3000 kg of moist sand when filled. The plunge floors, ¾-inch pressure-treated plywood, are supported by 2 x 6-inch cleats (redwood boards cut from scrap) at 18-inch (50 cm) intervals, and fastened to the plunge rails with 3/8-inch lag screws. All seams, between plywood sheets, and between the floor and 2 x 8-inch side rails were sealed with fiberglass tape and epoxy resin, and all internal surfaces were covered with two coats of the resin. Low sills were set at the joins between the two sides and the base of the "U" to separate the plunge into three bays, allowing separate watering regimes in these areas. Drainage holes were fitted with mesh-capped PVC tubing and set to allow overflow at different heights in the three bays – 12 mm for the south bay, 20 mm for the west bay, and 28 mm for the east bay. A wet run showed that the plunges were still not completely watertight, so I added a layer of 3-mm PVC sheeting to the inside of the plunges. I added a drip watering system, running ½-inch drip tubing to the three-bench area to feed a total of 50 feet of ¼-inch porous tubing clipped to the plunge floor. I envisioned using the south bay for succulents and xeric plants, so I put a valve on this line to regulate or shut off flow. After testing the drip system, I covered the tubing with about 1 inch (25 mm) of ¼-inch pea gravel, then filled the benches to the top of the rails with clean builders' sand.

I finished the structure in July 2012 with the installation of plywood siding. The total materials cost for this project was about $1600. A fully-glazed version of this structure with a recycled screen door, screened side and end walls with removable glazing, and continuous ridge vents (see the Ortho book above for details) could have been built for an additional $600-$700.



With the structure finally complete the moment comes when plants start to make their appearance.

The estimated service life of this "temporary" structure is at least 20 years, and probably much more. Decay of the support posts would be the limiting factor, and service life for 4-inch pressure-treated posts is expected to be from 20 to more than 40 years according to a long-term study conducted in the Corvallis area on similar soils by the Oregon State University College of Forestry. My decision to set the posts in sand was aimed at enhancing their service life. The wooden sides and floors of the plunges are exposed to constant moisture. All of this wood is pressure treated and the resin coating of the internal surfaces should further increase their service life. The UV-protected polycarbonate glazing is warranted for 10 years with up to 20 years of service life likely, and the panels are easily replaced when necessary.

Equipment & Materials

Tools: electric handsaw, jigsaw, cordless drill and impact driver, 3-foot carpenters level, speed square

Lumber: foundation posts, plunge bed supports: pressure-treated 4 x 4 inch, 8 feet (15); ridge board: 2 x 8 inch, 20 feet (1); rafters, rafterties, blocking: 2 x 4 inch, 12 feet (14); sills, side plates: pressure-treated 2 x 4 inch, 16 feet (4); plunge bed sides: 2 x 8 inch, 16 feet (5); plunge floors:



The completed "PlayPen"

¾-inch pressure-treated plywood (4 sheets); plunge cleats: 2 x 6 inch redwood scrap, 50 linear feet; siding: ½ inch plywood siding (6 sheets); lower sills: pressure treated 3 x 4 inch, 8-feet landscape timbers (6)

Hardware: galvanized lag screws, 4 inch; brass screws; roofing screws with neoprene washers; galvanized joist ties; aluminum drywall channel [to cap siding] custom flashing for ridge board

Evaluation: Is my PlayPen really an alpine house? It doesn't have the look, lacking brick, cedar, glass and louvers, but it functions well enough in my mild (USDA Zone 8b) maritime climate. I initially worried about my north-south layout, but this orientation has proved ideal for my diverse collection. I house my succulents and dry-land plants in the sunny south bay, and group alpines and bulbs in the east and west wings according to their temperature and sun tolerances. I had been prepared to use shade cloth during the summer or to evacuate the plunge to shaded ground-level plunges. I found such measures to be unnecessary, however. The combination of afternoon high shade and the evaporative cooling from the plunge have limited the heat load, especially and most critically in the root zone. Temperature in the sand plunge appeared to be more stable following installation of the plywood siding in August 2012.

As I finished framing the base structure, I still vacillated about two matters: first, whether I should glaze the sidewall between the plunge



Removable wooden trays allow for work to be carried out as and where necessary and mean that none of the plunge area has to be sacrificed

and the roof or keep it open; second, whether I should reduce the pitch of the roof to create wider eaves. I'm happy that I stayed with the original design – the plunges are accessible from the outside, a real advantage for my use and for viewing when I have visitors. The roof overhang (about 3½ inches/9 cm measured to the sand surface) is just right – with the house sheltered from prevailing westerly and southwesterly storms, very little rain is blown onto the plants in the plunge. Friends warned me that I should at least install screens and a door to exclude rodents and birds, but I've had no such problems to date. I can thank my Manx moggie, Sierra, for that. Invertebrate pests are more easily spotted and controlled than in the open garden. Slugs, present through the growing season, are dealt with by regular inspections of the outer walls of the plunged pots. Aphids are an early-season problem, but controllable with insecticidal soap. I bare-root all newly-acquired plants. This is essential – I have intercepted root weevil larvae, cutworms, and woodlice in nursery stock.

The Plants

Overall, survival has been very high. I am growing plants that I had given up on, or never thought of trying. And that's a long list – I presently have about 300 pots (and just about 300 taxa) in the plunges. (Yes, these are small plants since most of my collection is in 3-, 4- and 6-inch pots.) The capacity can be increased further by rotating dormant plants into nearly-dry sand plunges under the benches.

I grow many of the traditional alpines, and perhaps my greatest pleasure has been to grow cushion plants in character. I have tight, domed specimens of *Androsace* (*A. pyrenaica*, *A. tanggulashanensis*), *Draba* (*D. polytricha*, *D. rosularis*), *Gypsophila* (*G. aretioides*, *G. imbricata*), *Saxifraga* (*S. cebennensis*, *S.* x *megasaeaflora* 'Jupiter'), *Edraianthus* (*E. pumilio*, *E. owerianus*), and the "dinosaur daisy" *Hymenoxys lapidicola* (*Tetraneuris torreyana*) among others. Some species that I've always thought of as mat-forming and miffy, such as *Edraianthus serpyllifolius* and *Vitaliana primuliflora*, aspire to be cushions.

Other plants that have always rotted when I tried to grow them in the open are the "woollies" that I so admire – variously cushions (*Helichrysum milfordiae* and the exquisite little *Raoulia* x *petrimia* 'Margaret Hamilton'), mats (*Erysimum caricum*, *Veronica bombycina*, *V. caespitosa*), and rosettes (*Celmisia argentea*), all growing well and in character. Other prizes include westerners that I've seen or sought in the wild, but never hoped to grow (*Campanula shetleri*, *Primula suffrutescens*, *Polemonium chartaceum*), that I've grown poorly for a season or two (*Erigeron aureus*, *Townsendia montana*), or others that I've found possible but hardly assured (*Lewisia tweedyi*).

Similarly temperature-hardy and susceptible to winter wet are the dwarf cacti (*Echinocereus viridiflorus*, *Pediocactus simpsonii* var. *minor*,



A selection of primulas, *Cyclamen graecum*, and *Morisia monanthos*



Saxifraga 'Jupiter'

Coryphantha echinus), Crassulaceae (*Orostachys spinosa*, *Rosularia aizoon*, *Sedum sempervivoides*), and other succulents in the south bay. I enjoy the South African hardy succulents, among them *Aloe aristata* and diverse mesembs and others. Some of my winter-growing geophytes seem to do best when kept undisturbed in this sunny plunge: foliage of *Lewisia rediviva*, *Anemone fulgens*, *Biarum davisii*, *Ranunculus calandrinioides*, and the spectacular *Iris iberica* were all emerging in mid-November.

Dwarf bulbs, especially *Narcissus obesus*, *N. cantabricus* and related species, romuleas, and reticulata irises, are a real joy when they bloom in late fall through early spring, but their maturing foliage doesn't play nice with neighboring cushions. I plan to install a winter cover on the nearby plunge bed where I can segregate most of my geophytes, bringing them into the PlayPen in bloom, and returning them to the outside plunge when the foliage is ripening. I won't do this for tidier bulbs that pay rent over a long season of bloom, like *Rhodohypoxis* 'Hebron Farm' and the dwarf *Alstroemeria* 'Elfin Wonder' which blooms from June through November. *Paris luquanensis* grows well for me in the open garden but it's so tiny that I need to guide my visitors to view it. I brought a division into the PlayPen where its intricate flowers are better appreciated and its variegated foliage provides interest through the growing season.



Iris graeberiana

Gladiolus flanaganii



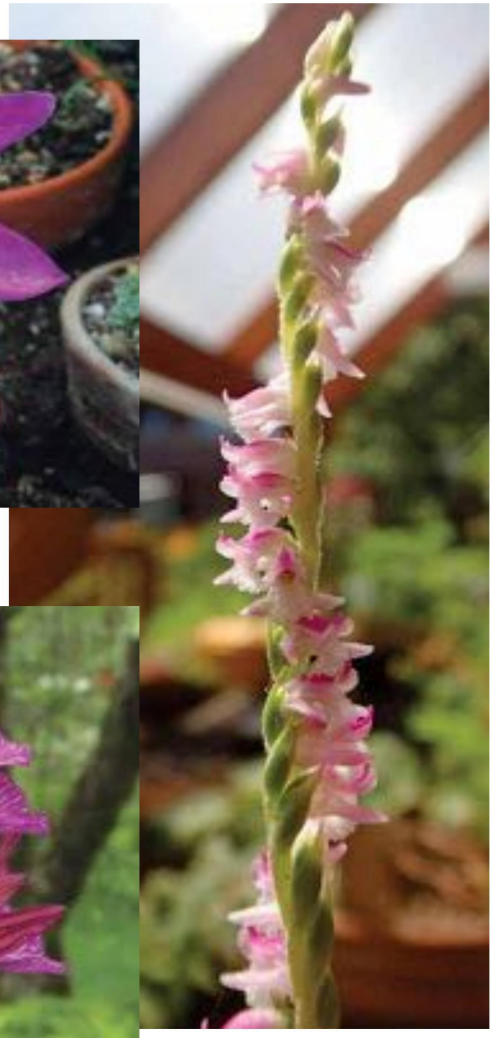
A few larger bulbs are brought in to occupy seats given up by summer-dormant plants – *Gladiolus flanaganii* puts on a long show, and this year I also brought in *Lilium occidentale* and *Nomocharis aperta*.



Pleione 'Vesuvius'



Anacamptis (*Orchis*) *papilionacea*



Spiranthes sinensis

One of my current madnesses is orchids. The first plants to go into the temporary plunge in February 2012 included two pots of *Pleione formosana*. Since then I've gradually added a few more *Pleione* species and hybrids, and smaller forms of other summer-growing orchid genera: *Calanthe*, *Dactylorhiza*, and *Spiranthes sinensis* (*S. australis* var. *sinensis*). I've also been able to find a few species of *Anacamptis*, *Orchis*, *Ophrys*, and *Serapias*. These winter-growing, summer-dormant genera, among the botanical highlights of the Mediterranean spring, are well suited to be grown in alpine house conditions and often show up on

show benches in Europe. With seed propagation finally worked out, it would be wonderful if more of these wonderful orchids were made available in North America.

I have had losses; among the worst of these were experienced during hot, windy weather in the first summer. I had to learn the hard way as many of my primulas, saxifrages, campanulas and some of my woodlanders scorched badly or dried out, despite a constant supply of moisture in the sand plunge. Most of these had been potted in peat-rich mixes, and I inferred that my problem was a breakdown in capillarity from the moist sand at the clay pot-compost interface. In September 2012, when the weather had cooled, I bare-rooted and repotted most of my collection in a grittier medium, and had few problems with my plants drying out during the past summer (2013). I now use a John Innes-like soil mix (one based on grassland loam rather than peat): 50% scoria fines, 20% clean sand, and 30% loamy topsoil, with added oyster shell for lime-lovers. For fussy dry-landers and high alpines, I reduce the loam to 15-20%. My gritty, dark brown loam is a deep topsoil developed over diorite in a subalpine sedge-fescue meadow. Pocket gophers do the hard work; I harvest the loam from their mounds and bring it home to air-dry for several days. The dried loam is then passed through a ½-inch screen. I remove stones and coarse organic debris and rub down the grass roots, retaining these in my loam base. I have pasteurized some batches, but on balance I doubt that this step is necessary – the source lacks the usual garden and greenhouse pests.

