

Alpine Garden Club of British Columbia



Viola sacculus in Patagonia, photo by Ger van den Beuken

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AGCBC meetings are held on the second Wednesday of each month except July and August in the Floral Hall, VanDusen Botanical Garden. Doors and Library open at 7:00 p.m. and the meetings start at 7:30 p.m.

Please bring plants for the plant draw; the proceeds of which go toward paying for the hall rental. Don't forget to bring your coffee/tea mug.

2016 AGC-BC Upcoming Events

- **June 8 - Ron Long on The Pink Mountain Report**
- **September 14 - Mike Kintgen on The Rise of Rock Gardening, Romanticism and Conservation**
- **Saturday, September 17, 12 noon to 4:00 pm - AGC-BC Fall Plant Sale**
VanDusen Gardens, Floral Hall, 37th and Oak, Vancouver
Cash/cheques only – Visa and Mastercard not accepted.
- **October 12 - Susie Egan on The Wonderful World of Trilliums**

Alpine Garden Club of BC Spring 2016 Show



Alpine Garden Club of BC, Spring 2016 Show, photos by David Sellars

From The Editor

Dear Readers,

I know I am not alone in finding my rock garden this spring especially lush and floriferous. Winter here in Qualicum Beach didn't seem particularly wet, but we obviously had the right amount of precipitation at the right time.

A top genus this spring for me has been Irises, from small to large, early to late, and the deer don't eat them. And since I have a family visiting daily, that matters! I am especially pleased by the vigorous flowering of the *Iris reticulata* cultivars I sourced from **Botanus.com**, cultivars bred by Alan McMurtrie. Those of you who belong to the RHS will have seen coverage of his creations in the "The Garden" or "The Plantsman". I am fortunate that Alan has sent along a piece about his breeding programme for our summer issue.



Pinguicula grandiflora in Qualicum Beach

native orchids, so again, please do get in touch about what you grow, how and where. Thank you, Bill Bischoff for sending me photos and intriguing me about this subject.

To start, here is a lovely photo from Vel Rhodes of Port Alberni of *Cypripedium formosanum*.

So, please mark your calendars: Deadline for the Summer issue is August 1, for Fall November 1. I hope to hear from you.

In the meantime I hope you will enjoy exploring Northern Patagonia with Ger van den Beuken, and hearing about the Tromsø Arctic-Alpine Botanic Garden from Kristian Nyvoll—both bucket list destinations, a mon avis.

A further pleasure has been the survival and flourishing of **alpine carnivorous plants** in the damp beds I have developed. I am sure more can be made of these fascinating plants in our alpine gardens. I would like feedback/reports/photos please from any of you that are using these beauties, towards a feature article. Please email me at **melanson.valerie@gmail.com**.

Another alpine group I would like to explore in the "Bulletin" is hardy and/or



With best wishes, Valerie Melanson

The Rosulate Viola Tour

Highlights of an Expedition in Northern Patagonia

Part 1

by Ger van den Beuken

A botanical tour in northern Patagonia to explore the Argentine provinces of Rio Negro and Neuquen became a reality January 2 to 19, 2010. We started in San Carlos de Bariloche and gradually worked our way north with the ultimate goal of the City of Neuquen. Our intent was to explore the alpine and steppe flora in this area. Therefore we were especially focused on those mountain and steppe areas located directly east of the Andes Mountains. Our guide for the whole trip was Marcela Ferreyra, botanist and biologist at the University of San Carlos de Bariloche. Our driver was Alfredo Gastambidez, a very skilled craftsman with a huge interest in botany. Our group was rather international, with travellers from England, Russia, Denmark and the Netherlands. In this article I will focus primarily on the botanical highlights—those plants typical for these areas and which are most interesting for the reader.

Climate and Phytogeography

The annual precipitation in northern Patagonia decreases travelling from west to east. This is due to the rain shadow effect of the high Andes range. Most precipitation in the Andes and adjacent steppe areas is during the winter. Patagonia is divided into four **phytogeographic zones**. These zones have nothing in common with the geographic regions of Argentina, but are areas that are distinct in climate, characteristic plant species and vegetation type. To know the plants better and the conditions in which these plants grow, I will briefly describe these phytogeographic zones: Monte, Patagonia, Alto Andino and Subantarctica.

The climate in **Monte** zone is dry. The precipitation, usually less than 200 mm, falls mainly in winter and spring and the average temperature is about 13°C. The typical vegetation is thorny bushes, and grass species are rare here. That distinguishes this area from the vegetation of Patagonia zone. Note: We did not look for many of the important plants in this zone, because our main objective was the steppe and alpine flora.

