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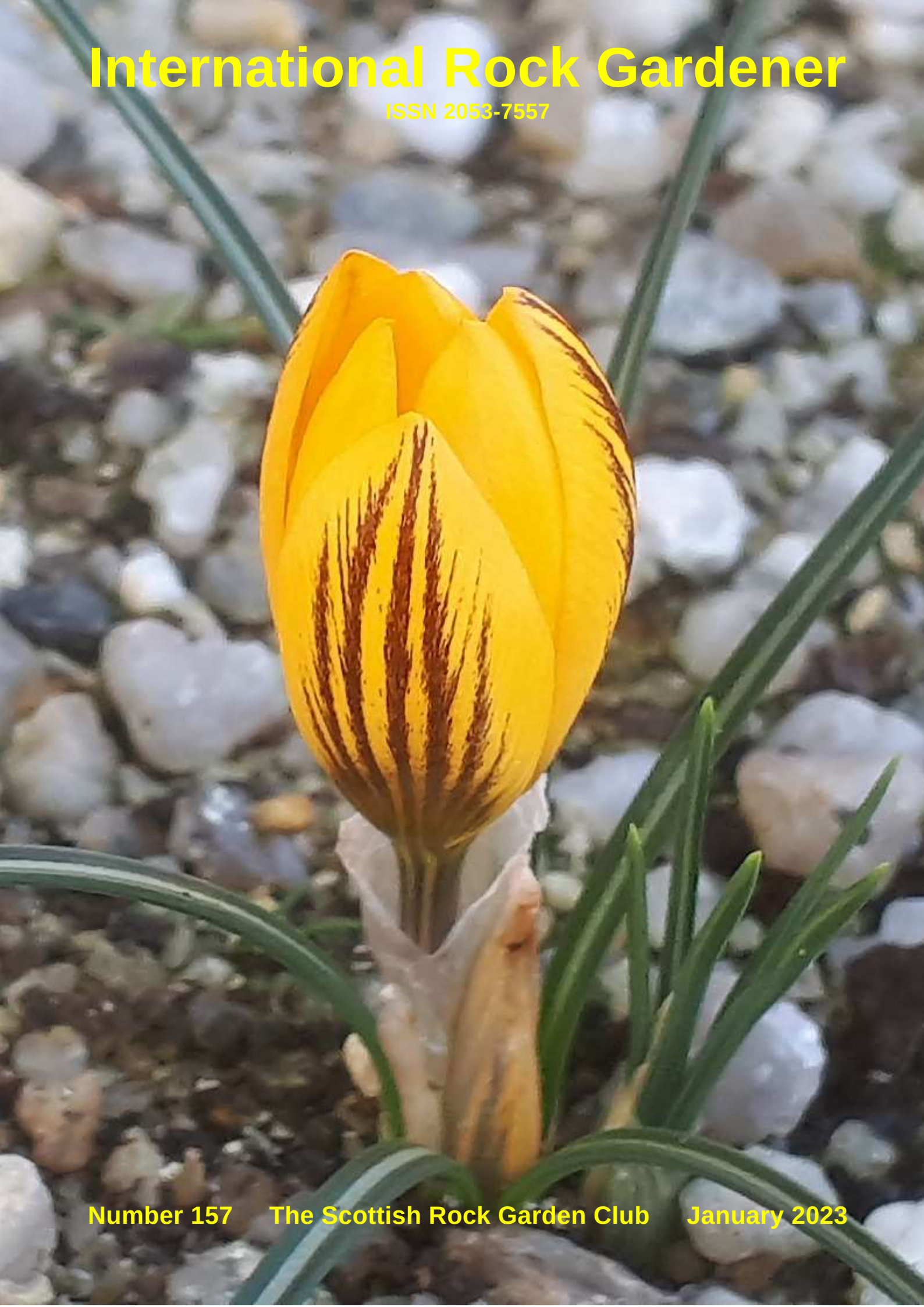

Number 157 The Scottish Rock Garden Club January 2023

---International Rock Gardener---

January 2023

Happy New Year to all our readers! We have two articles this month, firstly from Jānis Rukšāns on a new crocus hybrid raised by Dirk Schnabel in Germany and secondly, a report from Panayoti Kelaidis on the Patagonian plants which are doing well in the Denver Botanic Garden.

The regularity of the IRG is dependent on the receipt of articles and images – so in future the magazine may not appear each month. To submit an article, email Margaret Young via editor@internationalrockgardener.net

Cover image: A selected clone of *Crocus x schnabelii* – photo Dirk Schnabel.

Dirk Schnabel of Lichtenstein Sachsen, Germany is the treasurer of the Zwickau Rock Garden Association. Dirk is a devotee of both crocus and iris and has been contributing to the SRGC Forum since 2007.

The phenomenon that is Panayoti Kelaidis of Denver Botanic Gardens! Currently president of the North American Rock Garden Society, over his 30 years at DBG he has been an expert in horticulture, science and art. He also acts as a liaison to botanical societies, professional horticulture organizations and green industry members. He has been the recipient of prestigious awards from around the world and is a hugely popular writer, speaker and tour member wherever he goes.

Crocus x schnabelii – a new sensational *Crocus* hybrid species raised in Germany

Jānis Rukšāns, Dr. biol. h.c.

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All pictures of *C. x schnabelii* by Dirk Schnabel, Germany.

Summary. A new autumn-blooming crocus hybrid with yellow flowers is described, its breeding history and cultivation explained.

Key words: Crocus, new hybrid species.

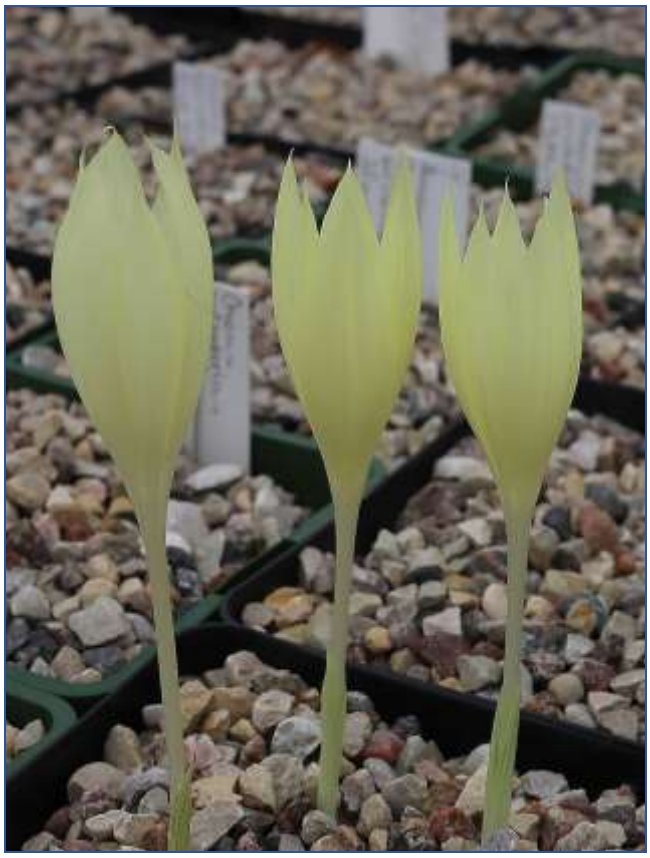
Up until December 2017, according to my monograph “The World of Crocuses”, there were recognized 230 named crocus species and a few natural hybrids (cultivars of hybrid origin were not included). The most popular hybrid species are *Crocus x gotoburgensis*, *C. x leonidii* and *C. x paulineae* – they all bloom in spring. During the 5 years since that date, 31 new species have been published and one moved into synonymy, thus the total number of taxa at the moment has reached 260 + 3 hybrids; however, researches on crocuses are ongoing therefore undoubtedly in coming months and years there will appear a handful of new species.

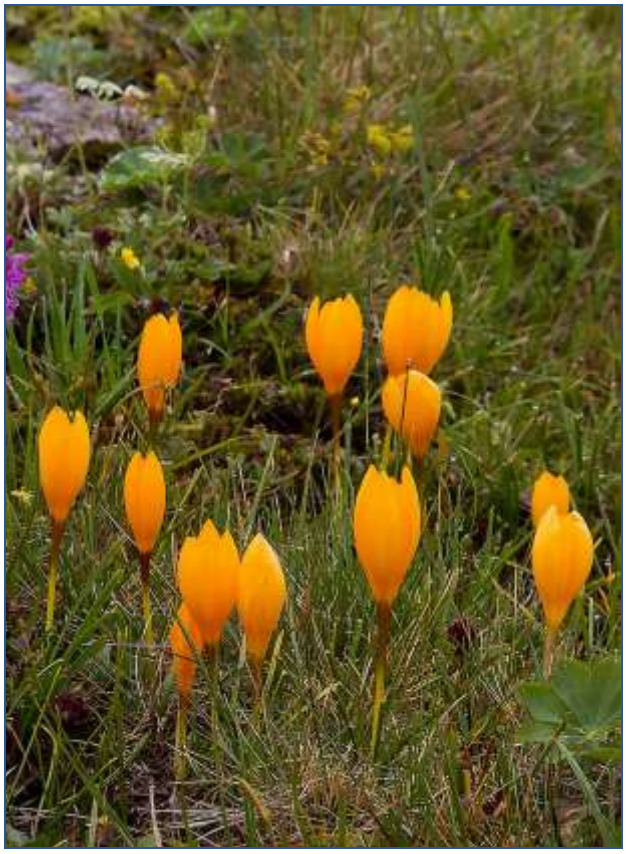
All crocuses from the gardeners’ point of view have been divided into 2 groups: those whose blooming starts after the 1st of January are customarily regarded as spring-blooming crocuses, while those that bloom from the second half of summer up to the 31st of December – as autumn-blooming crocuses. There are species that flower in December-January – these have been set apart by some as ‘winter-blooming’ crocuses. In any case, this division cannot be clearly defined for there are species that have both autumn-blooming and spring-blooming variants. One such is *Crocus hittiticus* – some of its stocks in cultivation regularly begin to bloom in early November, whilst others wait until February-March. Conventionally *C. hittiticus* is regarded as a spring bloomer. Of a similar variability is the usually autumn-blooming *C. laevigatus* which has forms (from the island of Naxos and other Cyclades Islands of Greece) that in cultivation regularly bloom not earlier than the start of March. Long mild autumns will accelerate the blooming of some species, as will delayed frosts extend the flowering of some late autumn crocuses into January or even beyond.