Losses were comparatively light in the winters of 2012 and 2013, both fairly normal in temperature range. I did lose a few plants during these first two winters to botrytis and other fungal diseases. The worst losses occurred in January 2013 during a prolonged period of stagnant air and freezing fog. Among the plants I lost were several xeric gems from western America: *Eritrichium howardii*, *Astragalus coccineus*, and *A. kentrophyta*. I may try some of these again (if I can obtain them!), but it's likely that they would require both a drier plunge and forced ventilation to survive our winters. I prepared for a third winter in the PlayPen with a drier plunge regime. I shut off the drip system for the season following the last hot weather in mid-September. Since then I have selectively watered individual plants by hand, and watered the plunges just enough to keep the lower half of the sand-profile moist. I also adjusted the position of dormant or xeric plants in the plunge, raising the pot so that there is less contact with the moist sand.

The winter of 2013–14 was devastating for my garden, taking out most of my "zonal denial" shrubs. Even though the Pacific Northwest experienced fewer cold waves than the eastern half of North America, what we had was quite enough – in early December and again in January and February, we had some of the coldest weather in 25 years.





In Corvallis, both cold waves were accompanied by heavy snow, protecting perennials in the open garden, but exposing my plunges to near-zero (F) temperature. Fortunately, I had enough warning to relocate some of my collection -- joining my pleiones in an unheated room in my basement. To my chagrin, I missed protecting some gems that I'll likely not be able to replace, most notably *Trillium hibbersonii*, and the equally rare but replaceable *Tecophilaea cyanocrocus*. Both, of course, have "gone to the fjords."

Most of my pots were left in place, covered with nursery fabric. This seemed sufficient for the really cold weather in December, but I did lose many bulbs and alpines in the later freezes. Even though the temperatures were not as extreme, some of the alpines and bulbs were already in growth and so more vulnerable. Strikingly, almost all of my mesembs (*Aloinopsis malherbei*, *Nananthus aloides*, x*Aloinanthus* hybrids, *Delosperma sphalmanthoides*, *Khadia alticola*, *Ruschia pulvinaris*, and *Stomatium beaufortense*) blackened and died within a week or so after the February freeze. Most of these succulents are said to be hardy to

Coryphantha echinus



Oxalis 'Ione Hecker'





Collomia larsenii

these temperatures in Colorado, but even in my "dry" plunge, they were not really dormant. Other losses were sporadic and unpredictable – a couple penstemons including my beloved *Penstemon tracyi*; several Asian gentians and androsaces, and several dwarf *Narcissus*.

Erigeron 'Goat Rocks' (left) and *E. aureus* (right)



But spring eventually arrived and, with it, new optimism and new bloom in my PlayPen. Nearly all of my classic European alpines – primulas, androsaces, saxifrages, gentians, campanulas – sheltered in place and are just fine. So too are my western American dryland daisies. I've already filled most of the gaps in the plunges with new acquisitions – saxifrages from Wild Ginger farms and a nice collection of pleiones from Fraser's Thimble Farms.

My PlayPen is not perfect, nor is it necessarily in its final form – I probably will modify it in future years, and most likely add satellite plunge frames. But it has long since repaid my effort and expense in building it. With it, I can walk out my back door every day of the year and have within an arm's reach plants from Alaska and Patagonia, Mongolia and New Zealand, from Blue Mountain, Utah, and Maude's Nek, South Africa, from the Mediterranean littoral to the Himalaya and Hokkaido, and from both the state of Georgia and the Republic of Georgia. My surprise is not that the PlayPen allows me to grow such a disparate collection, but that generally these treasures grow so well.

A spectacular array of treasures



photo | contest
2013 results

Congratulations to all whose entries made this such an outstanding contest.

The entries to the contest at the end of last year produced some wonderful pictures in 5 out of the 6 classes. In many of these classes the judges had great difficulty since the standard was very high with some outstanding photographs. The following pages illustrate the winning and placed entries but a wider display of very high quality entries (many of which were of extremely high quality) will be found in the online edition of the Quarterly. In some classes, particularly class 3 (portrait of plant in the wild) and class 4 (natural scene with plants), the standard was so high that even creating a shortlist was a very difficult task and judgements were very finely balanced. There are some great photographs - check them out.

The only class in which this was not true was, surprisingly, Class 1 (Rock Garden Scene), where no entries were judged to be worthy of awards: there were pictures of gardens but not rock gardens, pictures which have already won prizes in previous years, but no pictures of rock garden scenes that were deemed good enough to award.

An announcement about the next Photo Contest will be made in the next issue of the Quarterly.

class 2
portrait of plant in cultivation



winner - David Sellars
Saxifraga 'Winifred'



second
James Mikkelsen
Delosperma 'Fire Spinner'



joint third
Merrill Jensen
Iris setosa

joint third
James Mikkelsen
Penstemon procerus var. *formosa*



class 3
portrait of plant in the wild



winner - Ger van den Beuken
Oxalis laciniata subsp. *pubescens*
Chubut, Patagonia



second - David Sellars
Androsace helvetica above the Forcella Pana, Dolomites

third - Ger van den Beuken
Chaetanthera spathulifolia, Mendoza, Patagonia



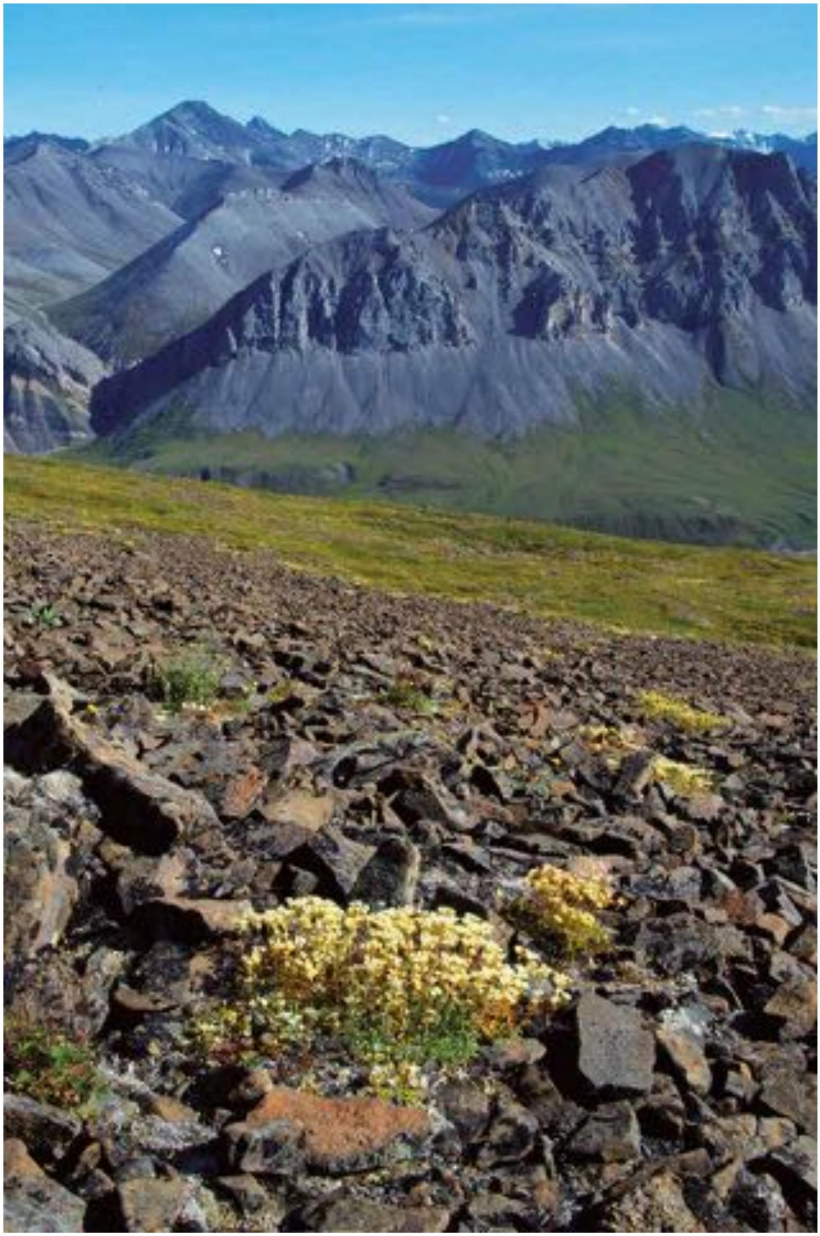
class 4
natural scene with plants



second - James Mikkelsen - Oregon coast view

third - James Mikkelsen - desert meadow scene,
Tavaputs Plateau, Duchesne County, Utah





winner - Merrill Jensen
Atigun Gorge, Arctic National Wildlife Refuge, Alaska, with
Saxifraga bronchialis

class 5
closeup



third - Judith Hebert - *Meconopsis betonicifolia*



second - James Mikkelsen - *Penstemon platyphyllus*





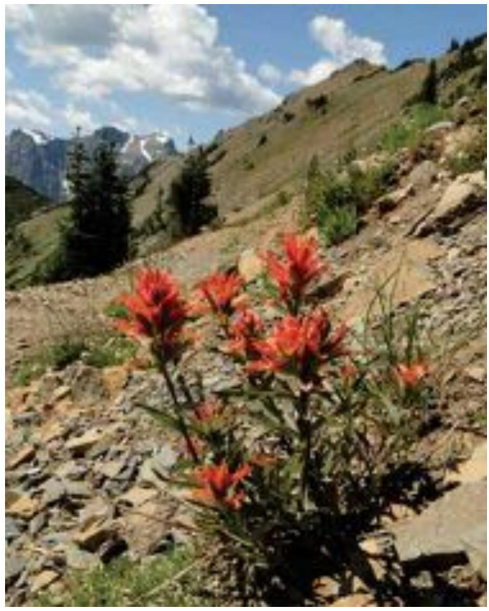
winner - Albert Martin - *Adonis amurensis*