The climate in **Patagonia** zone is cold and dry. The annual rainfall varies from 120 to 600 mm. The main vegetation consists of grasses and dwarf shrubs and the dwarf shrub *Mulinum spinosum* is predominant here. The steppe vegetation is divided into two regions: The first is the Sub-Andean region that borders the Andes and is less dry and recognizable by the presence of grasses. The second, the Eastern region, is drier

and more characterized by dwarf shrubs, for example the *Junellia sp.*, and relatively few grasses.

The **Alto Andino** starts above the tree line. The altitude at which this phytogeographic zone begins, depends on the latitude, but it is usually just above the tree line. In northern Patagonia, the tree line is at about 2000 m. In the extreme south of Tierra del Fuego, the tree line stops at 500 m. The climate in Alto Andino is cold and fairly dry, shielded from Pacific rains by the Andes. In the eastern part of Alto Andino the vegetation is similar to that of Patagonia zone. Both zones are close to each other, separated by the Subantarctica zone. The plants on the steppes of Patagonia have made useful adaptations to survive the climate.

The **Subantarctica** zone is located between the steppes of Patagonia zone and the high Andean vegetation of Alto Andino zone. Subantarctica is relatively humid and mainly consists of forests. These forests can be divided roughly into three different types in the transition to steppe. First there are drought-tolerant trees like *Austrocedrus chilensis* and *Araucaria araucana*. The second type is found in wetter conditions in transition to the Alto Andino. This transition is characterized by deciduous *Nothofagus antarctica* and *Nothofagus pumilio*. The third, evergreen *Nothofagus* forests, are also common in Subantarctica, but these remain limited to relatively mild climate conditions around some common lakes.

Exploring the Steppe between San Carlos de Bariloche and Pilcaniyeu



Marcela advised us to explore first the steppe between these two places, because this region harbours a huge diversity of plants. The timing to be there would turn out to be perfect. We were really not disappointed as our first stop, not far from Bariloche, gave us immediately our first excellent species.

Oreopolus glacialis, a truly magnificent cushion-forming species

belonging to the family of the Rubiaceae, with its long yellow tubular flowers was at its best. The flowers grow in clusters at the centre of a rosette. Continuing towards Bariloche airport, *Oxalis adenophylla* was frequently seen in grassy places. *Oxalis* is one of the most common genera in Patagonia and we would encounter several species during our trip. The steppe around the airport was quite humid and consisted mainly of grasses,



Oxalis adenophylla



Chloraea magellanica



Chloraea cylindrostachya

completely different from the steppe vegetation that we would come across to the east, where dwarf shrubs are the main focus. *Chloraea magellanica*, a somewhat exotic looking orchid, we found here as well. This was a species that we would see at various locations in the coming weeks. A little bit further on, but still in quite moist places, we found more types of Orchids. One of the nicest was *Gavilea glandulifera*, about one metre tall with flowers in white, green and yellow on different plants. The most robust species that we

found here was *Chloraea cylindrostachya* with white-green inflorescences. *Embothryum coccineum*, a shrubby species with bright red flowers that can grow up to two metres tall, is a common species in Patagonia. On our previous



Embothryum coccineum

trips to Tierra del Fuego, in the extreme south of Argentina and Chile, we found this member of the Proteaceae frequently. I can not remember ever having seen this species in cultivation in the Netherlands, in contrast to Scotland, where this plant is cultivated.

The genus Fabaceae is very diverse in Patagonia. *Senna arnottiana* is one of the more distinguished and remarkable species, with large yellow flowers and is about 30 cm tall. *Fabiana imbricata*, a shrub about one metre tall with white or lilac flowers, belongs to a different

genus, the Solanaceae. *Mulinum echinus* is a small dwarf shrub of about 20 cm and has pale yellow flowers. It belongs to the family of Apiaceae and could be a perfect plant for our alpine garden. *Mulinum microphyllum*, on the other hand, is only five cm tall and forms an

exquisitely beautiful cushion which would be nice for a trough. *Sisyrinchium macrocarpum*, a species with bright yellow flowers, is a beautiful plant and would certainly be an asset to our



Mulinum microphyllum



Sisyrinchium macrocarpum

gardens. The conifer *Austrocedrus chilensis* is widely common on the steppe. Also bulbs are an important part of the flora of Patagonia. It was in the same area we found our first *Rhodophiala* species. It's a member of the family of Amaryllidaceae. This *Rhodophiala* sp. has large yellow Amaryllis-like flowers and blooms in small clusters on 30 cm long stems. In a humid environment at the foot of a valley we found *Calceolaria biflora*. This species occurs frequently in Patagonia and has beautiful bright yellow flowers. The leaves of this plant reminds me of *Ramonda*. At the same place we found *Mimulus glabratus*. *Pratia repens*, the only Campanulaceae, was also common here and we would see many times in the next three weeks. This is a species that grows between short grasses in wet conditions. Further on *Grindelia prunelloides* made an attractive show. This is a creeping species with relatively large composite flowers and it would be a good asset in our gardens. *Tropaeolum incisum* was also abundant



Tropaeolum incisum

here with its attractive gray leaves and large orange or yellow flowers. I can remember our trip to Chile and especially the area in central Chile near Portillos where we saw it rarely. In contrast, it was *Tropaeolum polyphyllum* which grew there, everywhere.