Spring crocuses are the most colourful and among them one can find every combination incorporating all shades of white, yellow, brown, blue and purple trimmed with stripes, flecks etc. Autumn-blooming species are fewer – some 30% of the recognized taxa – and nearly all of them exhibit various shades of only white, blue and purple.

Crocus scharojanii from Karachay-Cherkessia, N Caucasus. Leg. D. Zubov.

The two bright, yellow-flowered species – *Crocus scharojanii* from the Caucasus Mountains all the way along the northern coast of the Black Sea and *C. lazicus* from the mountains in NE Turkey – bloom in July extending into August and can be regarded as more summer than autumn-blooming species. In common with other autumn crocuses, their seed ripens only in spring. Furthermore, both are very difficult in cultivation and only a few growers can pride themselves on being successful with them.

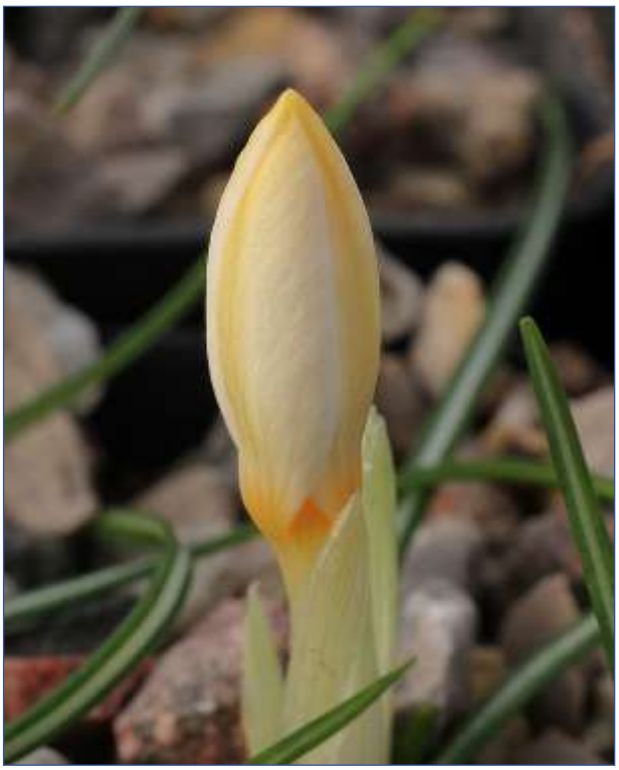




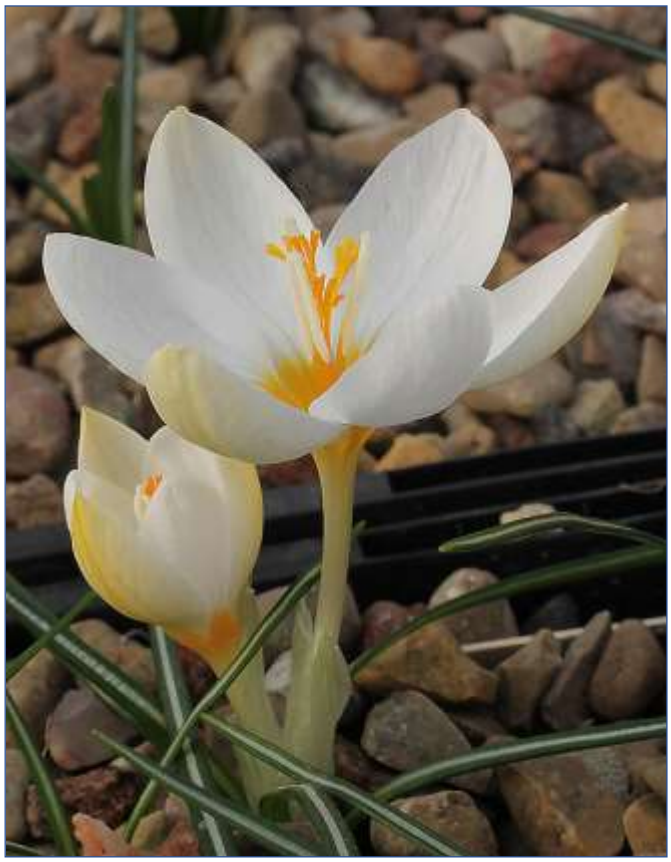
Left: *Crocus scharojanii* var. *flavus*. Right: *Crocus lazicus* in NE Turkey. Photo Johan Nilson, Gothenburg BG.

A little easier to cultivate is the crocus known as *C. scharojanii* var. *flavus* that blooms a bit later with light yellow flowers. Most experts regard it as a partly fertile(?) hybrid between *C. scharojanii* and *C. vallicola*.

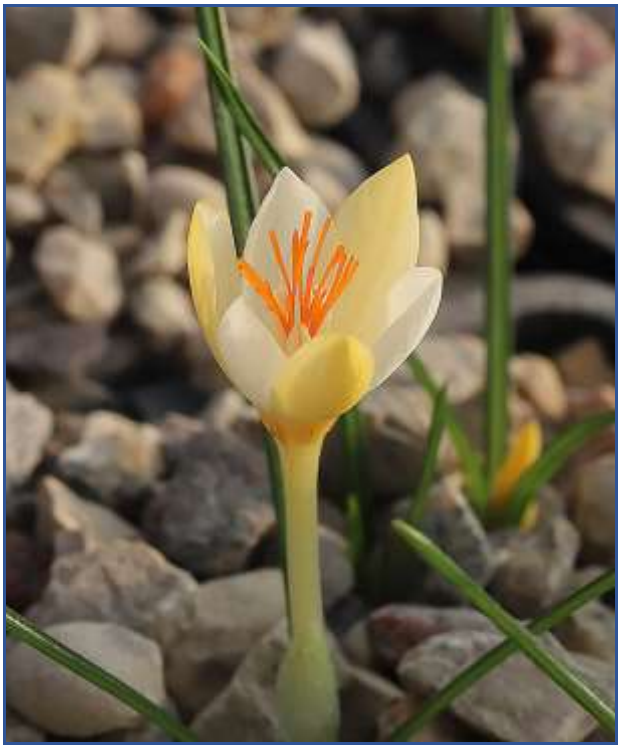
There are some species that have clones with a yellow tint in the flowers when in bud and at the very start of blooming, but, alas, within the next few days that tint fades to white. Such forms have been observed in *CC. pumilus, laevigatus, melantherus,* and *cartwrightianus*, but until recently there has not been a crocus species or cultivar with bright yellow flowers to bloom in the actual autumn.



Crocus melantherus selection ‘Gold Back’ from the Peloponnesus.

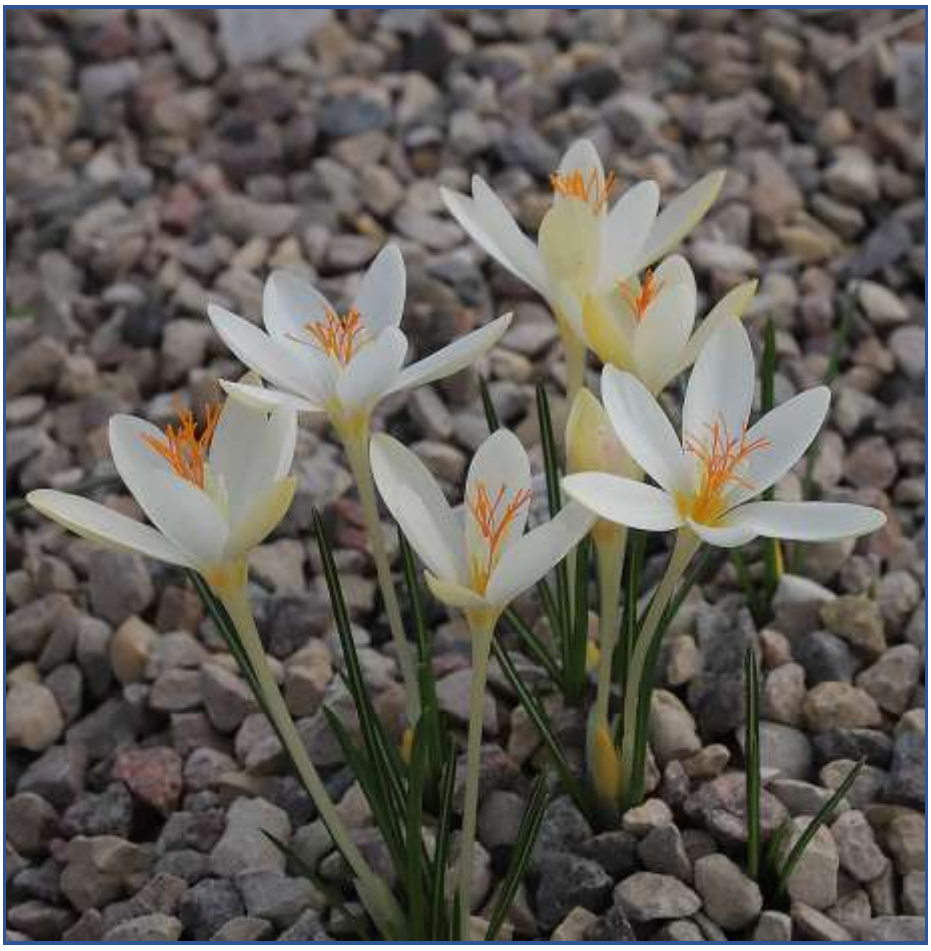


Left: *Crocus laevigatus* form with a yellow shade in the buds.