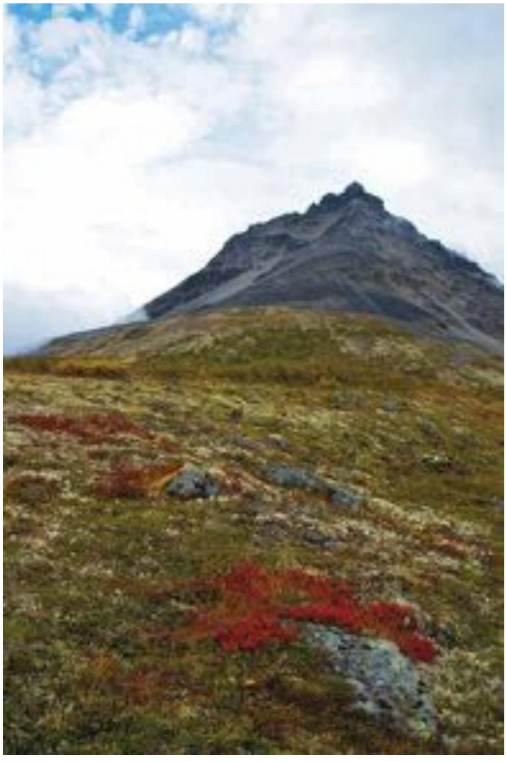
class 6
North American native plant



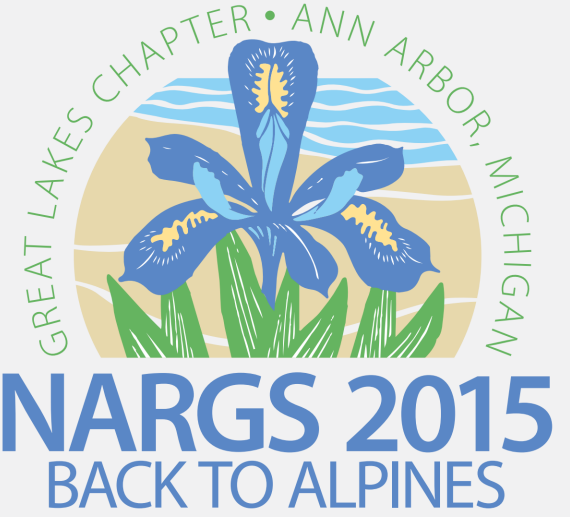
winner
James Mikkelsen
Phlox bryoides

second
David Sellars
Castilleja miniata





third
Merrill Jensen
Arctostaphyllos rubra
Three Guardsman Pass,
Alaska



Ann Arbor, Michigan
Weber's Inn

- Tours of selected gardens and natural areas
- Evening programs
- Workshops
- Open gardens
- Tufa and plants galore for sale
- Post conference trip to see natural rock gardens in Michigan's northern limestone country

May 7-10, 2015 NARGS Annual General Meeting

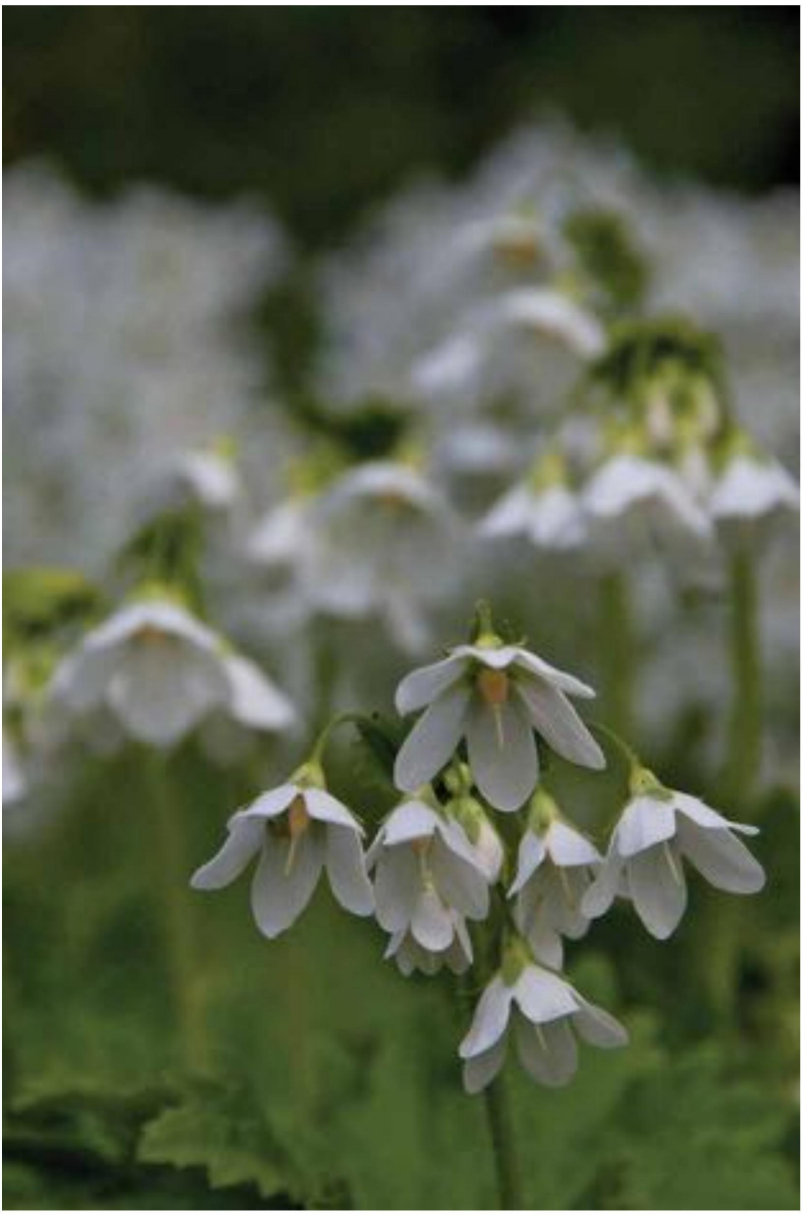
photo | contest

2013 results

online extras



class 4 (natural scene with plants)
Meadow in the Dolomites - David Sellars



class 2 (portrait of plant in cultivation)
Primula matthioli subsp. *matthioli*
Merrill Jensen



class 2 (portrait of plant in cultivation)
Eriogonum ovalifolium var. *nivale* - David Sellars

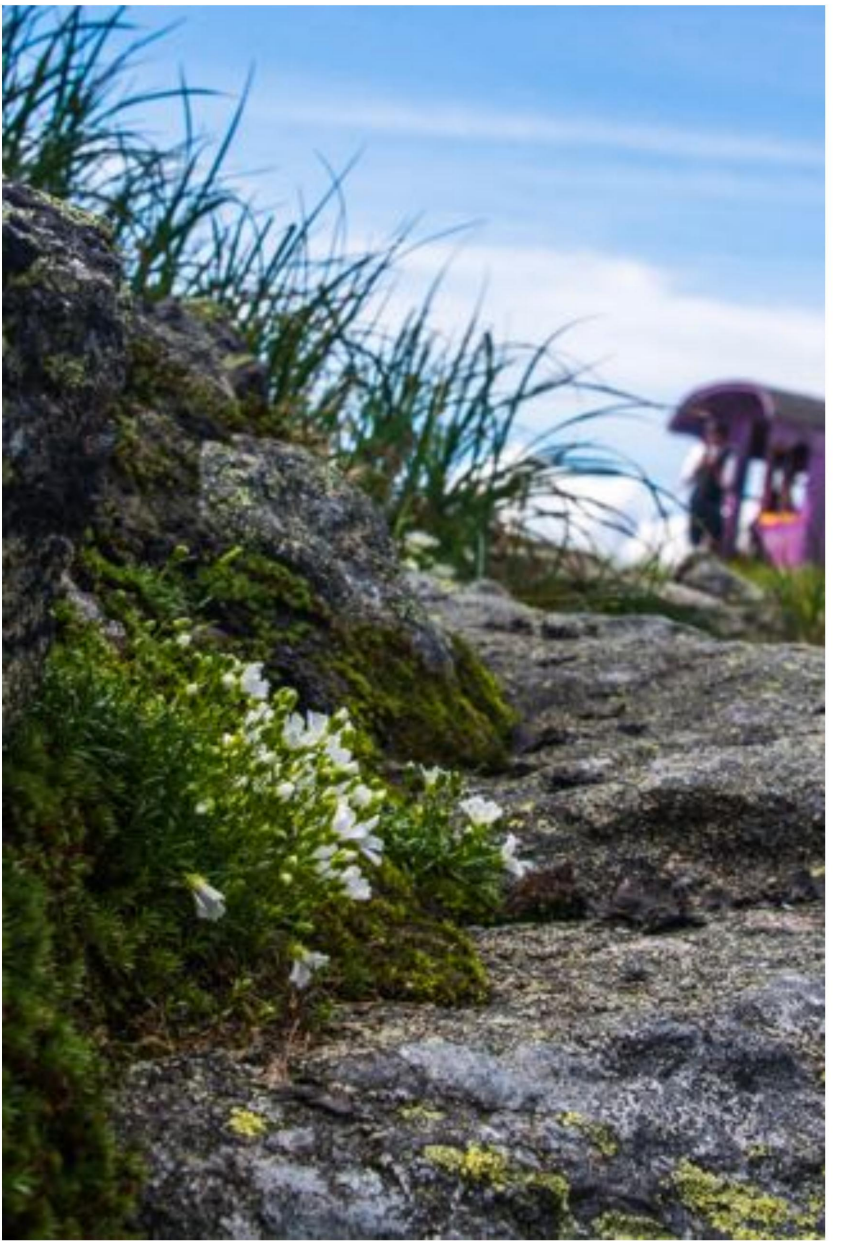
class 3 (portrait of plant in the wild)
Silene acaulis - David Sellars







class 4 (natural scene with plants) - third place
Desert meadow scene (enlarged) - James Mikkelsen



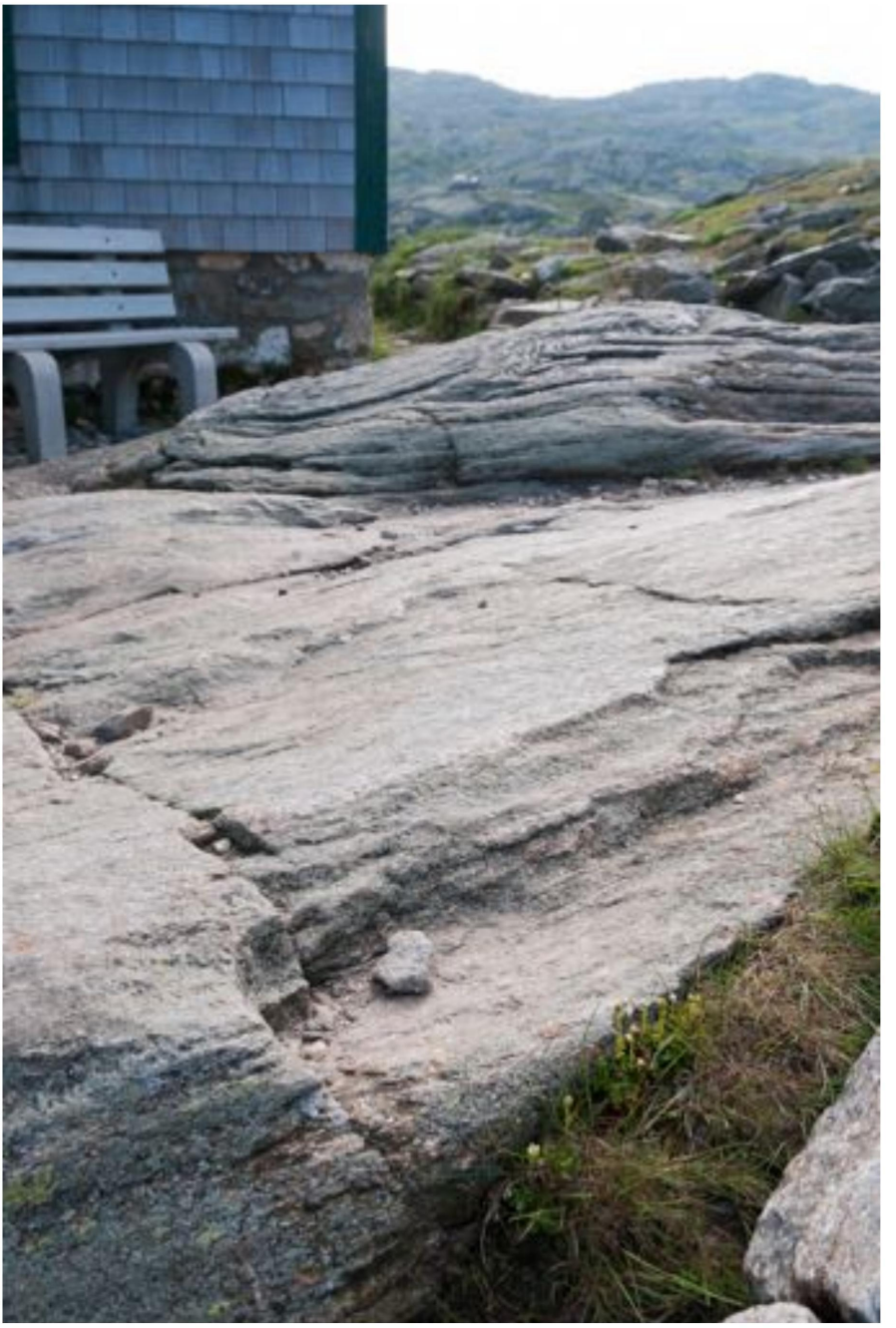
class 4 (natural scene with plants)
Mountain sandwort - *Arenaria groenlandica* on Gulfside Trail near Cog Railroad, Mount Washington - Albert Martin