As we travelled further eastwards, the steppe became drier. Interestingly, the vegetation changed significantly with many more dwarf shrubs and fewer grasses. This was the home land of the *Junellia* species.

The genus Verbenaceae is quite large and with so many different *Junellia*, it was almost impossible for us to differentiate all these species.

It was a great advantage to have Marcela as our guide, especially since this genus is her specialty. She was able to identify all the species faultlessly by name. All species are very attractive, but to be more selective, I will mention only the most spectacular species.

Junellia mulinoides certainly belongs to this category. It forms huge cushions, sometimes up to two metres in diameter and about 50 cm tall. *Junellia minutifolia* is a creeping species with lavender flowers. There was also a form with a completely different growth habit with yellow or red flowers. Marcela explained that a review of this genus is very important, and this need was clear on seeing two different forms of *Junellia minutifolia* growing here together. The conditions were much drier than in the immediate vicinity of Bariloche. This was clearly seen by the presence of two beautiful flowering cactus species. It was a fantastic sight to see some big cushions of *Maihuenia patagonica* with



Junellia mulinoides



Maihuenia patagonica



Austrocactus patagonicus

yellow and pink flowers and *Austrocactus patagonicus* in various shades of yellow. The *Maihuenia* species apparently had a preference for flatter terrain, while *Austrocactus* is more happy on steep rocky terrain. In the vicinity of the Town of Pilcaniyeu was a railroad, something you definitely would not expect here in this desolate area. And just along the railway we found a truly magnificent *Nastanthus patagonicus*, a rather strange looking plant that is part of the Calyceraceae. This rosette-forming species is monocarpic. Just past Pilcaniyeu, we found the small species *Junellia patagonica* var. *morenonis*.

This is a species that makes small cushions of gray leaves and blooms with beautiful lavender flowers. The title of my article indicates that the genus *Viola* had our preference during our tour. Most of the rosulate *Violas* have a mythical status in the world of rock garden plants. Actually, all rosulate *Violas* are wonderful, but experience has shown that these plants are extremely difficult to grow in our climate. It was near Pilcaniyeu where we found our first rosulate, *Viola escondidaensis*. This is not the



Nastanthus patagonicus



Junellia patagonica var. *morenonis*



Viola escondidaensis

best rosulate species, but a happy discovery as it was the first seen on this trip. *Viola escondidaensis* grows in colonies with a branching network of wired white rhizomes. The rosettes are column-shaped, about 10 cm high and 4 cm in diameter. The leaves are oblong and spatulate. The white flowers, light green veined and dark yellow in the throat, are on 2 cm long stems in a ring around the rosette.

Cerro Cathedral

Cerro Cathedral is a mountain located near San Carlos de Bariloche in the Nahuel Huapi National Park and is one of the most famous ski resorts of Argentina. The high alpine zone of the Cerro Cathedral is therefore easily accessible by cable car. Cerro Cathedral is named for the cathedral-like rock formations.

After reaching the top of this mountain you

can enjoy the most fantastic views on the Lake Nahuel Huapi. Arriving at about 2400 metres altitude there awaits a range of plants you can only dream of. The definite highlight is, without any discussion, *Ranunculus semiverticillatus*. Many people now know that I'm a fanatic cushion-



Ranunculus semiverticillatus



forming plants man, but coming face to face with these dazzling beauties, I must admit that there are other plants which should have my attention in the future. Here on the scree *Ranunculus semiverticillatus* was abundant and in perfect condition. The white flowers are of an exceptionally large size and on some plants the outer flower petals are a beautiful pink colour. This combination with divided gray foliage, that somewhat resembles broccoli, makes this species one of the most beautiful plants ever seen in the mountains.

On the summit, at the most extremely windy places, we saw the hard cushions of *Oxalis erythrorhiza*, another beauty with beautiful hairy leaves and large stem-less yellow flowers. It's a perfect *Oxalis* species in its right place in nature.



Oxalis erythrorhiza

I have occasionally grown it, but it was a great disappointment, losing its compactness. The flowers too proved very disappointing, in both regards due to our differing climatic conditions.