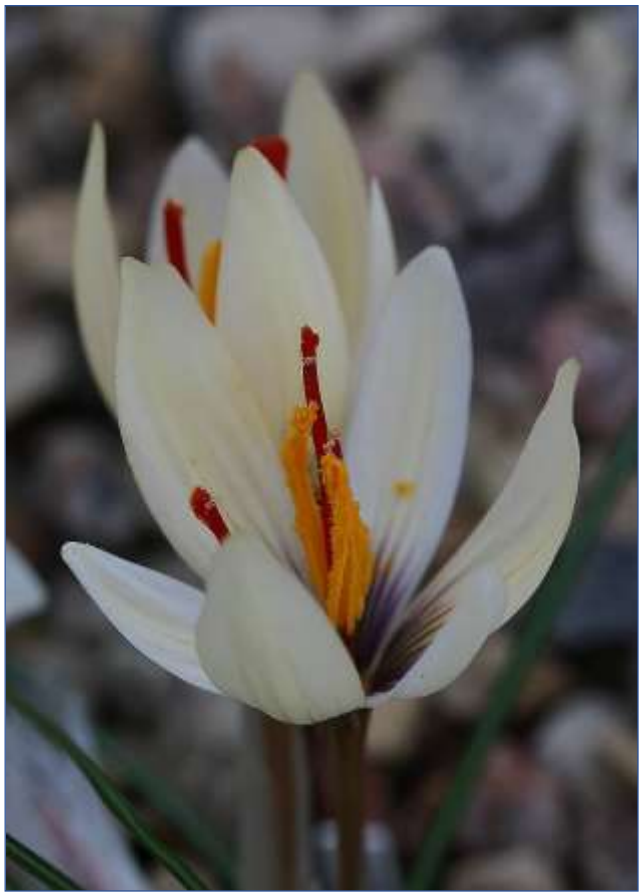


Above, right: *Crocus pumilus* 17GRA-013 has the darkest yellow tinted buds.....

...but the yellow very soon fades (*Crocus pumilus* 17GRA-013), below.



This form of *Crocus cartwrightianus* from Naxos Island, Greece, has a very slight yellow tint in its flowers.



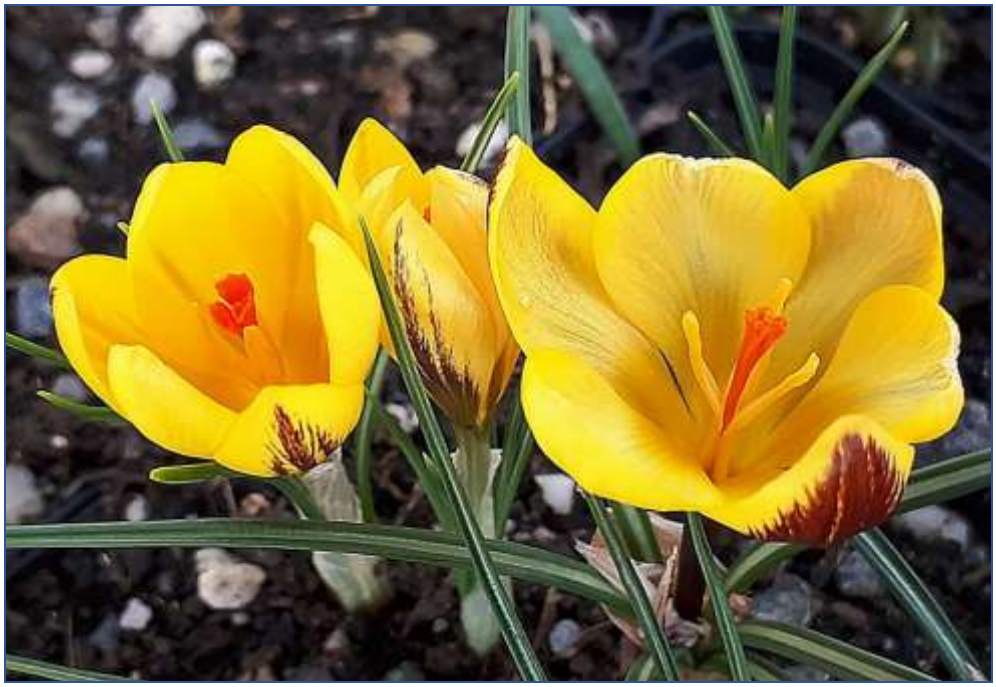
Crocus x schnabelii with its pollen parent *C. melantherus* on the right.

Variability of seedlings at their first blooming in Dirk Schnabel's garden.

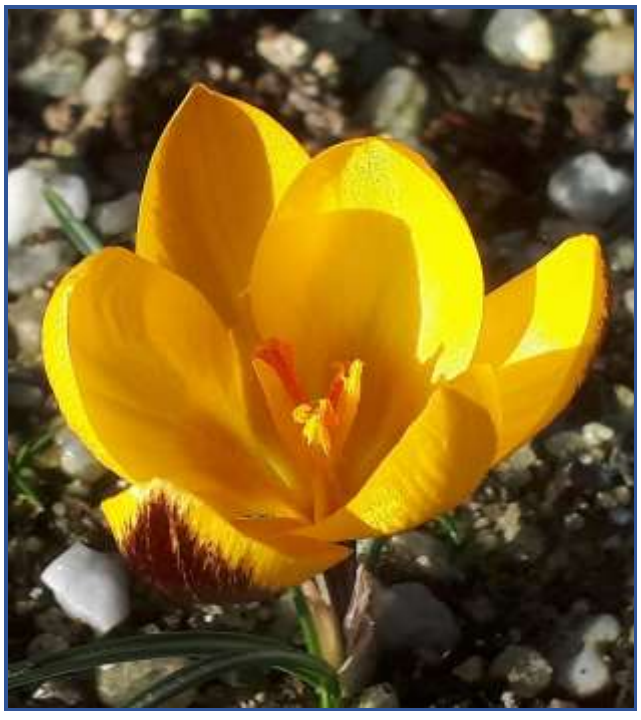
Within the genus *Crocus*, hybrids are relatively rare. A yellow autumn-blooming crocus was Dirk Schnabel's "dream plant" for about 30 years. All attempts at crossing *C. speciosus* with *C. chrysanthus* and *C. kotschyanus* with *C. scharojanii* were unsuccessful – these combinations yielded no seed. That is no surprise – the parent species genetically are too distant and different. As a rule of thumb, a successful cross is only feasible between closely related taxa, within the same series, on condition that both parents in the wild are geographically isolated and have not developed elaborate genetic or other barriers to prevent hybridization, thus ensuring the continuation of the species. In January 2014 Dirk forced some *C. chrysanthus* plants (a form growing wild in the northern part of Macedonia, Greece) on his windowsill. In the garden at that time a few flowers of *C. melantherus* from the Peloponnesus were still open. Both species belong to Series *Biflori* (sensu B. Mathew). He removed the anthers in *C. chrysanthus* flowers (put differently: he castrated them) and as the pollen parent elected the *C. melantherus* from the garden. The result was 2 capsules with several seeds in each, which were harvested in May 2014 and sown in a pot in August of the same year. On the garden bed the first flowers opened in December 2017.

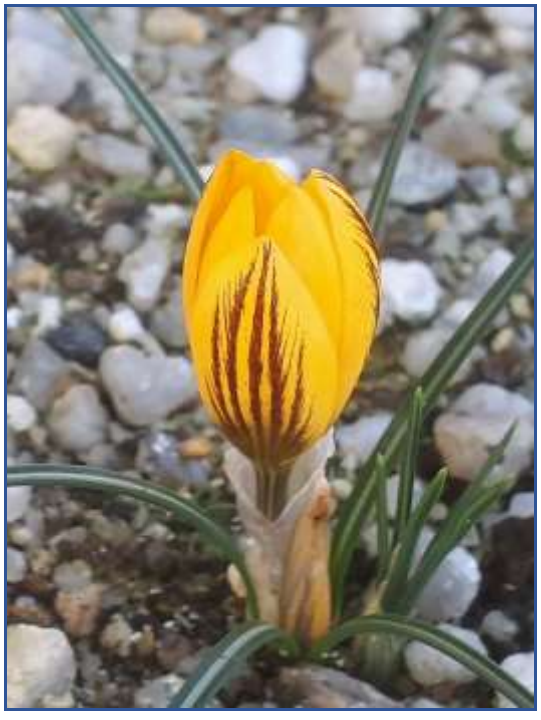
All were bright yellow (the colour was inherited from *C. chrysanthus*) with variously striped or deep, purple-blotched outsides of the outer segments, a *C. melantherus* hallmark.

Since then, all the hybrids have been grown in pots in a bulb frame. Now the flowers appear from mid-November and the blooming extends into January (in the Central European climate). Four seedlings with differing flower colours and blooming times have been selected for further evaluation and propagation. They multiply vegetatively by corm splitting – not as freely as *C. chrysanthus*, but still better than *C. melantherus*. Hybrids are sterile; however, the anthers are able to produce a few pollen grains.

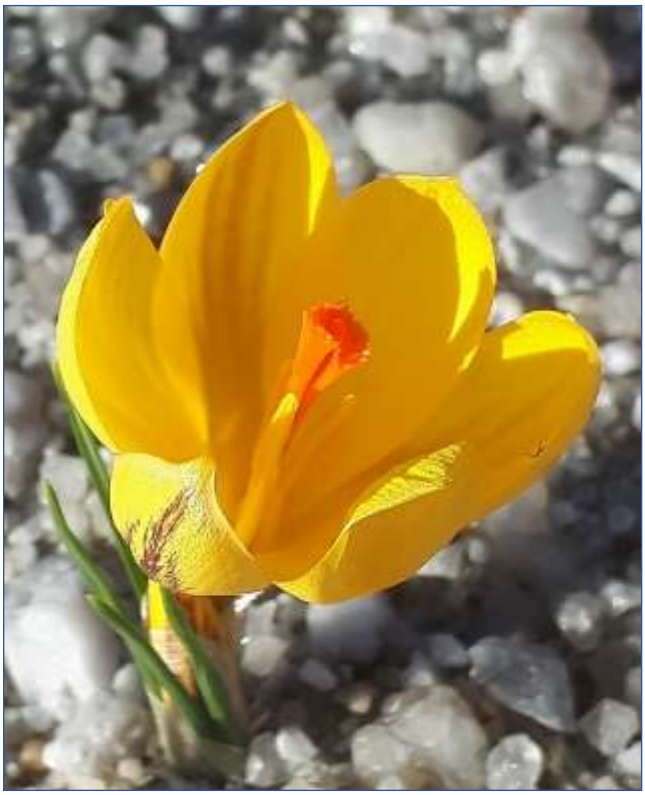


Some selected clones of *Crocus x schnabelii*……..





Some more selected clones of *Crocus x schnabelii*……



Crocus x schnabelii is a true “breakthrough” in the crocus realm, really an awesome achievement. It can grow in the open garden in regions with not very harsh winters as it overwinters ‘in leaf’ which could get damaged in colder areas. There it can be grown in a bulb frame or polytunnel as it is done at my nursery.