class 4 (natural scene with plants)
Calandrinia affinis, Mendoza, Patagonia - Ger van den Beuken

class 4 (natural scene with plants)
Lecanophora subacaule, Chubut, Patagonia - Ger van den Beuken





class 4 (natural scene with plants) - Alpine brook saxifrage - *Saxifraga rivularis* outside back door of Appalachian Mountain Club's Lakes of the Cloud Hut, Mount Washington - Albert Martin



class 3 (portrait of plant in the wild)
Lewisia rediviva - David Sellars

class 3 (portrait of plant in the wild)
Hamadryas delfinii, Santa Cruz, Patagonia
Ger van den Beuken





class 3 (portrait of plant in the wild)
Lecanophora subacaule, Chubut, Patagonia
Ger van den Beuken



class 4 (natural scene with plants)
Oregon Coast view (alternative) - James Mikkelsen





class 4 (North American native plant)
Cassiope hypnoides, Gulfside Trail near Mount Washington
Albert Martin



class 5 (close up)
Penstemon palmeri - James Mikkelsen

class 3 (portrait of plant in the wild)
Nassauvia pinnigera, Mendoza, Patagonia - Ger van den Beuken

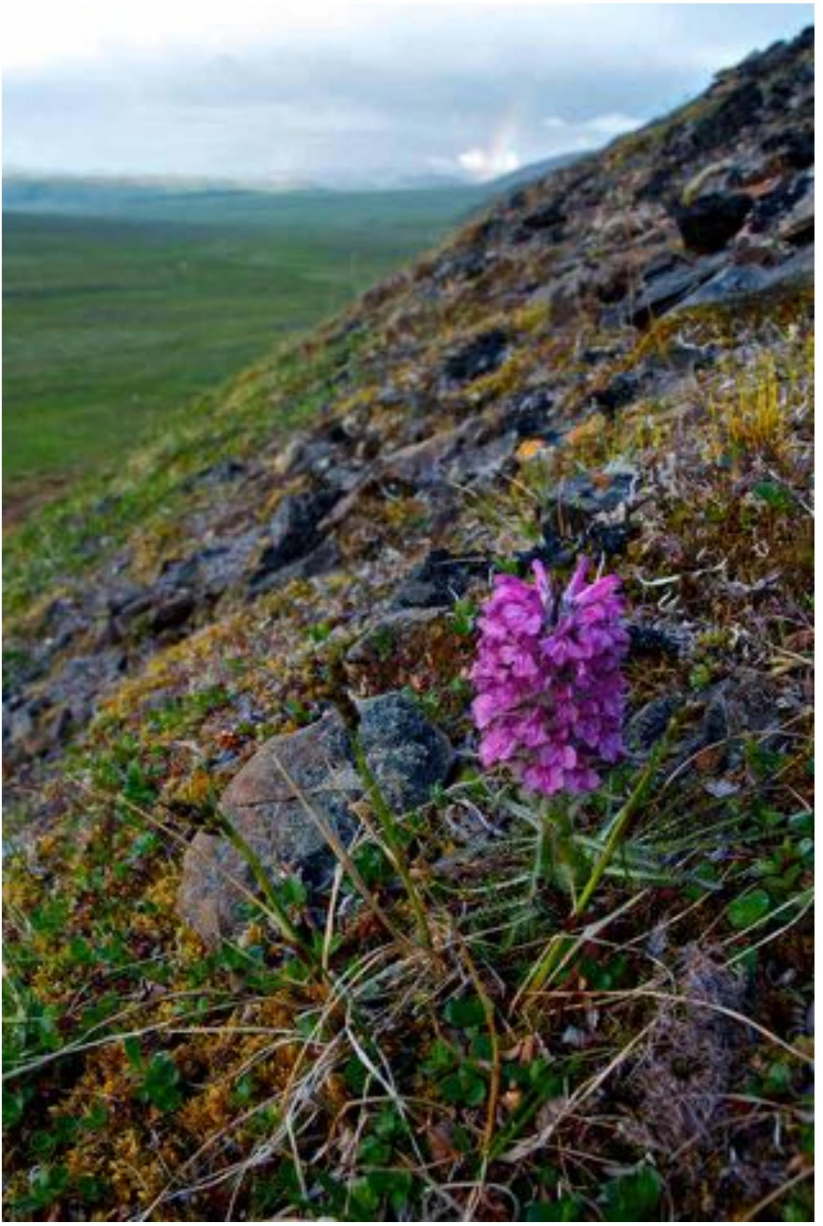




class 2 (portrait of plant in cultivation)
Townsendia parryi - James Mikkelsen

class 6 (North American native plant)
Astragalus spatulatus - James Mikkelsen





class 6 (North American native plant)
Pedicularis lanata, headwaters of the Kuparuk River, Arctic National Wildlife Refuge, Alaska - Merrill Jensen

class 4 (natural scene with plants)
Azorella compacta, Volcan Taapaca, Chile





class 4 (natural scene with plants)
Petunia patagonica, between Rio Gallegos
and Stag River, Patagonia
Ger van den Beuken



An announcement about the next
Photo Contest will be made in
the next issue of the Quarterly.

Patrolling my Mossy Promenade

Lola Lloyd Horwitz

I LIVE IN Brooklyn, New York, with a backyard 17 feet wide – the width of our brownstone – and 40 feet long. There wasn't any moss when we moved here in 1976, but I now have a mix that draws me to patrol its fascinating surfaces. When I first introduced pieces of country moss to the spaces between the aging concrete-block stepping stones in my "promenade," the squirrels made quick work of scattering it. I thought I would never have anything resembling the mossy scenes in my mind's eye. But my promenade was a mere 12 feet in length and only 30 inches wide so I was determined not to give up. And it turned out that I liked being next to my raised-flue rock garden, but just enough removed from it in terms of shade and temperature that I could dally comfortably during summer mornings, ruminating on what very low-growing plants I could use while waiting for the squirrels to tire of their games and the moss to settle in. Turning to my potted plants, I chose what appeared to be a choice super-low, tight groundcover that had charming small yellow blossoms. Many of you will mutter upon reading of my choice: "Didn't she know better?" or "What was she thinking!?" but *not* knowing better, I launched *Lysimachia japonica* var. *minutissima* into my "promenade."

As I recall, it was blooming at the time. Ah, woe is me. It took me a while before I changed my mind about this disarming invader. I believe it can flower, produce both seed and then thriving progeny in record time, but I only realized this once I had decided that I better remove my starter plant. So, while the supply line of new seeds had been cut short, hundreds of seeds were scattered through the entire length of my promenade, and they were primed to germinate during every week of the growing season.

I developed a "crouch and attack" mode of finding and plucking out minute seedlings. The problem was that my replacement groundcover was *Houstonia caerulea* whose seedlings were so similar to those of *Lysimachia* that nothing less than very close scrutiny would differentiate them. When a lot hangs on recognizing small differences, one becomes a much more observant weeder. Such was my brief but focused daily routine from April through October for two years. When I missed too many days I would find longer, more tenacious seedlings threading their way through the moss, trying, I assumed, to remain hidden. If a plant can both lurk and be insinuating, this *Lysimachia* does both quite well.

The silver lining of this battle was that I became much more intimate with the moss gradually taking hold. It is a varied mix, the names of which I won't dare to give, but in different shades of green offering contrasting textures. Others have written of the peacefulness of working surrounded

by moss. Even in my small area, I experience more tranquility there than in other areas of my garden. Ironically, after three years of attempts at encouraging different species of moss I think I can actually give some credit to squirrels for spreading the moss spores around, but it's difficult to watch the upendings of settled patches every fall.

As mentioned, bluets, or *Houstonia caerulea*, was my favored replacement for the unwanted *Lysimachia*. It has seeded itself around in the moss such that I should have a respectable showing of bloom this spring. Other moss companions are *Ramonda myconi* backed up against the bricks which define the final level of my garden, and *Oenothera flavum* which, only a short distance from the *Ramonda*, gets a great deal more sun and throws up flower after flower all summer long, but only in the dark!

At the other end of the promenade, I now watch over *Shortia galacifolia*, introduced last year from Bovees Nursery in Oregon. It and the *Oenothera* both take on a wonderful cherry coloration in winter. The fact is, as choice as some of the afore-mentioned plants are, I still want moss to be the predominant texture. While I may no longer have to crouch and attack while crossing my promenade, I do want to crouch, touch, and admire these quiet plants and their select friends.

So alike when they're tiny: seedlings of creeping thyme (left), *Lysimachia japonica* var. *minutissima* (center) and *Houstonia caerulea* (right)



A small part of Lola's mossy promenade and *Oenothera flavum* in flower (at night)

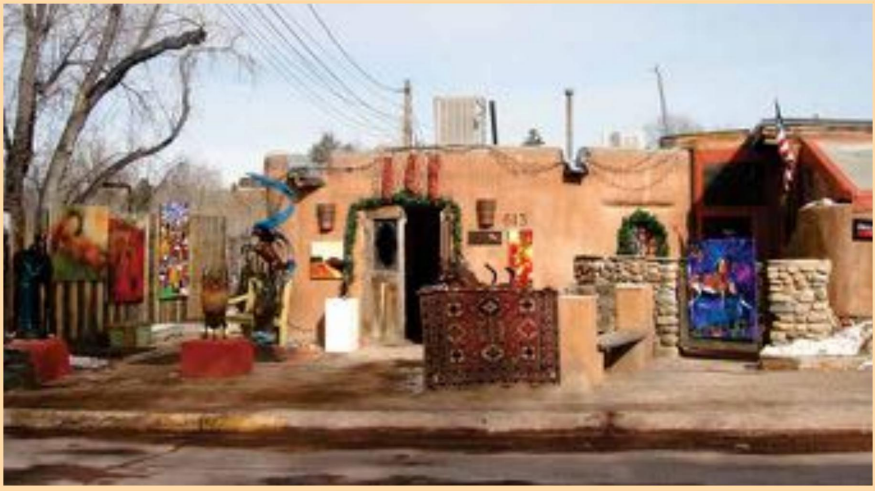




The Plaza, Santa Fe (Karol M)

AGM 2014
Santa Fe, NM
August 28-30, 2014
at the
Eldorado Hotel & Spa

Canyon Road, Santa Fe (M. Bucka)



SANTA FE, the site of the 2014 NARGS Annual General Meeting, is a vibrant multicultural city in a beautiful natural setting. Summer monsoons bring many native plants into bloom during the time that we will be there.

Originally known as La Villa Real de la Santa Fe de San Francisco de Asis, Santa Fe was founded in 1607 by the Spanish on the site of Native American villages and became the capital of the province in 1610. With brief lapses during the Pueblo Revolt and the Mexican-American War, Santa Fe has been the capital of its province, territory, and then finally state, since its founding, making the argument that it is the oldest state capital, as well as, at 7000 feet, the highest. In 1846, during the Mexican-American War, General Stephen W. Kearney arrived with his army along the Santa Fe Trail and declared that the New Mexico territory, including Santa Fe, was part of the United States. The Santa Fe Trail, with its Western terminus in Santa Fe, brought many European Americans to Santa Fe, as did the railroads later in the 19th and early 20th Century.