In the same windy conditions, we found *Viola sacculus*, our next *Viola* species from the rosulate group. A very beautiful species with rosettes of about 3 cm. The leaves are dark green in colour and have a slightly reddish edge. The flowers are white with a yellow throat. This species is endemic mainly in northern and central Patagonia, and grows on bare stony ground among boulders at up to 2000 m.



Viola sacculus

Continuing on our way towards a chairlift, we found *Tristagma patagonicum*, a magnificently established bulbous plant with upright white flowers. This species grows only in the most extreme conditions in proximity to snowfields. From the genus



Tristagma patagonicum

Ourisia are two species endemic on the Cerro Cathedral. *Ourisia fragrans*, with beautiful bright white flowers, is only common in shady areas between large rocks. And *Ourisia alpina*, a species with smaller pink flowers, that grows in brighter conditions.

Viola columnaris, the next rosulate *Viola* species was present in a few places. This form of *Viola columnaris* was completely distinct from the form we would see later in our trip. A complete description of this species follows later in this report.



Ourisia fragrans



Ourisia alpina



Viola columnaris



Passo Cordoba: Hunting *Viola Volcanica*



Viola volcanica

The next day we made a trip from San Carlos de Bariloche to San Martin de Los Andes. In accordance with Marcela's promises, *Viola volcanica* would be the most important plant of the day. A rosulate *Viola* species that's not easy to find, because the brown leaf colour of this plant has adapted completely to the colour of the volcanic sand in which the species grows. However, after some searching, we found this species in large numbers on the Passo Cordoba. Because of perfect camouflage everyone passed the plants without noticing them.

Viola volcanica is a short-lived perennial, forming a flat rosette. On the underside of the leaves are glands that seem to attract ants. These may be the insects that take care of the pollination of these pretty little white flowers. Seeing these plants for the first time, you would think they grow in extremely dry volcanic sand. After removing an extremely thin top layer of sand, the substrate turned out to be pretty damp. This is something that is obviously important to know if you are trying to grow this species. It seemed to be the right place as well to celebrate my birthday with coffee and cake, a complete surprise organized by Marcela and our group. Later that day we found the species again, near the side of the road, together with *Nastanthus agglomeratus*. Descending from the Passo Cordoba to San Martin de los Andes, when we were still in evergreen *Nothofagus* forest and near a small stream, we found little *Calceolaria tenella*, a pretty, vulnerable species which is endemic in damp shady places.

Cerro Chapelco

Cerro Chapelco is another well-known ski resort, located in the vicinity of the town of San Martin De Los Andes and again easily accessible by chair lift. The vegetation on this mountain ridge is quite identical to that of the Cerro Cathedral, therefore I will describe only new species. *Viola dasyphylla*, for instance, has to be described for sure. This rosulate *Viola* species is no less spectacular than *Viola volcanica*. *V. dasyphylla* is a very beautiful species from which can grow in up to 40 cm diameter pads with white



Viola dasyphylla

and sometimes pale yellow, ranging to pale blue, flowers on green rosettes, somewhat similar to the flowers of *Viola cotyledon*. *Viola dasyphylla* occurs only in the volcanic areas of northern Patagonia and grows on scree between rocks but can also be found on sandy bottom land between dwarf shrubs and other steppe vegetation. Another species not previously found was *Nassauvia lagascae* ssp. *globosa*, from the family of Compositae. This is a small, dwarf species with open brown or bronze hairy rosettes and stem-less white flowers. It's a pretty diverse genus of which we would see some other species in the near future. Growing in a rough scree we discovered *Calandrinia caespitosa* ssp. *skottsbergii*, another spectacular and rare species with large orange-yellow flowers and green rosettes. This is a plant which is adapted to our European climate and easier to grow. The flower colour is quite exceptional and, therefore,



Nassauvia lagascae ssp. *globosa*



Calandrinia caespitosa ssp. *skottsbergii*

seen immediately. This species is typically found with the exotic-looking *Chloraea alpina* and *Viola coronifera*. Cerro Chapelco is also the habitat of *Oxalis adenophylla*. Unfortunately we were too early for this species. The first leaves appeared between coarse and fine rock with, sparingly, the first purple flowers. This species, however, we would see in full flower at other places later on.



Chloraea alpina



Viola coronifera

To Be Continued in the Summer Issue of the Bulletin



Ger van den Beuken became interested in alpines 35 years ago and, since retiring, now runs a small nursery specializing in rare species. He and his wife, Mariet, have explored widely in Europe, the Sierra Nevada, Patagonia, Tierra del Fuego, Central and northern Chile, the USA, China, New Zealand and Turkey. In the last nine years he has organized several expeditions to Patagonia. He has done speaker tours for NARGS and the SRGC as well as lecturing in England, Germany, the Czech Republic, Belgium, New Zealand, and at home to the Dutch Society of which he is President.