Crocus x schnabelii Rukšāns

A hybrid between *Crocus chrysanthus* **(**Herbert) Herbert (from the northern part of Macedonia, Greece) and *C. melantherus* (B.Mathew) Peruzzi; cultivated material from Dirk Schnabel’s garden; Holo: RIG! (University of Latvia) ex culturae in horto Dirk Schnabel, leg. 07-12-2022.
Flowering time – November-December (January).
Corm – depressed-globose, up to 20 mm in diameter, 15-16 mm in height.
Tunics – thin, smooth.
Tunic neck – up to 7 mm long, formed by narrow splits of the main tunic, tightly adpressed to the shoot.
Basal rings – thin, 1-2 mm wide, with a pronged upper edge and occasionally, irregularly spaced up to 1 mm long widely based triangular teeth; basal tunic as a small round disk with a pronged edge.

Prophyll – absent.

Cataphylls – 3, paper-white or tinted light green in the upper part, somewhat transparent.

Leaves – 4-5, dark green, 2 mm wide, at the blooming time 5 cm long, appear before or together with flowers and during flowering overtop them: lamina with downward and inward bent edges, the white stripe slightly less than 1/3 of the leaf width, lateral channels with mostly 2, rarely 3 ribs, keel sparsely papillose on the edge, with a rounded (convex) base.

Perianth tube – white to yellow, with or without greenish, greyish green or dirty purplish stripes in the upper part, in the darkest forms becoming dark brownish purple below the flower base.

Bract and bracteole – silvery, transparent, ending shortly below the flower, bracteole of variable length – shorter or longer than the bract.

Throat – nude, indistinct, of the same colour as the inside of the flower segments or of a slightly darker shade.

Filaments – glabrous, light yellow, 5 mm long.

Anthers – yellow, 9-10 mm long, with 1.5 mm long basal lobes.

Connective – pale yellow (lighter than the anthers).

Style – in the throat deep yellow becoming orange towards the top, stigmatic branches 3, orange, 4-6 mm long, expanding somewhat fan-like at the top, with a roughed upper edge, mostly overtopping the stamens, very rarely slightly shorter.

Flower segments – very variable in shape – elliptic to widely oblanceolate or obovate, even obdeltoid, the inside colour in both whorls bright deep yellow. Flowers have a distinct, strong scent.

Outer segments – very variable in size, up to 25 mm long, the width depends on the shape of the segments, the outside deep yellow and variously striped dark purplish brown, sometimes the stripes confluent with the wide yellow band along the margins or form a large dark brown basal blotch with a few stripes reaching or not the tips of the segments, occasionally pure yellow.

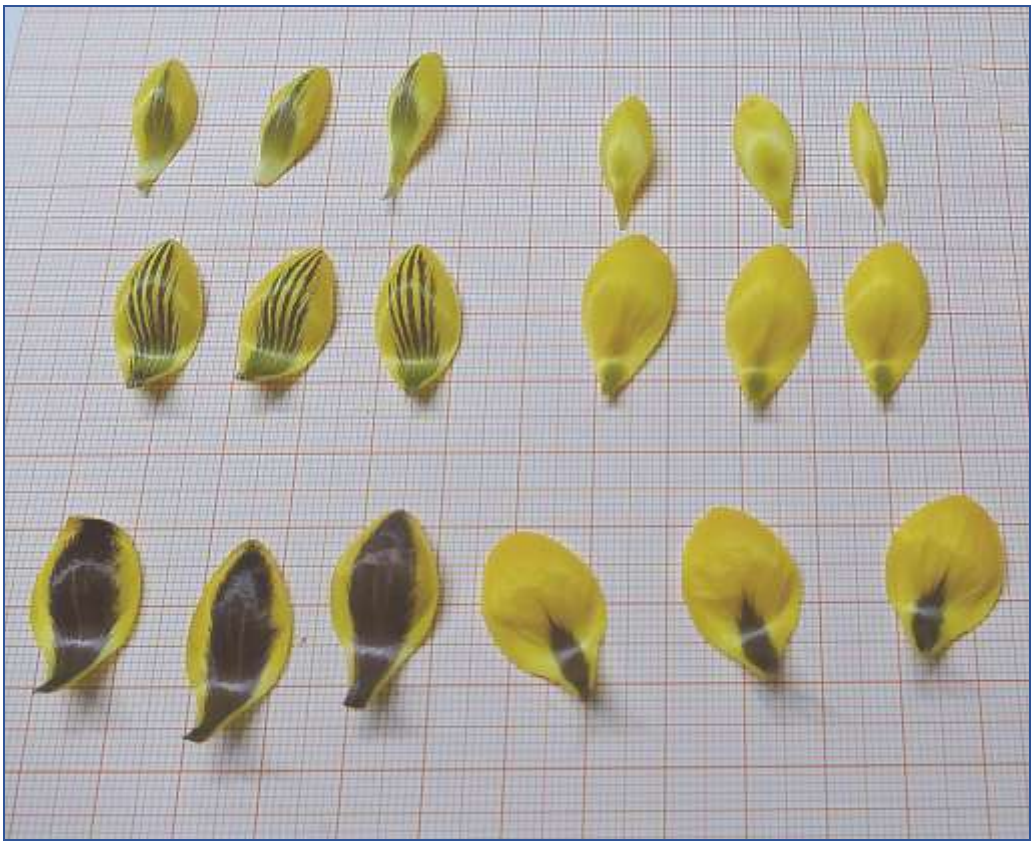
Inner segments – slightly shorter and narrower, on the outside darker or lighter deep yellow, without stripes but with a comparatively long, narrow, pointed greyish basal blotch.

Capsule and **seeds** – plants are sterile, so no seeds develop regardless of artificial pollination.

2n = unknown.

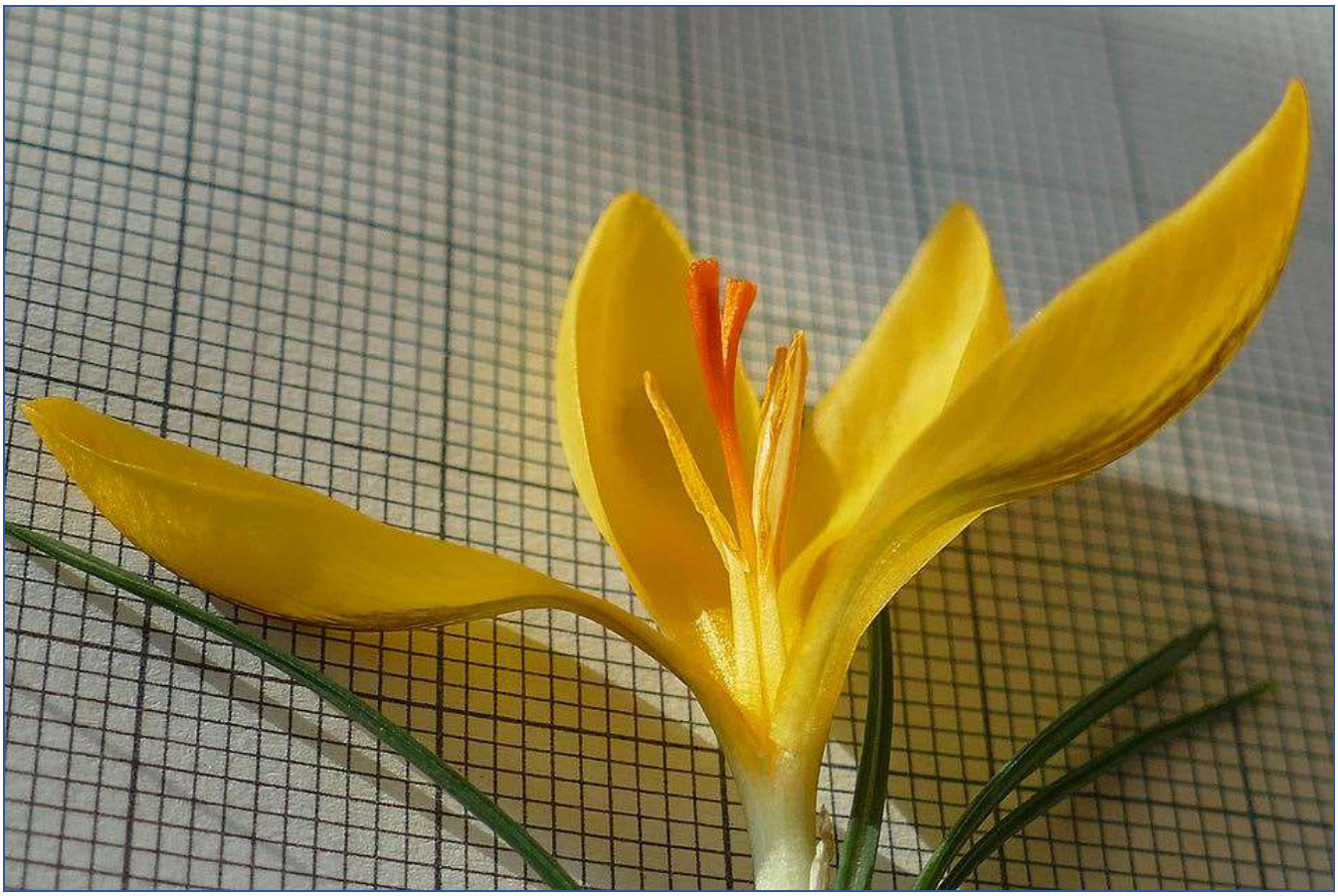
Etymology – named after the well-known German crocus grower Dirk Schnabel who raised this marvellous hybrid after 30 years of experimenting with crossing different autumn-blooming species with yellow-coloured spring-blooming species in an attempt to breed easily growing autumn-blooming plants with distinctly yellow flowers.

Holotype specimen – *Crocus x schnabelii*



Variability of the exterior segment outside design in *Crocus x schnabelii*.

Crocus x schnabelii corm.



Details [inside] flowers of *Crocus x schnabelii*.

Cataphylls, bract, bracteole and leaves of *Crocus x schnabelii*.

Acknowledgments

I want to express my greatest thanks to the German crocus enthusiast and grower Dirk Schnabel for sharing with me corms, pictures and information about this marvellous achievement, thus facilitating the publishing of this new hybrid species.

The Puzzle of Patagonian Plants! Text and photos: Panayoti Kelaidis

We love rock gardens for many reasons: their year around appeal, the spectacular bloom in springtime, the way every plant summons up images of places you've hiked and loved...and then there is the whole scientific aspect: creating just the right soil mix, the perfect aspect, the right watering regime. It's almost like solving a puzzle, which brings me to one of the biggest puzzles of my professional life: namely Patagonian plants. A few—like *Bolax glebaria* (or is it *Azorella trifurcata* again?), a few calceolarias, some hardy cacti (for heavens sake) and a handful of other Patagonians have settled into our gardens comfortably. In 2001 I went on a collecting expedition funded by the Betty Ford Alpine Garden in Vail with Nicola Ripley (who is now their CEO). We brought back more than 200 accessions of seed of all manner of Andean gems. Not one of these persisted to this day.