The combination of Native American, Mexican Spanish, and European American perspectives permeates Santa Fe, making the art and culture unique and vibrant. The city is a tourist destination and there are excellent museums, world-renowned art galleries, and outstanding restaurants — as well as a variety of shopping opportunities. Much of the city and most of the tourist sites are easily accessible on foot. The Plaza and Canyon Road, home of many art galleries, should not be missed.

Taos Ski Valley, August 2012 (Fredlyfish4)



PROGRAM

Thursday, August 28

8:30 am - noon	Registration Open
10:00 am - noon	NARGS AdCom Meeting
Lunch	On your own
1:30 - 6:00 pm	Registration Open
1:00 - 4:00 pm	NARGS Board Meeting
Dinner	On your own
6:30 - 7:00 pm	Opening Remarks
7:00 - 8:00 pm	NARGS Board/Member Forum

Friday, August 29

7:00 - 9:00 am	Breakfast
7:00 - 9:00 am	Registration Open
8:00 am - 4:00 pm	Taos Ski Basin Field Trip*
9:00 am - noon	Garden Tours - On your own
Lunch	On your own
1:00 - 4:00 pm	Garden Tours - On your own
4:00 - 6:00 pm	Plant Sale
4:45 - 5:45 pm	Reception with Cash Bar
6:00 - 7:00 pm	Dinner (NARGS) - Buffet
7:00 - 8:00 pm	Speaker - David Salman
8:00 - 8:20 pm	NARGS Business Meeting
8:25 - 9:25 pm	Speaker - Dan Johnson

Saturday, August 30

7:00 - 9:00 am	Breakfast
8:00 am - 4:00 pm	Taos Ski Basin Field Trip*
9:00 am - noon	Garden Tours - On your own
11:00 am - 1:00 pm	Plant Sale
Lunch	On your own
1:00 - 4:00 pm	Garden Tours - On your own
3:00 - 5:00 pm	Plant Sale
4:30 - 5:30 pm	Reception
5:30 - 7:00 pm	Dinner (NARGS)
7:00 - 8:00 pm	NARGS Awards Presentation
8:00 pm	Speaker - James Reveal

Sunday, August 31

8:00 - 10:00 am	Plant Sale

Santa Fe AGM Mail-In Registration Form

We prefer that you register on-line.
Please Print Clearly.
This form may also be filled in electronically at <www.nargs.org>

First member

First Name | Last Name | Membership No. (Optional)

Phone Number | e-mail address | Name for Tag

Saturday Dinner Selection

- ◯ Roasted Free Range Chicken Breast
- ◯ Pan Roasted Sea Bass
- ◯ Vegetarian Option

Special dietary requirements

Taos Tour

- ◯ 8 am - 4 pm Friday
- ◯ 8 am - 4 pm Saturday

Additional Member

First Name | Last Name | Name for tag

Saturday Dinner Selection

- ◯ Roasted Free Range Chicken Breast
- ◯ Pan Roasted Sea Bass
- ◯ Vegetarian Option

Special dietary requirements

Taos Tour

- ◯ 8 am - 4 pm Friday
- ◯ 8 am - 4 pm Saturday

Dinner guest

First Name | Last Name | Name for tag

- ◯ Friday Buffet
- ◯ Saturday Dinner Selection
  - ◯ Roasted Free Range Chicken Breast
  - ◯ Pan Roasted Sea Bass
  - ◯ Vegetarian Option

Special dietary requirements

Program Listing

May we list you and your address in the list of attendees?
Yes ☐ No ☐

May we list your phone number?
Yes ☐ No ☐

May we list your email address?
Yes ☐ No ☐

Payment Options: NARGS accepts major credit cards, checks, and money orders in US dollars.

Amount enclosed

Credit Card Number (16 digits, dashes OK) | Expiration Date (Mo./Yr.)

3-digit Security Code | Signature

Check or Money Order (payable to "NARGS - 2014 AGM") Enclosed ☐

Send Application and Payment to:
NARGS
Bobby J Ward
PO Box 18604
Raleigh, NC 27619-8604, USA

Inquiries:
Bill Adams
<sunscapes@comcast.net>
(719) 546-0047

Fees: The Conference Registration Fee includes all programs, Taos field trip and lunch, reception hors d'oeuvres each evening, Friday evening buffet, and Saturday evening dinner.

Registration received by June 30, 2014 - $325/person
Registration received July 1 to August 24, 2014 - $350/person
If you are bringing a guest to the Friday evening buffet and speakers or the Saturday evening dinner and speaker, there is an additional $60 and $70 per person, respectively. There is a $25 cancellation fee until August 24, 2014. There will be no refunds after that date. For questions, contact Bill Adams (719) 546-0047 <sunscapes@comcast.net>.

ACCOMMODATIONS

The Eldorado Hotel and Spa is the site of the Santa Fe NARGS Annual General Meeting and is the location for registration, meetings, receptions, the Friday and Saturday dinners, talks, plant sales, and the departure point for the Taos field trip.

Located just steps from the historic Santa Fe Plaza, the Eldorado Hotel & Spa is within walking distance from a host of local treasures, including the Georgia O'Keeffe Museum, Canyon Road art galleries, and restaurants.

The following discounted rates have are being offered to NARGS members for the nights of August 28-30. You can extend your stay at the same rates for three nights before and after those dates:

Guaranteed Room Rate	
Deluxe King/Double	$199.00
Upgrades	
Deluxe King/Double Patio	$229.00
Junior Suite	$249.00
Junior Suite w/ Patio	$279.00
One Bedroom Suite	$299.00

Rates are per room, per night, single or double occupancy. Guest room tax is 15.1875%. Reservations must be made by August 15, 2014. All upgrades are subject to availability. Valet parking at the hotel is available at the discounted rate of $18/day.

Hotel reservations must be made directly with the Eldorado Hotel and Spa and may be done online via the NARGS website or by telephone (800 955 4455) stating that you are attending the NARGS meeting.

SANTA FE & the SURROUNDINGS

To the east of Santa Fe are the Sangre de Cristo Mountains, the southernmost extension of the Rocky Mountains, offering numerous scenic drives and hikes as well as mountain biking and horseback riding. To the south lie the Sandia Crest and the city of Albuquerque. North of Santa Fe are several Native American pueblos and the village of Taos, another tourist destination with restaurants, art galleries, and shopping. To the west are the Rio Grande River and the Jemez Mountains, home of Los Alamos and the Valles Caldera National Preserve. There are many other places well worth visiting in the area, including Bandelier, El Morro, Pecos, El Malpais and Fort Union National Monuments, Chaco Canyon National Historic Park and White Sands National Monument, and much more.

The program for the NARGS Annual General Meeting includes an all-day trip to the alpine region of the Taos Ski Basin on Wheeler Peak, talks from three notable speakers, plant sales from Southwest nurseries, and opportunities to visit local gardens and to explore Santa Fe. No trips are



Wheeler Peak, the highest point in New Mexico viewed from Mount Walter in the Sangre de Cristo Mountains (Fredlyfish4)

Williams Lake, just below Wheeler Peak (Fredlyfish4)



planned before or after the meeting; however there are many activities to do on your own.

There are many diverse ecotypes in the area — from Sonoran desert to alpine environments. The extent of flowering will be dependent on the summer

The flora of central northern New Mexico is a varied and exciting one but it is very dependent on the rainfall patterns. In Santa Fe, only June through October have more than one inch per month rainfall with July and August getting to over 2 inches per month. Taos has a similar rainfall pattern but with slightly lower figures across most of the year. However while rainfall is low in winter there is snowfall December through March which provides the moisture



Rio Grande Gorge viewed from the Taos Rio Grande Gorge Bridge. The rim of the gorge (about 650 feet deep) is an interesting habitat and home to some rare plants (Betsy Weber)

reservoir for high-altitude spring flowers while the rainfall provides for late summer ones.

Good starting points for both birds and plants are the Santa Fe Canyon Preserve and the Randall Davey Audubon Center which is also an excellent location for native vegetation. This nature preserve contains 135 acres of striking landscapes and wildlife. Bounded by thousands of acres of National Forest and Santa Fe River Watershed land, the Sanctuary provides a peaceful refuge for native plants and animals in various ecosystems, from riverside riparian areas to piñon-juniper woodlands. Bird, mammal, and plant lists are available for your visit.

VALUABLE RESOURCES

There are many resources but some of the most valuable would include:

1. The Southwest Environmental Information Network

http://swbiodiversity.org/

This is a great way to identify plants in the area. One of the nice tools is the ability to build a provisional checklist or a key (limited by the availability of herbarium specimens collected in the area) for any geographic area.

2. New Mexico Rare Plants

http://nmrareplants.unm.edu

Don't just look at the Rare Plant List. The County Lists for Santa Fe and Taos counties generate rare plant lists, then clicking through allows access to photos, descriptions, and distribtuion maps.

3. Patrick Alexander's website

http://www.polyploid.net/swplants/

Despite the page heading "New Mexico Flora", this is not confined to flowers of New Mexico but it is very valuable source.

4. Flowering Plants of New Mexico by Robert DeWitt Ivey,

Now in its fifth edition, this is an expensive spiral bound paperback volume.

The included fieldtrip during the meeting will be to the Taos Ski area but the Sangre de Cristo Mountains above Santa Fe can also be accessed with Ski Santa Fe scheduled to be operating a chair lift on August 31 - September 2 that will take you to 12,000 ft. Other than the Taos Ski Basin, this will provide the easiest access in the area to alpine flora and scenic mountain vistas — and possibly some early fall color from the aspens.



Meadow south of Santa Fe, September, with *Verbesina encelioides*, purple asters, juniper, *Cylindropuntia imbricata*, and *Bouteloua gracilis* and other grasses (Jerry Friedman)

Opposite: Ute Mountain and upper Rio Grande Gorge (BLM New Mexico)



Alpine gems of Southland, South Island, New Zealand – Part 1

Dave Toole



Raoulia hookeri var. *hookeri*

DESCRIBED AS THE "Switzerland of the South," New Zealand has it all in terms of breath-taking mountain scenery and while the North Island has dome-topped volcanic peaks, some of recent activity, this description refers to the South Island where 60% of its area is covered by ranges with sharp rugged peaks over 1,500 metres (5000 feet) high.

The Southern Alps of the South Island are a significant mountain barrier to the moist westerly winds of the Southern Ocean and this causes a very high rainfall zone to the west, and often drought-prone regions to the east. Having a narrow west to east land mass, the differing climatic areas of New Zealand can easily be reached within a few hours traveling.

My home province of Southland, sitting at the bottom of the South Island at about 46 degrees south, is roughly 28,500 square kilometers in size. It has some of the most fertile farmlands in the country and, with a population of less than 100,000, is one of New Zealand's most sparsely populated areas. Ranging from the temperate oceanic climate of the coastal regions, the near-continental climate of the interior and the wetter mountain climate of Fiordland to the west, the area experiences weather conditions that are cooler and wetter than the other regions of New Zealand.

From my home on the outskirts of Invercargill, the main city with 50,000 inhabitants, I have at the most a 75-minute trip to reach the base of the various lofty peaks that are visible from anywhere in the province. However before we head up high, I'd like to mention a few alpines that grow at sea level, more or less at my back door.



Map of South Island, New Zealand, highlighting Southland, Fiordland and Invercargill

The coastal climate is what I call invigorating, with strong persistent winds off the Tasman Sea, 1100 mm (43 inches) of rainfall per year with no defined dry period, and zero snow cover.

Just above the high-tide mark



Gentianella saxosa

and in amongst storm debris, *Gentianella saxosa* ekes out an existence in exposed spots. Flowering from mid-January with glistening white goblets that appear to sparkle in the sun, it grows here in the hundreds.