An Introduction to the Tromsø Arctic-Alpine Botanic Garden —and Some of the Plants You Can See There

*Text and photos by Kristian Nyvoll
Tromsø Arctic-Alpine Botanic Garden
Tromsø Museum, UiT The Arctic University of Norway*

with additional photos by Arve Elvebakk and Gabriel Matz

Twenty cm of snow had fallen, and I had to grab the shovel first thing this morning. Looking up into the sky there is a promise of even more snow. I'm happy about it, as a good blanket is the best insurance for the plants to survive through the winter. The polar night is gradually loosening its grip on these lands, every day new minutes of twilight are added. It turns into hours, and by the end of April, the night doesn't turn dark any more. By 15th of May the sun stays above the horizon and the Midnight Sun returns.

At a latitude of 69°40', Tromsø is well north of the Arctic Circle, about the same latitude as Herschel Island in the Yukon Territory. Tromsø is called 'The gateway to the Arctic'. Having arctic light conditions, travel agencies and others like to market this as part of the Arctic, however, climate and growing conditions are somewhat better. Due to the North-Atlantic sea current, the fjords surrounding Tromsø never freeze, and the coldest temperature ever recorded on the island is -18.9°C. Summer temperatures are cool with a mean July temperature of 11.9°C. The alpine tree line is at about 400 m above sea level.

Tromsø Arctic-Alpine Botanic Garden is the northernmost botanical garden in the world. It is a part of UiT, The Arctic University of Norway, and located at the campus, near the cruise ship harbor.



Queen Mary 2

First opened in 1994—I compare the garden with a baby just starting to walk. It is still a very young garden, and there has been construction work almost every season. Recent years' extensive work includes bringing in big boulders and stones. This has given us a more diverse rock landscape, offering a wider range of habitats for the plants. Big boulders create their own microclimates, and break sheaths of ice. Some winter ice has caused severe damage. Sun heats the stones, and the warmth is released during the night. We see the effect on rhododendrons and cushion plants, in faster growth and richer flowering. The plants are growing and covering the rock surfaces.



Steps in construction work (photos by Arve Elvebakk)



African Collection – the building completed and planted

A goal for this season is to finish the upgrading of the Ranunculaceae collection. Then we will create a well-drained ridge of gravel with tight crevices between rocks, and a mound with enriched soil for the tall growing Delphiniums and Aconitums.

There are many splendid botanical gardens all over the world. However, most of them are located at low elevations, making it difficult for them to grow plants from their alpine zones. Some of these alpiners have adapted well to our climate, thus there are some beautiful plants I would like to share with you, giving a further introduction to our garden.

The Saxifrage Collection



Saxifraga oppositifolia 'Skye'



Saxifraga ludlowii

In the north of Norway *Saxifraga oppositifolia* is always the first to flower in the spring. One notices the plants by their bright purple flowers hanging from the cliffs. This plant is among those growing the furthest north in the world. The species in the genus of Saxifrages are high up on our wish list!

Through the years local plant enthusiasts have propagated and donated plants to the garden. One of these donations turned out to be more exciting than expected! Comparing with the flora, seedlings of a Chinese collection said to be *Saxifraga chionophila*, turned out to be *S. decora*. Then one of the plants developed a much tighter cushion, and it came into flower weeks ahead of the others. No stems, much larger single flowers and purple-lilac petals—apparently this was not *S. chionophila* and somewhat more desirable. Diving one more time into the literature my colleague came up with a species not known to be in cultivation, nor seen in any seed list—*Saxifraga ludlowii* that is known to grow in southern and eastern Tibet.



Saxifraga tricuspidata
(photo by Gabriel Matz)



Saxifraga hirculus



Micranthes melanocentra

The species I have mentioned so far are all within the section of Porphyron saxifrages. Many of them form tight cushions and flower beautifully, making them most desirable for alpine gardens. Our best is *S. marginata*—the cushion is one metre in diameter, and it is completely covered in flowers. Another section with desirable species are the Ligulatae. To quote Reginald Farrer; “The encrusted or Silver Saxifrages make up a



Saxifraga marginata

race so far ahead of every other in general value that a rock garden can be glorious with nothing else and without them could not be really glorious at all.” I think he has a point here. There are 12 species of the “Silvers”, and only one is missing in our collection. Saxifrages in Ciliatae section are quite rare to find in cultivation, though being the most numerous group of saxifrages.



Saxifraga cochlearis



Saxifraga longifolia

On mainland Norway only *S. hirculus* is present, and I got to see it in the nature for the first time last year, actually growing close to bogs where I so many times before have been picking cloudberry. One plant we have been searching for without any luck is *S. serpyllifolia*. Beautiful pictures show it flowering on North American mountains, forming mats. Another section of species not often grown in gardens are the Trachyphyllum saxifrages. Most members including *S. tricuspida* grow into mats and often have coloured dots on their petals. *Micranthes melanocentra* was in a section that was separated from the saxifrages to make its own genus.