Contrast that with South Africa: dozens of collections from my early travels there are not only persisting, but have become widely distributed through nurseries worldwide: a bevy of *Delosperma* obviously, but also *Othonna capensis*, *Diascia integerrima* 'Coral Canyon', *Kniphofia caulescens* and many many more. I have fretted about this phenomenon for some time. And I think I've come to learn some of the reasons for the radically different performance of plants from these two Antipodal regions.

The soils of South Africa are derived almost entirely from various sedimentary rocks as well as basalt (and even a bit of limestone here and there), forming a rich, loamy matrix rich in microflora and fauna—in other words they grow in soil not that different from the soils in our gardens. No matter how much we try to "exclude" our native soils in our rock gardens, worms and weather and time will eventually bring elements of that soil even into the purest rock gardens and crevice gardens—and the rich microscopic soup of fungi, bacteria, microorganisms of all sorts will quickly devour any delicate alpine adapted to more sterile conditions in nature.

When I visited South America, I quickly noticed that the Andes were far steeper than any mountains I'd ever seen (and I've seen a lot of mountains). There were hardly any of the lush, grassy meadows I knew from the Alps, Rockies, Himalayas, Caucasus—in other words, everywhere else! Practically every plant I found was growing on unbelievably steep, moving screes of andesite—a volcanic rock named for the Andes. Even the more "levelish" places (in

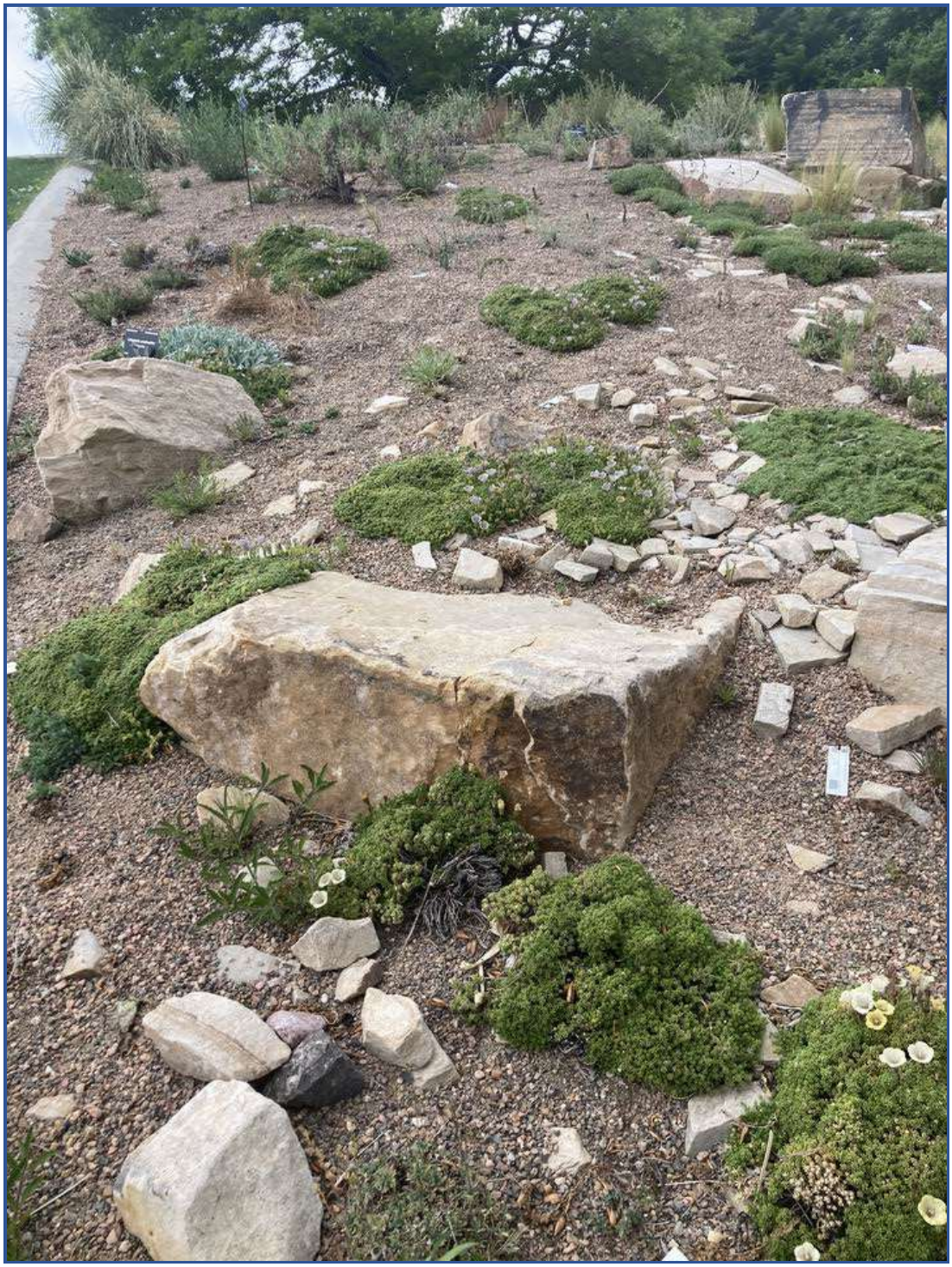
quotation marks—there were no truly level places anywhere in the Andes) were basically slightly more stable screes. There hardly seemed to be any crevice plants growing anywhere because the rock must shatter easily, and perhaps andesite isn't prone to creating the sort of crevices we're used to in regions of limestone or sandstone.

In 2014 my colleagues (chiefly Mike Bone, Kevin Williams and Sonya Anderson) conceived of a garden to highlight plants from the worlds 4 steppe regions. Didier Design Studio—a Landscape Architecture firm that has designed gardens for many botanic gardens—plotted and oversaw the construction of the Steppe Garden at Denver Botanic Gardens (henceforward referred to as DBG). All four of the consequently built and planted gardens have been revelatory, but none more so than the Patagonian section which occupies a very generous, mostly North facing slope dropping down to the rectilinear water feature that flows through the entire York Street site of DBG. The slope was contoured and large boulders that resemble andesite (I just realized they may BE andesite!) dot the slope, which consists of a deep layer of a locally produced expanded shale product called Arcosa Lightweight.

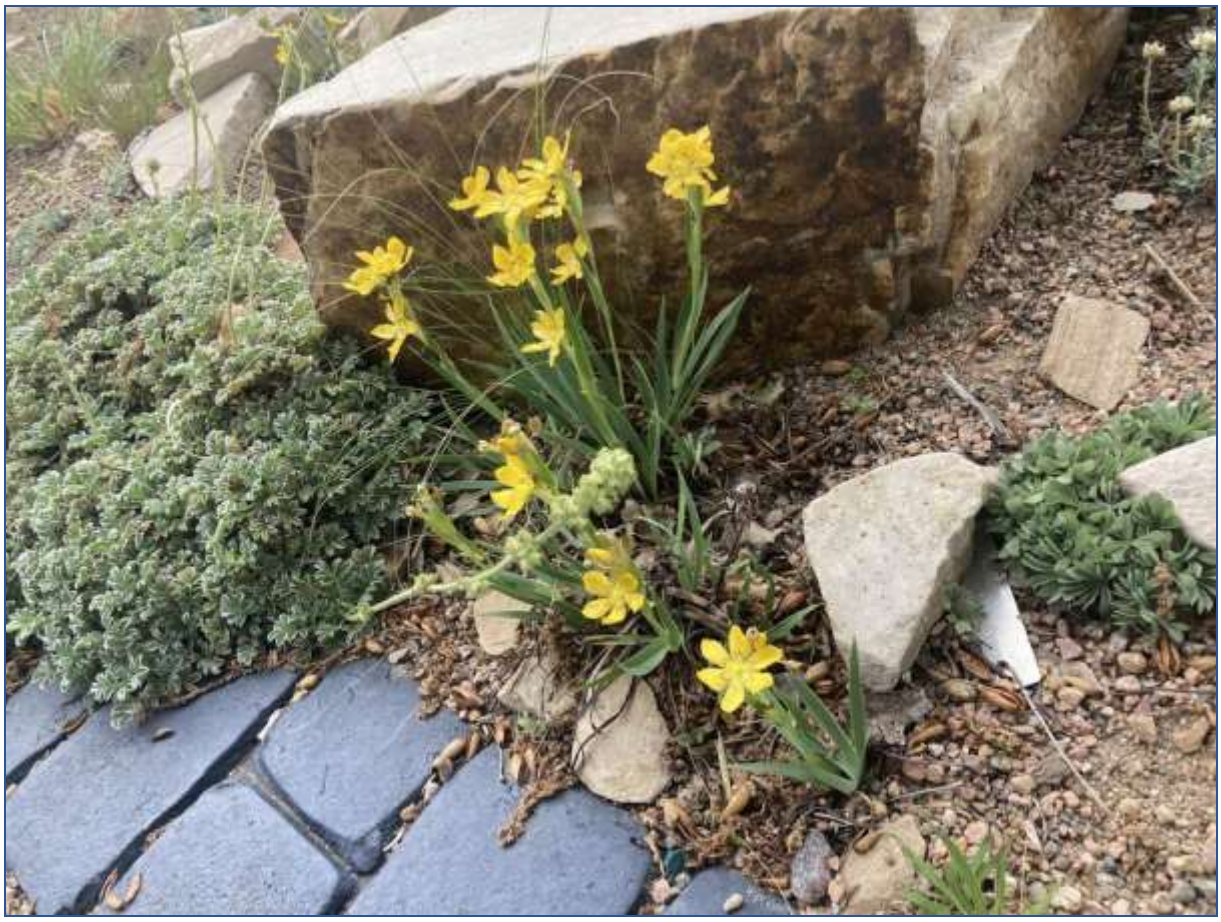
To my astonishment, almost any Andean plant put on this slope seems to thrive. I believe the gallery of pictures accompanying this article will convince you as well. A few, such as *Sisyrinchium macrocarpum* and *Oxalis squamata* had proved to be good growers before in other gardens. And *Bolax glebaria* thrives here as it does in almost any good rock garden setting. But the kicker for us has been the spectacular success of *Petunia patagonica*, which forms massive cushions studded with hundreds of flowers for most of spring. We were not too surprised that *Anemone magellanica, Antennaria magellanica* and *Armeria tweedyi* are proving adaptable—since they are so closely allied to taxa growing around the world. One of the stars for me in this garden is *Calceolaria arachnoidea*, that has formed a big mound smothered in flower stems for much of the spring and early summer. The fantastic success with *Junellia micrantha* and finally *Viola cotyledon* have convinced me that an extremely deep scree, preferably on a slope, consisting of a relatively sterile expanded shale such as Arcosa Lightweight is key to growing Patagonian alpines in cultivation.