Close at hand is one of the scab weeds, *Raoulia hookeri* var. *hookeri*, a silver mat about 50 cm wide (20 inches) illustrated at the beginning of this article. While it can be found on sand slopes it is more abundant on the ledges of rock outcrops.

Gentianella lineata



In and around poorly drained sites, coastal bogs have a community of their own. Growing in moist sphagnum moss one of the larger sundews, *Drosera binata*, with its unique upright forked leaves is easily found as well as the low stoloniferous bladderwort,



Coastal bog (above) with *Drosera binata* (top), and *Utricularia dichotoma* (below)



Herpolirion novae-zelandiae

Gaultheria macrostigma

Utricularia dichotoma, which covers large areas with its bright purple blooms in early December.

Gentianella lineata with its very dark, much branched 5 to 10 cm high stems (2–4 inches) is a handsome plant. While patches may only be a few centimetres wide, I have come across plants where the display is up to 30 small white terminal blooms.

The sky lily, *Herpolirion novae-zelandiae*, also revels in these wet conditions. It has grass-like foliage, so much so that plants are very difficult to locate when out of flower. The white or lilac flowers sit just above the very low spreading narrow leaves .

In abundance on slightly higher, drier land is the ground-creeping, wiry *Gaultheria macrostigma* in both its white- and pink-fruited forms with berries that remain on the foliage for such a long period of time. And there is one of the purple sun orchids, *Thelymitra cyanea*. Here also is *Leptecophylla juniperina* subsp. *juniperina*, commonly known as prickly heath, reaching about 1.5 m. (60 inches) in height in these conditions, producing heavy crops of white edible fruit, even on young plants.



Thelymitra cyanea

Leptecophylla juniperina subsp. *juniperina*





Fiordland ridge

To the west sits the World Heritage area of Fiordland (*Te Wahipounamu*) where snow-capped mountains formed of gneiss and granite, steep U-shaped ancient glaciated valleys, deep lakes, clear sparkling rivers fed by up to 7500 mm of rain per year (that's 295 inches, 24½ feet), produce a landscape of stunning beauty. The hard rocks of the Fiordland Ranges do not show the typical weathering and erosion of the Southern Alps that commence a little further north. Being an area with very little human habitation much of Fiordland is inaccessible by road.

Its mountain peaks are not high by world standards at up to about 2800 metres (9240 feet). The lower vegetation is predominately *Nothofagus* beech forest which fades out at about the 900-metre mark (2950 feet) to be replaced with various golden-hued *Chionochloa* snow-tussock grasslands.





Nothofagus forest

Fiordland

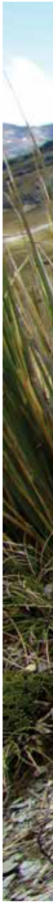




Donatia novae-zelandiae cushion (above) and close-up of flowers (right)

Phyllachne colensoi





We visit the so-called drier eastern ranges of Fiordland in the remainder of Part 1 in this issue of the *Quarterly* and will turn to the wetter western ranges in Part 2 in the next issue.

In alpine spots with a depleted vegetation a number of cushions thrive such as the very hard growths of *Donatia novae-zelandiae*. I just love the way the single white flowers sit just slightly in and on top of the foliage. Having a wide altitudinal range, plants can also be found on the south coast at sea level. The only other *Donatia* species grows in southern South America

Phyllachne colensoi is similar to *Donatia* at a glance. In flower they are easy to tell apart with the stamens of the *Phyllachne* forming a prominent central column. A third cushion is *Hectorella caespitosa* which I consider to be the finest of the lot. It forms impressive growths 20 cm or more (8 inches) across. In a really good year the yellowish flowers (males being more colourful), completely hide the foliage.

Hectorella caespitosa







Celmisia sessiliflora

Celmisia coriacea

Celmisia petriei



The grasslands also support numerous and varied *Celmisia* species ranging from the diminutive silver-cushioned *C. sessiliflora* to the larger magnificent bronze growths of *C.coriacea*, with its conspicuous mid- ribbed orange stripe, and clumps of the pointed narrow green-leaved *C. petriei*.

In and on the banks of streams and seepages at one of my favorite spots, two *Dolichoglottis* species and their variously colored hybrid forms clothe the cool, shaded southwest-facing slopes in a multitude of flowering yellows, whites and creams.





An example (left) of a hybrid between *Dolichoglottis scorzoneroides* (above) and *D. lyallii* (below)







*M*eadow with white *Dolchiglottis scorzoneroides* and bright yellow *D. lyallii,* and various hybrids between them



Anisotome haastii

Uphill from the *Dolchiglottis* meadow, after a couple of hours slowly botanizing you get to a spot that is a great place to stop and rest, have lunch and take in the stunning plants and mountains. The vistas invoke all sorts of emotions within me and often I feel like I'm in paradise and that it doesn't get much better than this.

Nearby a couple of members of the carrot family, *Anisotome haastii* and *Aciphylla pinnatifida* with its very conspicuous bright orange bract sheaths, reign supreme, both appearing in more open positions as long as there is ample moisture.

Climbing higher we reach the foot of bluffs and it isn't long before large tuffets of greenery are spied growing in amongst the large chunky



Aciphylla pinnatifida

rock of a fellfield which is the home of *Ranunculus buchananii*. The sight of this magnificent, large white buttercup never fails to quicken one's heart rate. Flowering time varies according to how much snow has been dumped the previous winter and it is interesting to see how nature "covers its bases" where plants still under, but near the edge of, snow cover, show advanced flower buds at the expense of foliage.

Unfortunately it is highly palatable to introduced browsing animals such as hares and deer and in some seasons there doesn't appear to be much seed formed. In saying that however I have visited one specific area for some 20 years and the large colony appears healthy and I'm amazed how many seedlings do appear each summer.



Fellfield with *Ranunculus buchananii* and pictures showing specimens with flowers opening, fully open, and past their peak.











Ourisia remotifolia

Smaller in stature, *Ourisia remotifolia* also grows on the fellfield beside the *Ranunculus* enjoying the ample moisture from snow melt that trickles through the voids in the fallen rock and in these cool shady positions puts up its reddish-throated white foxglove-like flowers. I once found a specimen where the red flared three quarters of the way up its petals. Hoping this would be consistent and of some horticultural merit I constructed a small rock cairn to mark its spot in the hope of collecting a little seed. Unfortunately I didn't return until the next season … you can imagine how much rock had tumbled off the bluffs in the meantime … duh!! … and despite a thorough search I've never located as good a plant since.

In Part 2 the author will take us over the main divide of the Fiordland ranges onto, and among, the wetter western peaks.

Ann Arbor, Michigan
Weber's Inn

- Tours of selected gardens and natural areas
- Evening programs
- Workshops
- Open gardens
- Tufa and plants galore for sale
- Post conference trip to see natural rock gardens in Michigan's northern limestone country



NARGS 2015
BACK TO ALPINES

May 7-10, 2015 NARGS Annual General Meeting

Why Castillejas appreciate Artemisia as a Host

David A. Nelson

AFTER EXPERIENCING THE summer and fall of 2012, it is quite easy to agree with climate scientists that warming and shifts in rainfall patterns are projected (1). Such additional drought conditions will impact forests which contribute 30% of Earth's surface. Further, angiosperm trees (such as oak and maple) in drought areas are very susceptible to forest die-off. Gymnosperms (pine and cedar) apparently have a higher tolerance to increased drought. This does not consider pine bark beetle and other herbivores. Thomas *et al*. (2) predict 15-37% of species are committed to climate change extinction in the next 50 years. Since such harsh results are being observed within Northwestern forests, particularly in 2012, an attempt was made to determine if *Castilleja* and its hosts could survive under low water, garden conditions. Such information would give an indication of survival for the native hemiparasite and its hosts.

In plants, transpiration of water from the roots to leaves occurs through the xylem. The water exits the leaves via the stomata. This mechanism depends on transpiration pull, capillary action, and inherent water surface tension (1). However, cavitation is hard to avoid. This condition occurs when air is pulled into the xylem through pit pores. The air, as bubbles, causes a xylem embolism and can reduce the flow of water by 30% through the xylem.

Small flowering angiosperms can also be susceptible to this and other transpiration problems. For instance, floral size is dependent upon the amount of water available. Large amounts of water can be lost from the flowers since they lack the ability to control water loss through their stomata (3). Floral maintenance reduces the amount of water available for the vegetative structure. However, a reduction in floral surface area reduces the loss of water through floral transpiration and increases the conservation of a plant's water supply during drought conditions.

The hemiparasite *Castilleja* (paintbrush) attempts to solve water availability by coupling with a host. It does this by penetrating the roots of the host, and unidirectionally drawing water, nitrogen, minerals, and organic compounds to the hemiparasite. As an example, *C. chromosa* generally prefers *Artemisia tridentata* and similar shrubs and subshrubs within arid areas such as the White Mountains of California (4). In general, *A. tridentata* has a much deeper root structure than grasses



Castilleja integra, *C. haydenii*, and *C. sulphurea* among *Penstemon strictus* hosts and survivors of other hemiparasites.

or forbs which are normal hosts. *Castilleja linariifolia* also utilizes *A. tridentata* as a host in arid regions. Similar observations have been made for annual and perennial parasites. This includes *Olax phyllanthi*, a root parasite that attaches to both shallow- and deep-rooted hosts to access higher water potential (5). The preference for *Artemisia tridentata* as a host has been noted by many authors (4). However, whether this host is better under drought conditions or all conditions has not been well defined. I have noted *Castilleja integra* growing under both *A. tridentata* and *Chrysothamnus nauseosus* (gray rabbitbrush) in my yard. *Castilleja integra* was at least 24 inches tall and multi-stalked with these hosts. Normally, *C. integra* reaches 18 inches or less with *Penstemon* hosts under my growing conditions.

My experience with growing *Castilleja* indicated that both it and grass or *Penstemon* hosts, generally *P. strictus*, responded poorly to drought conditions even though some were native to arid areas. The worst loss period is that prior to placement of the plants in the garden (after germination and potting). I have observed this for the past 10 years: however, it was more interesting to note the survivors' response to a reduced water regime after they were planted in the garden (usually early May). Conditions of the Mid-Columbia Basin (eastern Washington) during the spring-summer include about 33% of the annual precipitation of 21.5 cm (8.5 in.) with temperatures ranging from 31°C to 40°C (88°F to 104°F). Most rain occurs from October through

March. Moderate xeric conditions were established with a series of microsprayers during the garden period (May through September). The microsprayers allowed 1.0 mm/day (0.05 in./day) which did wet the sandy loam soil, but to less than an inch in depth each day. Often, additional water was added if wilting was observed. This was particularly needed during the first year to allow establishment of the root systems.

Those *Castilleja* in which 50% survived the first year of low water conditions were *C. haydenii*, *C. indivisa*, *C. integra*, *C. sulphurea*, and *C. thompsonii*. A minimum of 10 pairs (hemiparasite and host) were grown for each species of paintbrush. There is no obvious rationale for the survival behavior since the native conditions for *C. haydenii* are alpine, while *C. sulphurea* is subalpine. *Castilleja indivisa* is a Texas native, and *C. integra* is native to the foothills region. On the other hand, *C. thompsonii* is native to the Columbia Basin from steppe to alpine regions. In general, the host *Penstemon strictus* was moderately diminished in size by these *Castilleja* except for that hosting *C. thompsonii*. That host was nearly annihilated by the end of the first summer. *Artemisia pedatifida* and *A. frigida* were also used as hosts for *C. thompsonii*. Both of these hosts were only slightly reduced in size, while *C. thompsonii* completed the first year with 5-6 survivors.