The Southern Hemisphere – Africa, New Zealand, and South America

A few species from the African continent also manage the Tromsø climate. They either grow naturally in the Atlas Mountains of Morocco (associated with the Mediterranean flora), or the Drakensberg of Lesotho and South Africa. The blue daisy *Felicia rosulata* (*Aster natalensis*) was for many years the only South African species that managed the habitat we could offer. After extensive reconstruction, the number of species has increased considerably. We are now happy to manage more species within the Asteraceae family, *Delosperma*, and *Diascia*, and even annual species manage to flower, some producing viable seeds.



Felicia rosulata



Myosotis aff. pulvinaris

Somehow, our expectations about alpine plants from the New Zealand flora have been too high. Despite a moist climate, high mountains, frost and snow during winter, so many of those we tried didn't want to establish themselves. Luckily, *Myosotis aff. pulvinaris* seems ready to grow wherever we get the idea to put down cuttings!

Despite dry and windy conditions in parts of Patagonia, several species from this southernmost part of South America manage the Tromsø conditions. Four species of *Oxalis* including subspecies and forms grow well in the garden. Their coiling buds and semi-opened flowers are beautiful, but you need a sunny day to view them at their most glorious, when they open completely. *Oxalis laciniata* and *O. loricata* have some stunning forms. On the picture, you see a form growing in Torres del Paine. *Olsynium biflorum* is also a species that has survived winters covered only by ice!



Oxalis laciniata



Olsynium biflorum



Calandrinia caespitosa



Calandrinia ranunculina
(photo by Arve Elvebakk)

I consider it as the reaching of a milestone for the botanic garden, when in 2015 a species new to science was described for the first time. This work was partly based on comparative cultivation done in our garden. Growing several forms of *Calandrinia* together, they displayed consistent variation. Taking a closer look through a microscope Prof. Arve Elvebakk—leader of the botanic garden—found other significant differences apart from colours and habit of growth. Then he started a process of meticulously looking through wilted brown herbarium specimens, microscope analyses, and more field studies done by his co-authors A.R. Flores and J.M. Watson.

Summarized in the paper, ‘Revisions in the South American *Calandrinia caespitosa* complex’ they give evidence and support species considered belonging to a widely defined *C. caespitosa*. Then, *Calandrinia ranunculina* was described as new to science. (<http://biotaxa.org/Phytotaxa/article/view/phytotaxa.203.1.1>)

The Arctic Collection

Comparing some biological and climatic factors such as vegetation period, mean June/July temperature, and heat sum, one finds that they are quite similar at the arctic forest line and alpine tree lines. We consider the northern forest line to be the border into the Arctic. The latitude of this line differs considerably around the world. Many of the plants surrounding the garden are species that grow into arctic areas. Some of them are even ‘circumpolar/boreal’ growing all around the northern hemisphere.

Choosing species for the ‘Arctic collection’, we confer with the ‘Panarctic Flora’ (Panarctic Flora; Annotated Checklist of the Panarctic Flora (PAF) Vascular plants <http://nhm2.uio.no/paf/>) and the taxa included there. In this collection, we also grow

red listed species from Norway and Svalbard, being rare and threatened in nature. Having small flowers, and weak colours, most of them lack an obvious garden appeal. Patterns of distribution, habitats and history, however, makes them very interesting!

One of the species we keep from the red list of Svalbard really represents everything! *Ranunculus wilanderi* is a compact miniature buttercup. It has quite large shining yellow flowers and glossy dark green leaves. The species is only known from one locality at Spitsbergen. About 40-80 individual plants grow within a range of one square kilometre. A herd of grazing reindeer trotting through the area is a worrying scenario. It grows very well in Tromsø, and thus the number of specimens in the world has doubled. Still it is rarer than the Giant Panda of China! I find every reason to be excited about this plant, and refer to the description in Flora of Svalbard (Flora of Svalbard; page for *Ranunculus wilanderi* <http://svalbardflora.no/index.php?id=593>)



Ranunculus wilanderi



Pedicularis groenlandica

“The background of this species in Svalbard is a mystery. From where has it arrived? Or has it evolved in isolation in Svalbard, and from what?”

In spring, visitors can see ptarmigans feasting on buds of the arctic plants. Later on, we point out our rare “Panda”. Then, from middle of June, we send excited children out in search of “Pink Elephants”. First described from Greenland in 1790, it took more than a 100 years before the type locality was rediscovered—proving to be the only locality in Greenland. In the meantime, this Lousewort was found around Hudson Bay, in the High Sierras, and the Cascades. Our plants of *Pedicularis groenlandica* or ‘Elephant’s head’ gets more attractive every year, growing into bigger plants having more flowers.