I have recently had help from Ryan Keating building a crevice garden on a rather steep slope alongside the southwest corner of my home that consists largely of Arcosa Lightweight: I am excited to see how some of these might perform for me in that rather different set of circumstances (scree + crevice garden + expanded shale)

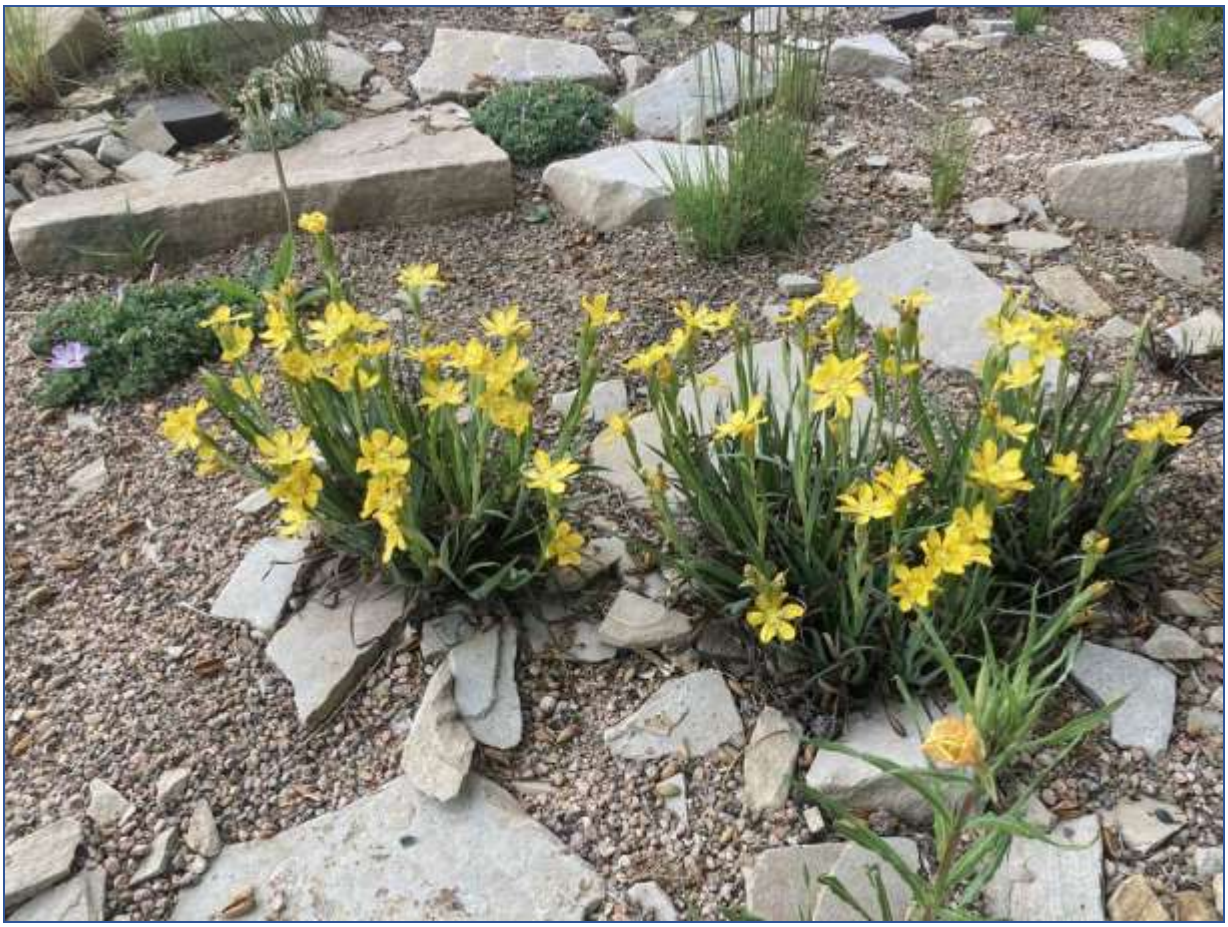
As a postscript I should add that DBG has entered into an agreement with INTA (Instituto Nacional de Tecnologia Agropecuaria)—the Argentine government agency that oversees collection and growing native plants. They have provided a wide suite of Patagonian plants for testing at DBG. Most of these are not from the high mountains, but from the lower, more level, steppe like habitats. I have been shocked to see that most collections from there seem to adapt easily to our loamy soils at the Chatfield test site where they are being grown for research and observation. But that is another story, which is still unfolding.