The *Castilleja* species that did not survive well (less than 20%) were *C. chromosa*, *C. miniata*, *C. occidentalis*, *C. parviflora*, and *C. rhexiifolia*. *Castilleja occidentalis* and *C. parviflora* are alpine dwellers, while *C. miniata* and *C. rhexiifolia* range from subalpine into alpine areas. *Castilleja chromosa* can range from foothills into steppe areas. In my garden, no *C. parviflora* survived the first year whereas at least two of the ten plants survived for the remaining five species. In general, the host survived the lost hemiparasites. These results were quite similar to those reported previously when water supply and microclimate were replicated as much as possible for the pairs (6).

Different results were obtained earlier in Salt Lake City (as opposed to the Mid-Columbia Basin) where *Castilleja chromosa*, *C. integra*, and *C. occidentalis* were readily grown, but *C. sulphurea* and *C. thompsonii* were difficult at best to grow there during the first year. Obviously, other factors, besides aridity, may have to be considered for this difference in survival between plants grown in two different areas. These may include soils and various aspects of microclimate.

During the second year in the Mid-Columbia Basin, the group that had more than 50% survival (at least 5 pairs) held on quite well. *Castilleja indivisa* is an annual and was not involved in the second year. Only *C. haydenii* lost a hosted pair; thus, placing it at 40% survival for two years. *Castilleja integra*, *C. sulphurea*, and *C. thompsonii* (with *Artemesia* hosts) all remained at 50% survival. In the second group, only

C. miniata had a surviving hosted pair. The remainder of the pairs lost the *Castilleja* during the winter or spring. Thus the *Penstemon strictus* survived, but the hemiparasite did not. Consequently, *C. chromosa*, *C. occidentalis*, and *C. rhexiifolia* did not respond well to my garden conditions in the Mid-Columbia Basin.

As noted from this garden experiment, plants habituated to drought conditions may still experience survival problems. Further, low soil moisture also advances the date of senescence for many plants in arid regions (7). Dry soils from early snowmelt and minimum summer precipitation constrained the growing season for *Castilleja miniata* and caused the death of 25% native *Penstemon heterodoxus* (8) which could have suffered a more severe loss had it been a host to *Castilleja*.

This preliminary work with *Castilleja* species was an attempt to determine whether such a hemiparasite or its hosts could survive drought conditions and not undergo wilting or death. More evidence is needed concerning *Castilleja* and its *Artemisia* host under minimal water conditions to establish such a useful piece of data. At this time, *C. haydenii*, *C. integra*, *C. sulphurea*, and *C. thompsonii*, are candidates to establish survival with *Artemisia* hosts. Further, *C. chromosa*, *C. occidentalis*, *C. miniata*, and *C. rhexiifolia* with *Artemisia* hosts should be grown under both dry and moist conditions the first year to provide better results the second year under dry conditions.

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NARGS Bulletin Board

Letter from the President

"If you wish to make anything grow, you must understand it, and understand it in a very real sense. 'Green fingers' are a fact, and a mystery only to the unpracticed. But green fingers are the extensions of a verdant heart."

Russell Page, *The Education Of A Gardener*

Why do plants grow for some of us, and not for others? Why can I grow *Gentiana acaulis* in one location in my garden and watch it wither and die just 4 feet away, in the same soil, with the same watering schedule and the same fertilizer? Why does *Lewisia tweedyi* bloom next to my barn, and literally melt away on an east-facing slope 10 feet away? These are among the hundreds of mysteries I confront each day of each growing season, and which over the years have remained unanswered and apparently unanswerable. I've taken soil tests, I've done everything possible to make locations within 1 or 2 feet of each other identical, but the plants I grow in those apparently identical spots in the garden seem to know that they are not identical, but different in one or more significant ways, which make the plants grow differently, sometimes die differently. So I no longer believe that there is such a thing as a green thumb. I've concluded that the decisive element in growing rock garden plants (and probably all plants!) is our willingness to let intuition guide us to a much greater degree than we are accustomed to in our daily lives. We can read books and articles and watch videos and study the catalogues, but ultimately we have to let the plants themselves guide us. Each year, as I've aged and my garden has matured, I've spent more time holding a plant, looking at the garden, walking around the beds at different times of the day, and waiting until I simply feel that I've arrived at the right place for that particular plant. This year, as I've watched the garden explode from a snowy mess to a verdant wonderland, I can see that my intuition has guided me well these past few years, and the plants I "connected" with are doing better than the ones I planted "by the book." So whether we allow our "verdant heart" to guide us in our gardening lives, or use our "green brain," we should try to open ourselves to the messages of our garden angels, for they will almost

always work with us to assure that our plants have the best chance of flourishing under our care.

Moving from the metaphysical to the practical, NARGS is entering an exciting few months. Our expedition to the Sierra Nevadas is set for early July, and although the number of NARGS members who are availing themselves of this outstanding opportunity is a modest 10, it is happening. I am hopeful that this year's trip will be the first of many that NARGS will arrange and sponsor, giving our members a chance to explore the amazing botanical richness of North America. In late August, we'll be traveling to Santa Fe for our Annual General Meeting. For me, it will be somewhat bittersweet, as my tenure as NARGS President will end on the second night of the meeting. But the opportunity to spend a few days in the Southwest at a time of year when my garden is relatively uninteresting is very appealing, and I'm really looking forward to our first meeting in New Mexico. The New Mexico chapter is hosting the meeting, and it's a real endorsement of NARGS people that we could make this kind of event happen with a new chapter in a new place at a new time of the year. Please take a few minutes to check out the website <www.nargs.org> and give strong consideration to registering for this meeting. We have room for up to 200 people, and I'm confident that the meeting will sell out quickly, so please don't be left out!

I will probably have one more President's message to contribute, but I won't let this opportunity go by without a heartfelt thank-you to many of our wonderful, generous and talented members across the world. I'm not going to mention specific people here, but from me, and from the entire group of NARGS officers, please accept our gratitude for the work you're doing to keep our organization, and the hobby it supports and promotes, healthy and growing. Visit the website, read the *Quarterly*, and promote rock gardening wherever and whenever you can – and if you need help or advice or support in your efforts, just let me know. So again, my thanks to all, and I hope to see many of you in Santa Fe.

Peter George
May 7, Petersham, Massachusetts

Seed Exchange

We hope you have all enjoyed a wonderful spring, with rains coming just often enough to keep both the gardens and the gardeners happy. As much as spring is a wonderful event in itself, a good spring can also mean a good crop of seeds later this season.

Now that the initial press of garden chores is past, an easier chore, right now, would be to make a list (and we're all list-makers, aren't we?) of the many great plants whose seed you can share with your fellow gardeners. The NARGS Seed Exchange is one of the very best ways to give and receive treasures from gardens and the wild.

If you donate at least five packets of different seeds, you can request an additional ten packets of seed and will receive priority in having your order filled (with a better chance of receiving those rare seeds in short supply). You will also receive the appreciative thanks of many hundreds of NARGS members. And that doesn't even include the warm sense of accomplishment you will feel as you mail your shipment of seed packets to Laura Serowicz, our Intake Manager, at:

Laura Serowicz
15411 Woodring Street
Livonia, MI 48154-3029

Look for the Donation Form tucked into this issue of the *Quarterly*. If it has gone missing, contact Laura Serowicz: <seedintake@mi.rr.com>

Many members have generously donated their time and efforts, as well: this past season the seed donations were re-packaged into multiple smaller packets by the members of 13 chapters, plus 3 additional individuals, and we appreciate their continuing help. We are extremely grateful to volunteers in the two chapters who filled hundreds of orders in the main and surplus rounds for the past two years: the Potomac Valley Chapter (led by Dick and Freddi Hammerschlag) handled the Main Distribution of seeds and the Siskiyou Chapter (under Jean Buck, Margaret Meierhenry, Leigh Blake, and Baldassare Mineo) fulfilled orders from the Surplus Seed list. We offer them our heartiest thanks for a job beautifully done!

For the next two years, your seed orders will be filled by the very capable volunteers from the Piedmont Chapter (Main Distribution) and Rocky Mountain Chapter (Surplus Seeds). We greatly appreciate their willingness to take on the responsibility of keeping vibrant one of NARGS's core member benefits.

The 2014-2015 seed list and seed ordering form will be posted on the NARGS website <nargs.org> on December 15. If you wish to receive a print copy of the seed list, send your name and complete postal address by November 15 to:

Joyce Fingerut
537 Taugwonk Road
Stonington, CT 06378-1805
or
<alpinegarden@comcast.net>

Look for more details about ordering seed in the fall issue of the *Quarterly*.

Have a wonderful, floriferous summer!

NARGS Donations

Donations between February 1, 2014 and April 30, 2014 - $155

Applied to the NARGS general operating fund and Seed Exchange.

Karen Barrett (Maryland)
Racile Casey (Alabama)
Betty Lou Emmons (Illinois)
Sandra Kay Hampton (Illinois)
Paul S. James (Virginia)
Joseph A. Kantor (Iowa)
Sally Konen (Idaho)
Alice Laughlin (Vermont)
Davie Sharp (Moray, Scotland)
Anna L. Sullivan (Pennsylvania)
Andrea Thompson (Michigan)

New Members

Welcome to all those who joined between February 1, 2014 and April 30, 2014.

Appel, Laurie, 10 Monadnock Rd., Harrisville, NH 03450
Ball, Charlsie, 1594 N. Main St., Farmington, UT 84025
Bartolomew, Gail, 50 Gander Crescent, St. John's, NL A1E 5R6, Canada
Batten, Linda, 26791 West Bench Rd., John Day, OR 97845
Bourke, Greg, Blue Mountain Botanic Garden, 1-17 Tomah Dr., Mount Tomah, NSW 2758, Australia
Cooper, Barbara & Bella Seiden, 96 Bombay Ave., Toronto, ON M3H 1C2, Canada
Daley, Jeanne, 215 West 92nd St., Apt. 3C, New York, NY 10025
DiMattio, Joe, 260 W. 25th St., New York, NY 10001
Eriksson, Torsten, Smorasvegen 105, Radal 5238, Norway
Ferreyra, Marcela, Paso 181, Depto. 1B, San Carlos de Bariloche, Rio Negro 8400, Argentina
Flanagan, Christine, 3121 W. Tucana St., Tucson, AZ 85745
Florencechild, Rosenelle, 208 Robert Trent Jones Blvd., Eagle Point, OR 97524
Fox, James, POB 335, Medina, WA 98039
Garstad, Aase, Tortenli, Fauske 8218, Norway
George, Arie, 7533 W. 139th Terrace, Apt. 1803, Overland Park, KS 66223
Gillam, Tommie, Growing Wild Nursery, HC 31, Box 101B, Jasper, AR 72641
Gruey, Richard, POB 686, Douglas, AZ 85608
Hagen, Michael, Curator, New York Botanical Garden, 2900 Southern Blvd., Bronx, NY 10458
Hinton, Paddy, 179 Hursley Rd., Chandlers Ford, Eastleigh SO53 1JH, United Kingdom
Hogenson, Gordon, 18815 320th Ave. NE, Duvall, WA 98019
James, Susan, 550 Davenport Rd., Newberry, SC 29108
Key, Marlene, 3709 Meadowbrook Ave., Nashville, TN 37205
Laughlin, Alice, 78 Tavern Hill, Putney, VT 05346
Lawlor, Josie, LM+D, 376 Van Brunt St., Brooklyn, NY 11231
Leinberger, Tom, 11540 Dice Rd., Freeland, MI 48623
Maguire, Bonnie, 216 Tall Timber Rd., Glastonbury, CT 06033
Mast, Keith, 1809 Baylor St., Vermillion, SD 57069
McFarland, Ken & Dennis Rogers, 3875 Geist Rd., E323, Fairbanks, AK 99709
Miller, Janet, Westwind, Main Rd., West Keal, Spilsby, PE23 4BE, United Kingdom
Mitchell, Lenore, 6473 Willow Broom Tr., Littleton, CO 80125
Nagel, Marianne, 1710 Nelson St., Lakewood, CO 80215
Pacholko, Helen, 4919 Viceroy Pl. NW, Calgary, AB T3A 0T9, Canada
Paschall, Douglass, 87 East Stewart Ave., Lansdowne, PA 19050
Pavlis, Robert, 8 Meghan Pl., Guelph, ON N1L 1H1, Canada
Riehl, Deborah, 19325 29th Ave. SE, Bothell, WA 98012
Schmidt, Jeremy, 1109 New Castle Ct., Raleigh, NC 27603
Scott, Jason, 19310 4th Ave. NE, Apt. 4, Poulsbo, WA 98370
Strachan, Nell, 2007 Ridgecrest Ct., Baltimore, MD 21204
Stubbs, Rebecca, 909 SE 1st Ave., Gainesville, FL 32601
Turner, Cheryl, 2639 Tudor Ct., Rescue, CA 95672

Viljanen, Liisa, Maenalustantie 30, 11710 Riihimaki, Finland
Watanabe, Hideaki, 4-4-30 Minamisakasai, Kashiwa, Chiba 277-0043, Japan
Yri, Line, Finstadvegen 232, Dal 2072, Norway

Life Members

The following recently became NARGS Life members:

Kay E. MacNeil (Illinois)

Pandora Wilson (Colorado)

NARGS Speakers Tours 2015

The time is near for requesting a speaker for the 2015 tour. In order for chapters to plan meeting schedules and procure venues the scheduling will be completed in early August, 2014 for the 2015 tour, so try to get your request in by the end of July. By the time this is published exact dates for the tours will be posted on the NARGS website.