Papaver lapponicum ex. Kvaenangen

Many alpine plants and especially arctic species have a rather short flowering period. The Arctic Poppy, *Papaver lapponicum* has been allowed to seed freely, resulting in numerous seedlings popping up all over the garden. At their peak, they form citron yellow waves in the breeze. Now we make sure to cut the green seed pods, the reward is new buds and flowers coming through the season. In the rest of the garden, we make sure to pull them out!

My favorite bellflower is *Campanula turczaninovii*. It reaches the Arctic in the Taymyr area in Siberia. The deep blue, funnel shaped flowers I find exquisite! The biggest number of bellflowers is the Caucasus collection.



Campanula turczaninovii



Campanula aucheri

The Caucasus Collection



Veronica caespitosa



Asperula sintenisii



Lilium monadelphum

Celebrating the botanic garden's tenth anniversary, we invited Vojtěch Holubec to give a lecture on 'Alpine flora of the mountains of the Caucasus and Turkey'. Completely in awe by all the wonderful plants presented from those high mountains—the entire staff (leader Finn Haugli and gardener, myself) came out with the same idea: “We need a separate Caucasus collection!”

So many plants are introduced to the “Garden World” from these areas; fruits, roses, tulips and lilies! The yellow, sweetly scented *Lilium monadelphum* has a long tradition in North Norwegian gardens. The vicar Wisløff in Steigen received seeds of it around 1870. Since then it has spread out from the vicarage and become the joy and pride in so many gardens in northern Norway.

Since 2004 we have received wonderful alpines originating from this area. Mentioning *Campanula*, we have now about 35 different taxa of this genus. In the picture, you can see *Campanula aucheri* almost working as a compass. For the crevice garden, I full heartedly recommend *Veronica caespitosa* and *Asperula sintenisii*!

Starting a tour in the garden, guiding visitors I say it will take about 30 to 40 minutes. Too many times we end up spending an hour or two! Something similar has happened with this article. I will end by showing you one last picture of autumn flowering *Gentiana litangensis*, saying nothing else about our precious gentianas. Not telling the story of “The Russian Princess”. Skipping over a *Primula* 1 cm tall with 2.5 cm wide flowers. Not showing any pictures of our orchids, peonies, rhododendrons, or the most famous of them all—the heavenly blue *Meconopsis*. Maybe you will find them in a future edition.

Best of all would be for you to come visit Tromsø Arctic Alpine Botanic Garden—
Welcome!

I would like to thank Arve Elvebakk and Valerie Melanson for helping me sort out the worst sentences of Norwegian written in English!



Gentiana litangensis



Kristian Nyvoll has been gardener at the Tromsø Arctic-Alpine Botanic Garden since 2002. Previously he taught horticulture and ran the plant nursery at a high school for five years. He has a Masters degree in Horticulture and is also a consultant to the Norwegian Centre for Development and Planning of Parks, Green Areas and Traffic Environment. He has also been an editor of The Saxifrage Magazine of the Saxifraga Society.

Correction to the Seedlist

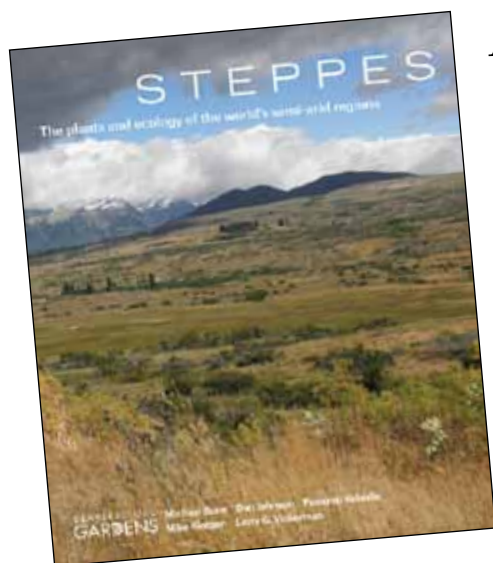
Paul Olsson got in touch with Linda Verbeek to note a correction, based on first flowers: the *Arabis koehleri* from the 2011/12 seed exchange should be *Arabis blepharophylla* instead.

Book Review

Steppes: The Plants and Ecology of the World's Semi-Arid Regions

Authors: Michael Bone, Dan Johnson, Panayoti Kelaidis, Mike Kintgen, Larry G. Vickerman, Denver Botanic Gardens

by Kenton J. Seth



About reader criticism of the book, author Michael Bone said in passing, quite profoundly, that it “starts a conversation.” Indeed, the book is just that. A fresh charge into an important new comparative field.