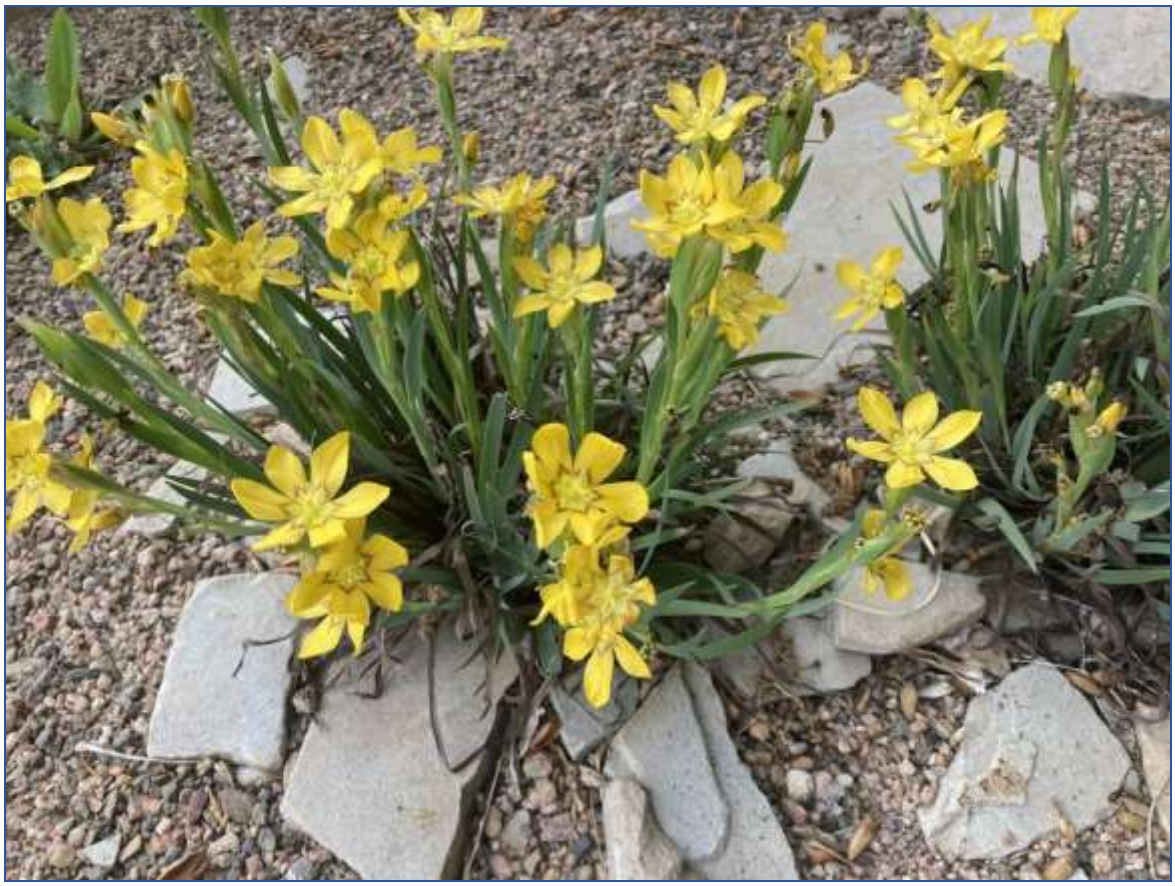


South end of Patagonian garden section of Steppe gardens at DBG 2022-05-27

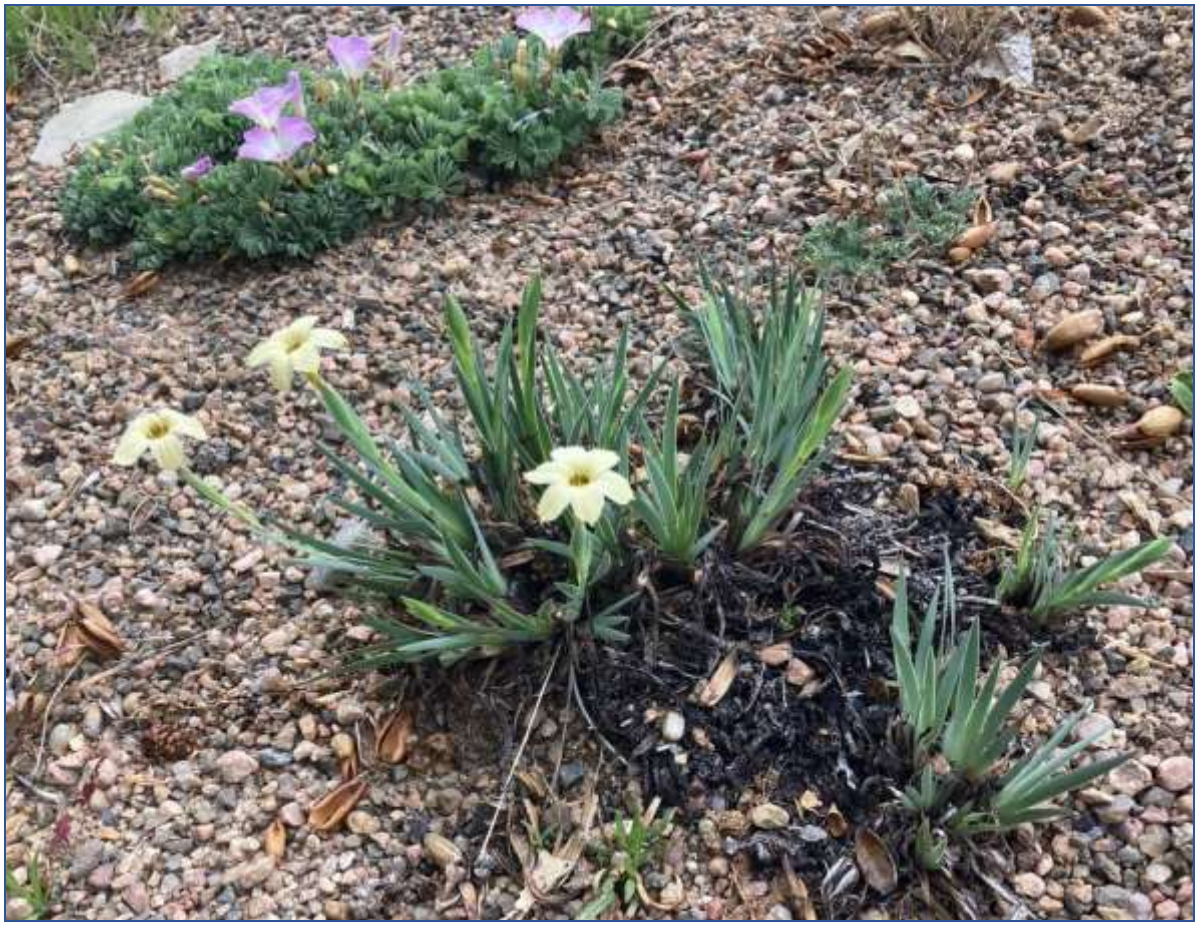


Sisyrinchium macrocarpum

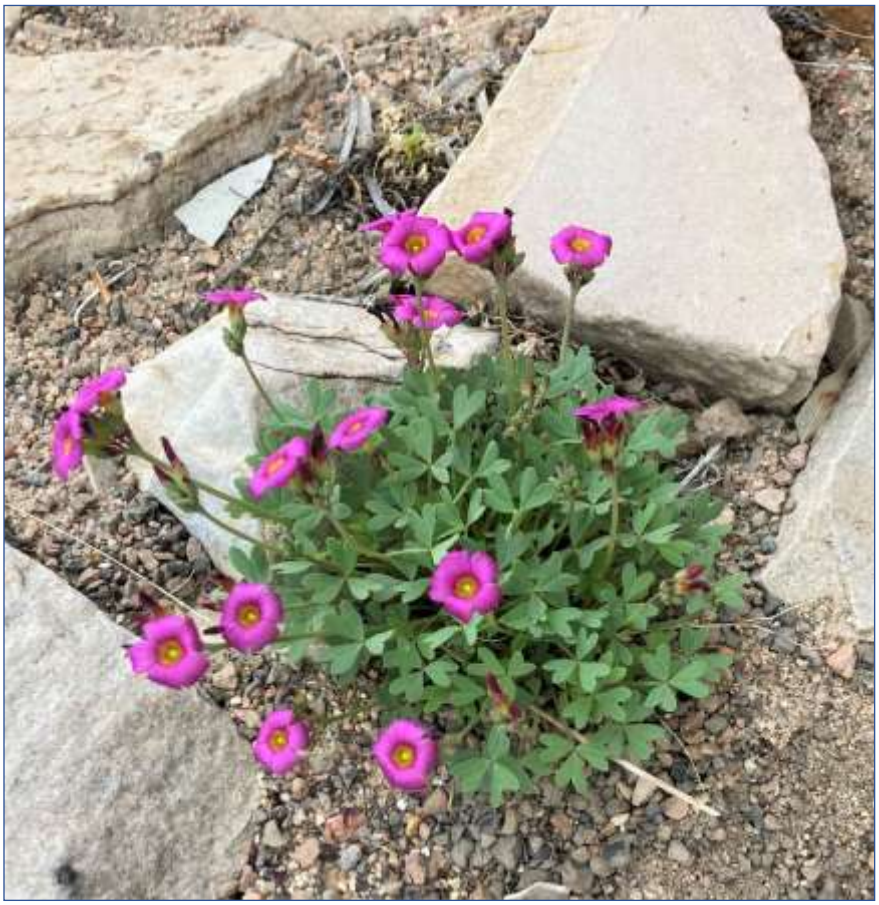




Sisyrinchium macrocarpum

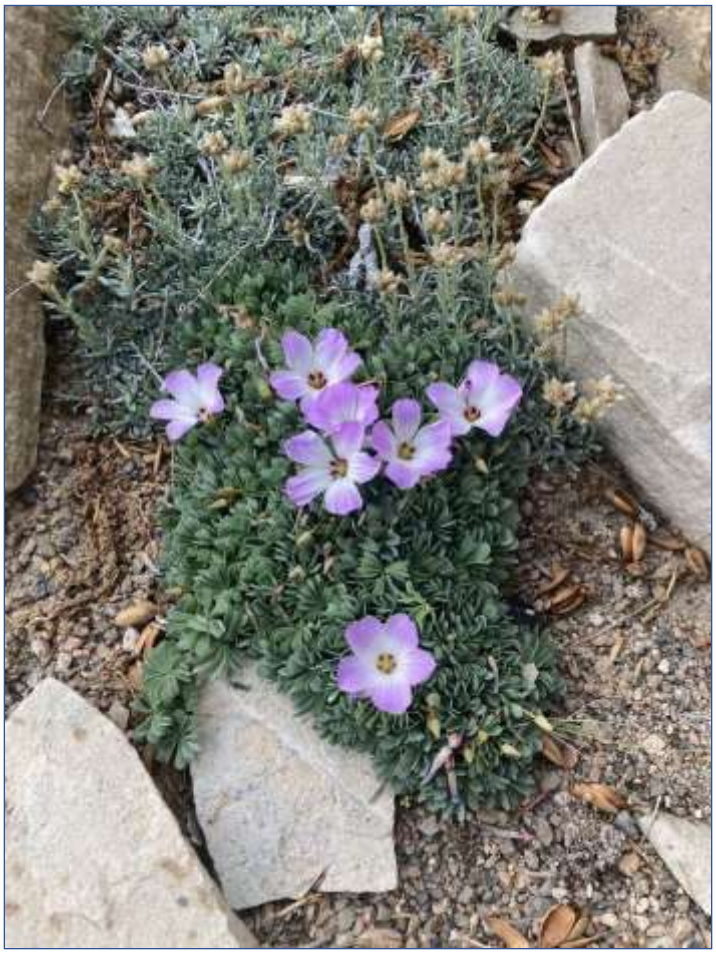


Sisyrinchium arenarium