Spring-- East Tour

Dieter Zschummel will be on tour the second half of April, exact dates will be on the website by now. His topics include alpine plant explorations, gardening experience in Germany, and trying to grow alpines in less than favorable conditions.

Fall-- West Tour

Jerry Kral anticipates an eighteen day tour tentatively from mid – August to early September, see the website for exact dates. Jerry's topics include using rock and conifers in the garden, garden design ideas, container gardening and utilizing art objects in the garden. Jerry gardens in Rochester, New York, where conditions can be challenging.

Harold Peachey
Speakers Tour Coordinator
hlpeachey@gmail.com
Email: <hlpeachey@gmail.com>

Patrons

The following recently became NARGS patrons:

William E. Frey (New Jersey)
Laura Gregg (Pennsylvania)

Emma Elliott

Columbia-Willamette Chapter Award for Service

Last year long-time member Emma Elliott suggested it was time our chapter joined the 21st century and had its own website.

Over the past year Emma has single-handedly designed, created, and maintained <www.cwnargs.org>. Our new website is attractively designed and it works! Emma was even able to implement a "Members Only" forum to build community among Portland rock gardeners. In addition to being our webmaster, Emma serves on our board of directors and, as further evidence of her dedication to the chapter, operates our PA system at meetings.

Emma and Truls Jensen own Wild Ginger Farm, a nursery specializing in alpines, western natives and woodland plants. Pacific iris are a particular interest of Emma's and she has been hybridizing and selecting them for several years. In February 2014 Emma presented a well-received program to the chapter on these beauties. The chapter door prize table can count on receiving several covetable door prize donations from Emma and Truls each month.

For her dedication to the chapter, and her work on its behalf, the Columbia-Willamette awards Emma Elliott a Chapter Service Award

Prepared by Jan Jeddeloh, Columbia-Willamette Chapter

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

Andre Legare, St. Nichols, Quebec

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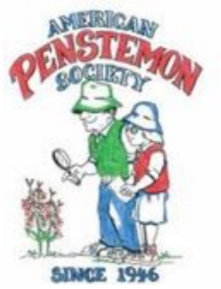
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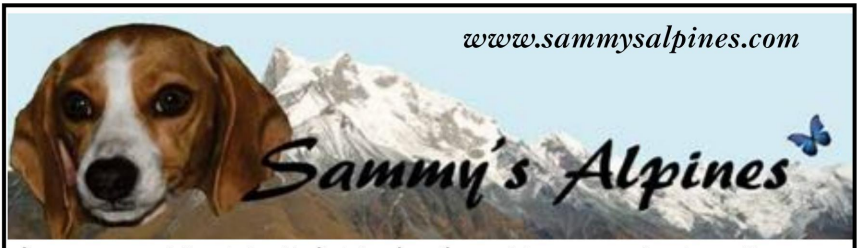


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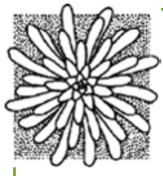
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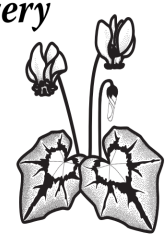
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Adirondack (Ithaca, NY)	Carol Eichler - carolithaca@gmail.com
Alaska (Anchorage & Mat-Su Valley)	Carmel Tysver - garden@gci.net
Allegheny (Pittsburgh, PA)	Len Lehman - lclehman1@verizon.net
Berkshire (Stockbridge, MA)	Judith Brown - jloveys@nycap.rr.com
Calgary Rock & Alpine Garden Society (Calgary, AB)	Cathy Kurio - cakurio@shaw.ca
Columbia-Willamette (Portland, OR)	Jan Jeddeloh - janjeddeloh@gmail.com
Connecticut (New Haven, CT)	Virginia Gingras - ginnygingras2013@gmail.com
Delaware Valley (Philadelphia, PA)	Mary Ann Ulmann - ulmannc@msn.com
Fells (Newbury, NH)	Thelma Hewitt - thelmakh@gmail.com
Gateway (St. Louis, MO)	Bruce Buehrig - buehrig31@aol.com
Great Lakes (Southern MI)	Patrick Ion - ion@ams.org
Hudson Valley (Westchester Co, NY)	Don Dembowski - dondembowski@optonline.net
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Manhattan (New York, NY)	Michael A. Riley - ManhattanNARGS@verizon.net
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Minnesota (Minneapolis/St. Paul, MN)	Michele Wallace - mrewallace@mwap.us
New England (Waltham/Boylston, MA)	Rachel Ross - h.rachel.ross@comcast.net and Helen du Toit - NJGarden@aol.com
Newfoundland (St. John's, NL)	Todd Boland - todd.boland@warp.nfld.net
New Mexico (Santa Fe/Albuquerque)	Jean Warner - jean@cybercomp.net
Northwestern (Seattle, WA)	Robert Fincham - bobfincham@mashell.com
Nova Scotia (Halifax & Truro, NS)	Jeff Morton - jeff.morton@dal.ca
Ohio Valley (OH & surrounding states)	Mary "Maggie" Whitson - mkw513@hotmail.com
Ontario (Don Mills, ON)	Donna McMaster - dmcmaster@rogers.com
Ottawa Valley (Ottawa, ON)	Zandra Baines & Linda Nishikawa - president@ovrghs.ca
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Piedmont (Raleigh, NC)	Charles Kidder - chas36kid@gmail.com
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Potomac Valley (Alexandria, VA)	James "Jim" Dronenburg - 2rutlands@comcast.net
Quebec (Montreal, QC)	Robert LeClerc - leclercr@bell.net
Rocky Mountain (Denver, CO)	Mary Jenson - maryjenson@gmail.com
Sierra (Sonora, CA)	Val Myrick - vkmyrick@pacbell.net
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Wasatch (Salt Lake City, UT)	Tony Stireman - tonystireman@msn.com
Watnong (Far Hills, NJ)	Michael Wilson - missycat10@verizon.net
Western (San Francisco Bay area, CA)	Ted Kipping - tkippingsprint@earthlink.ne
Wisconsin-Illinois (Madison-Chicago)	Debra Wopat - ddwopat@gmail.com

Two chapters (Genesee Valley [Rochester, NY] and Shasta [Etna, CA]) are currently inactive.

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, nine elected directors, and the chair of each NARGS chapter. Chapter chairs are required to be NARGS members by NARGS by-laws.

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

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Recording Secretary	Ben Burr, bnfburr@verizon.net PO Box 549, Bellport, NY 11713
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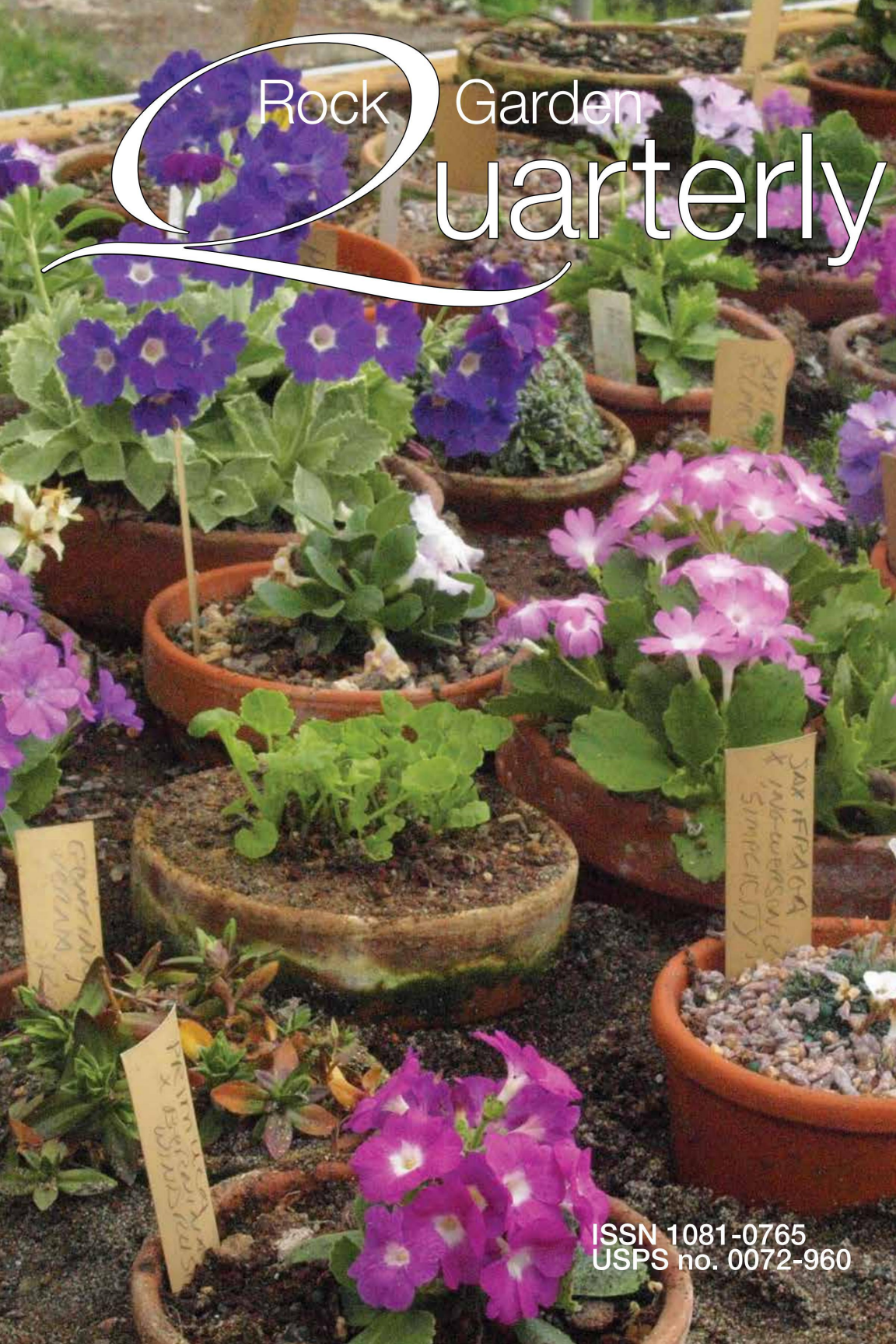
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2012–2015	Jan Jeddeloh, Portland, OR Matt Mattus, Worcester, MA Gwen Moore, Lakewood, CO
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Back cover: Primulas in plunge bed – Loren Russell



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