Steppe are indeed important—four big biomes which are cold, dry, and generally treeless. They are neither desert nor forest, neither tropical nor arctic. This significant portion of the world’s dry surface, as author Panayoti Kelaidis points out, is perhaps the most important ecological matrix in which mankind has developed.

The book introduces the world’s naturalist readers to the subject of steppe with the heart-compelling artistry of absolutely fantastic photography from all authors, luring us into the brain-compelling study of steppe ecology.

To be the first volley at such a wide field is doomed to be incomplete, and we must remember that it is brave to be the first to take that swing, which, by its nature, cannot complete the whole task on first try. Steppes are international, and so are readers, who will demand in future editions some standardization and glossary of measurements and landform terminology, which are awkwardly halfway americentric in ‘Steppes.’ The other bias from which the book is written is that of horticulture in Colorado, USA, which it is allowed, having been produced by a botanic gardens there. This lens has its limits, leaving general naturalists craving some more mention of say, animals of the steppe, for instance, but is a wide and sophisticated lens from which to start, inadvertently re-marrying the erstwhile divorced sciences of horticulture and botany.

Each author addresses a particular steppe of his expertise. Mike Kintgen exhibits a time-steeped expertise of the Patagonian Steppe, enriching it with mention of early explorers, and the same from Kelaidis, who also provides the book’s powerful, big-brushstroke introduction.

After painting this big picture for us, they hone in to explain the details, down to species of plants, but the maps fail to support this “zooming in” and repeated mention of specific places. Further, the original “steppe” of Eurasia is so vast and complicated

that it will certainly take more than two authors to describe it in future, the number bid to cover North America in this book, but presently addressed alone by Michael Bone, who boldly pounces with humour and historical romanticism. The book also wants for some closer comparison of the steppes to each other, as well as some history of conservation and a nod to the future of the steppes.

The book has provoked a great deal of criticism, which is absolute proof it has struck upon a vein of study which the world has longed for amid a stewing latent international, if un-aggregated, knowledge of steppe. It is brave to venture a vanguard into a realm which one knows will require many successors and years to fully flesh in. Critique of the book will be necessary to enrich that “conversation” which will inspire generations worth of amalgamations of world sciences to further deepen our understanding of the world’s steppe. All of that starts by reading this one.

(Steppes: The Plants and Ecology of the World’s Semi-Arid Regions.

By: Michael Bone, Dan Johnson, Panayoti Kelaidis, Mike Kintgen and Larry G. Vickerman, Denver Botanic Gardens. Portland: Timber Press, 2015. 978-1-60469-465-9)



Kenton J. Seth is a landscaper/gardener/wild-plant-fiend in Colorado, USA, who specializes in desert natives and builds crevice gardens professionally. (See the Winter 2016 AGC-BC Bulletin for his report on building crevice beds at APEX.)



Aquilegia caerulea, denizen of the Central and Intermountain North American Steppes. Grown from AGCBC 2012 seed, at home in the garden of Valerie Melanson

Gardens ROCK!

by David Sellars

Flower Arranging

In March, we attended a Saxifrage Society seminar in Oxford. The seminar included visits to the University of Cambridge Botanic Garden and Waterperry Gardens, which houses the UK national collection of saxifrages. It was an opportunity to learn some of the methods that UK growers use to get alpines to flower so beautifully.

We saw stunning displays of Saxifrages, Dionysias and flowering bulbs in the alpine houses at Cambridge and Harlow Carr. Some plants were on permanent display but most were in pots plunged in sand beds. We were also given access to the “reserve collection” which means the plants that were currently not on display and were kept under cover in an area hidden from the public. The reserve collection was about 20 times the size of the alpine house display and consisted of alpines mostly not in flower but with exquisite foliage. Basically they show the plants that are beautifully in flower in the public alpine house and maintain a revolving pot display throughout the spring. It is flower arranging on a large scale.

Alpine plant shows are a major activity of the UK Alpine Garden Society and the Scottish Rock Garden Club. The plants entered in the shows are absolutely stunning. I get that each grower will have their own methods of making potting mixes, fertilizing and so on, but the thing that always puzzled me was the fact that plants on display at the shows are always so wonderfully in flower. How do they manage to get the plants covered in flowers exactly in time for the show? The answer to the perfect timing is actually quite simple. There are shows every weekend throughout the spring somewhere in the UK. If your plant is not quite perfectly in flower for a show one weekend you just enter it in another show a week later!

Another trick that growers in the UK use is to deadhead their plants after a show so that the plant is more likely to be in good condition the following year. Apparently some Saxifrage growers have been seen pulling off flowers in the car park immediately after a show. Seems an odd way to enjoy your plants.



Alpine House, RHS Harlow Carr