Oxalis squamata

Oxalis adenophylla and
Antennaria magellanica



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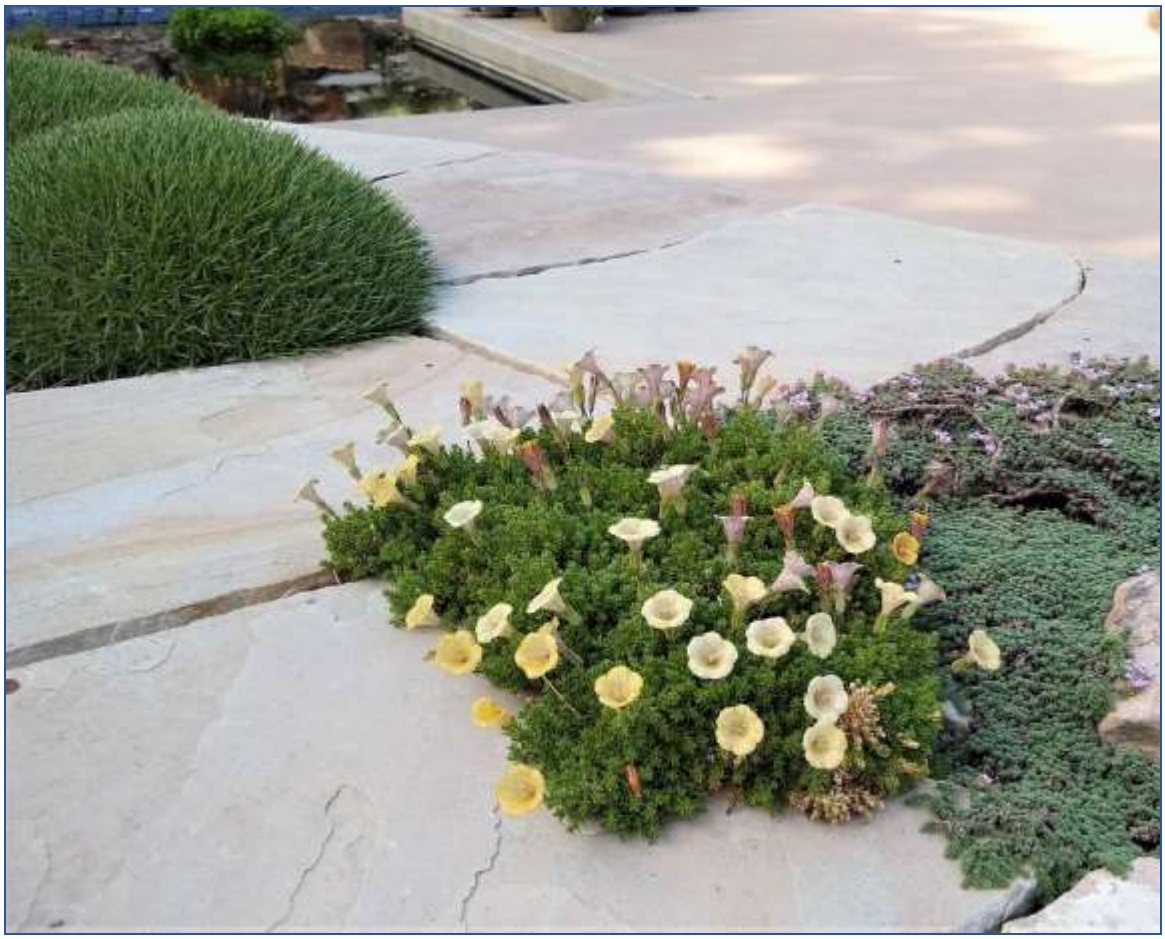
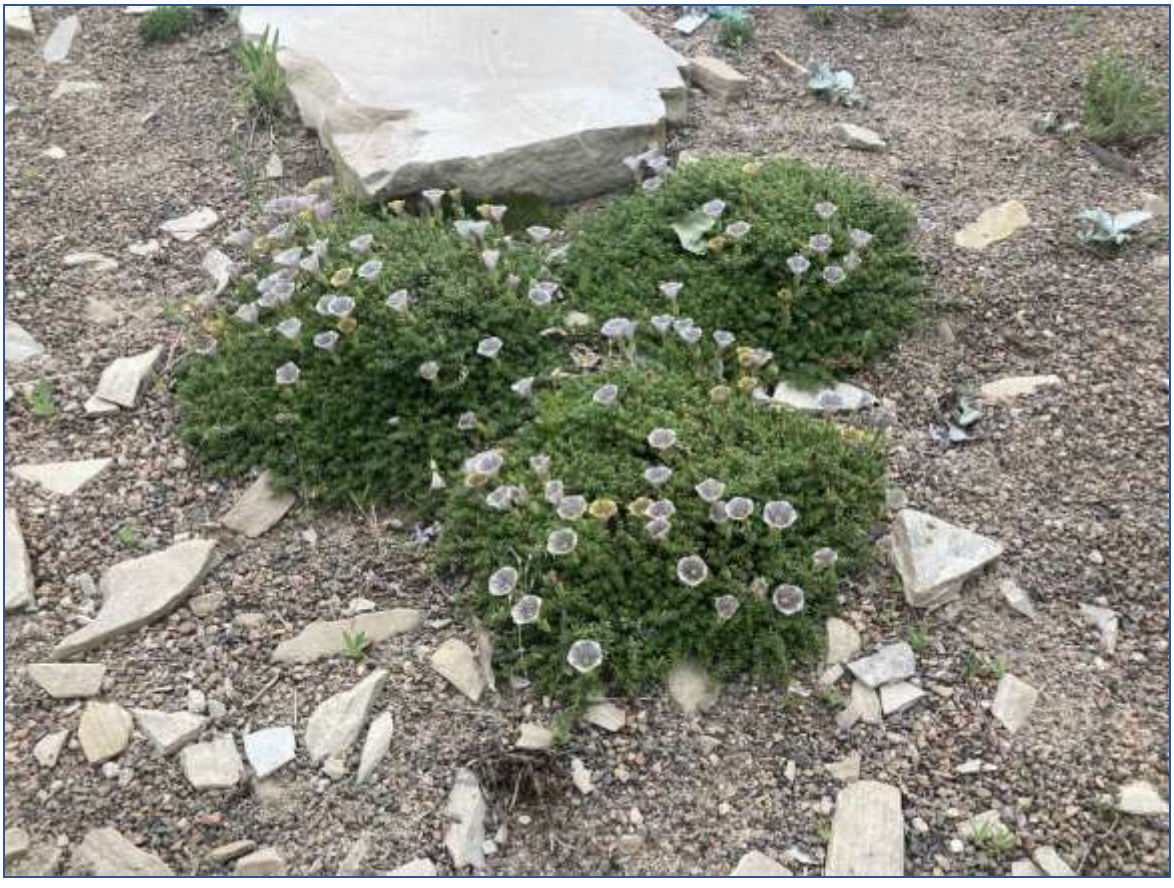
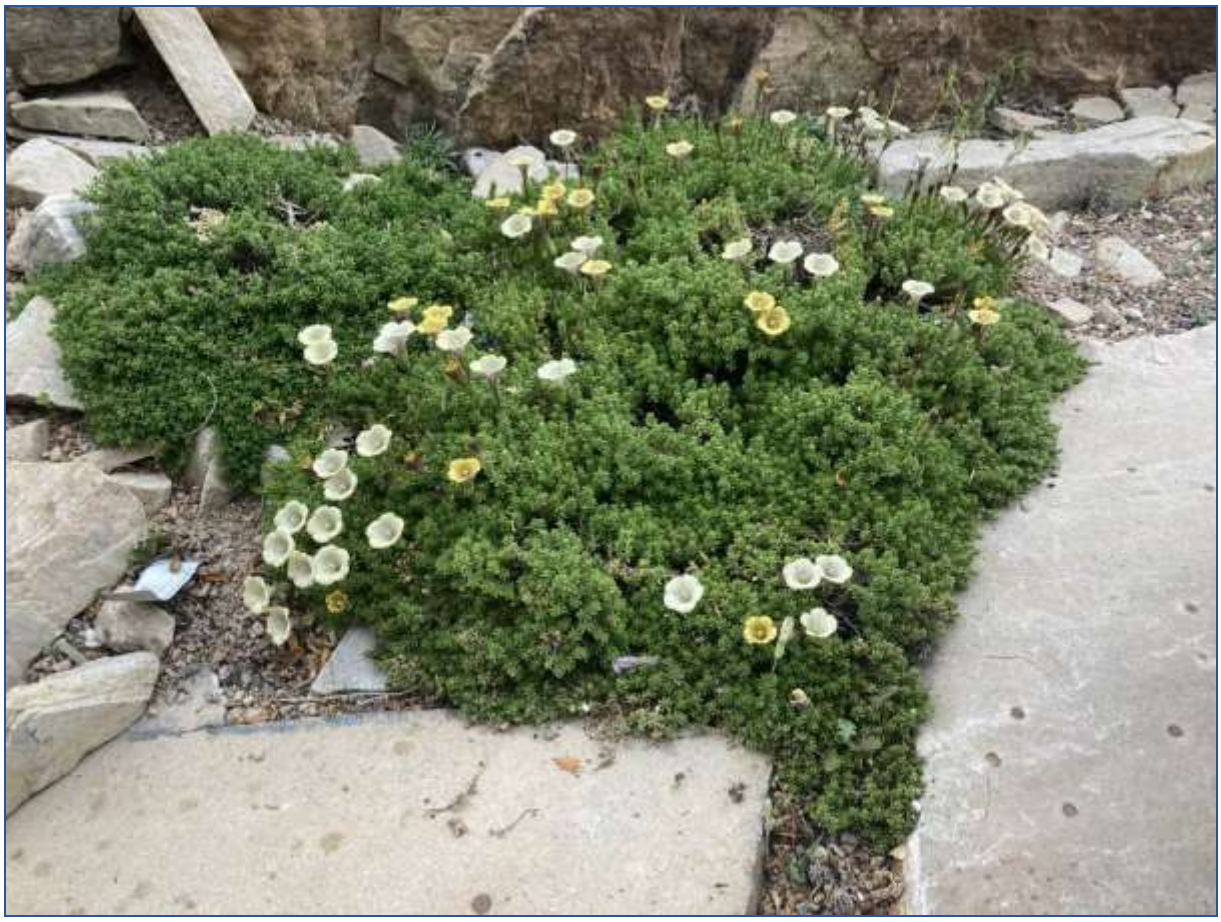


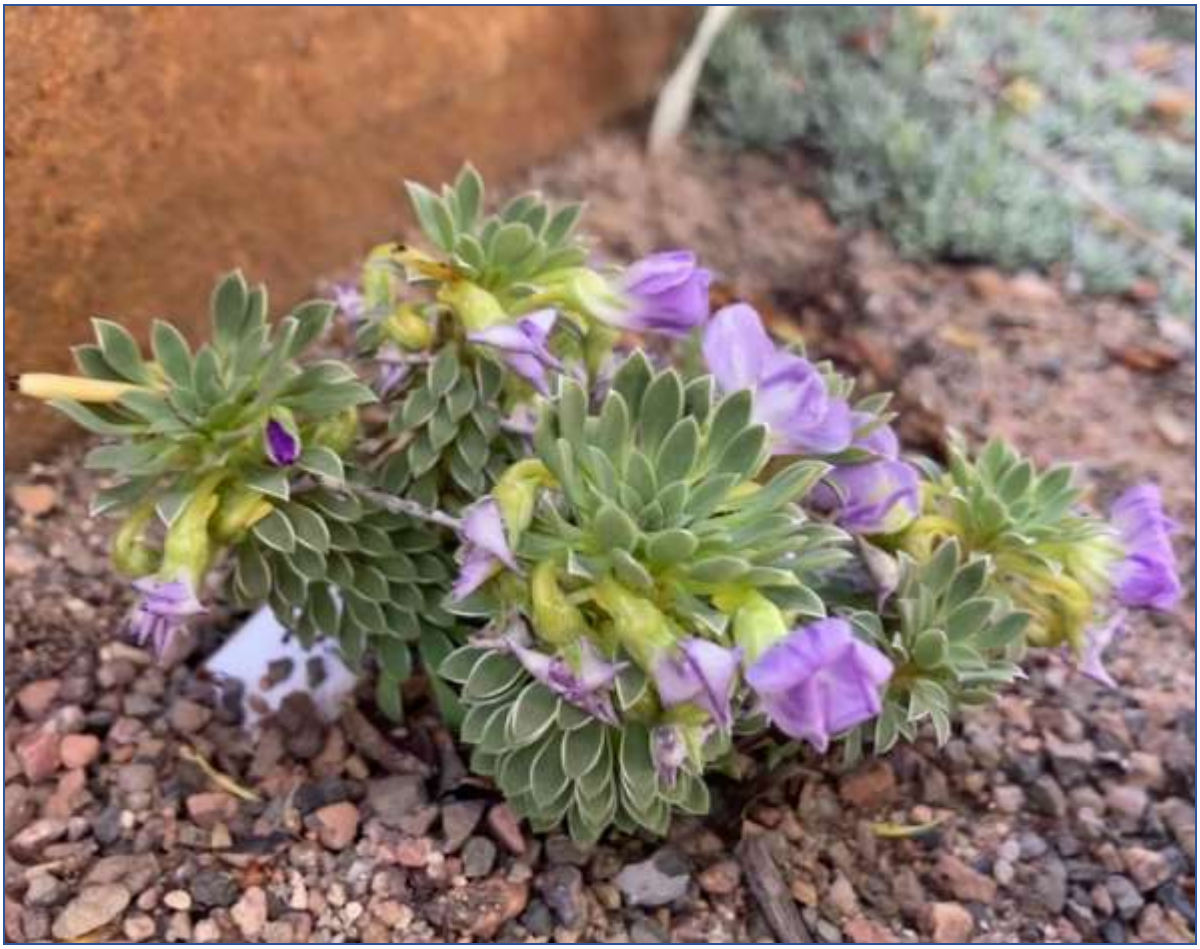
Petunia patagonica





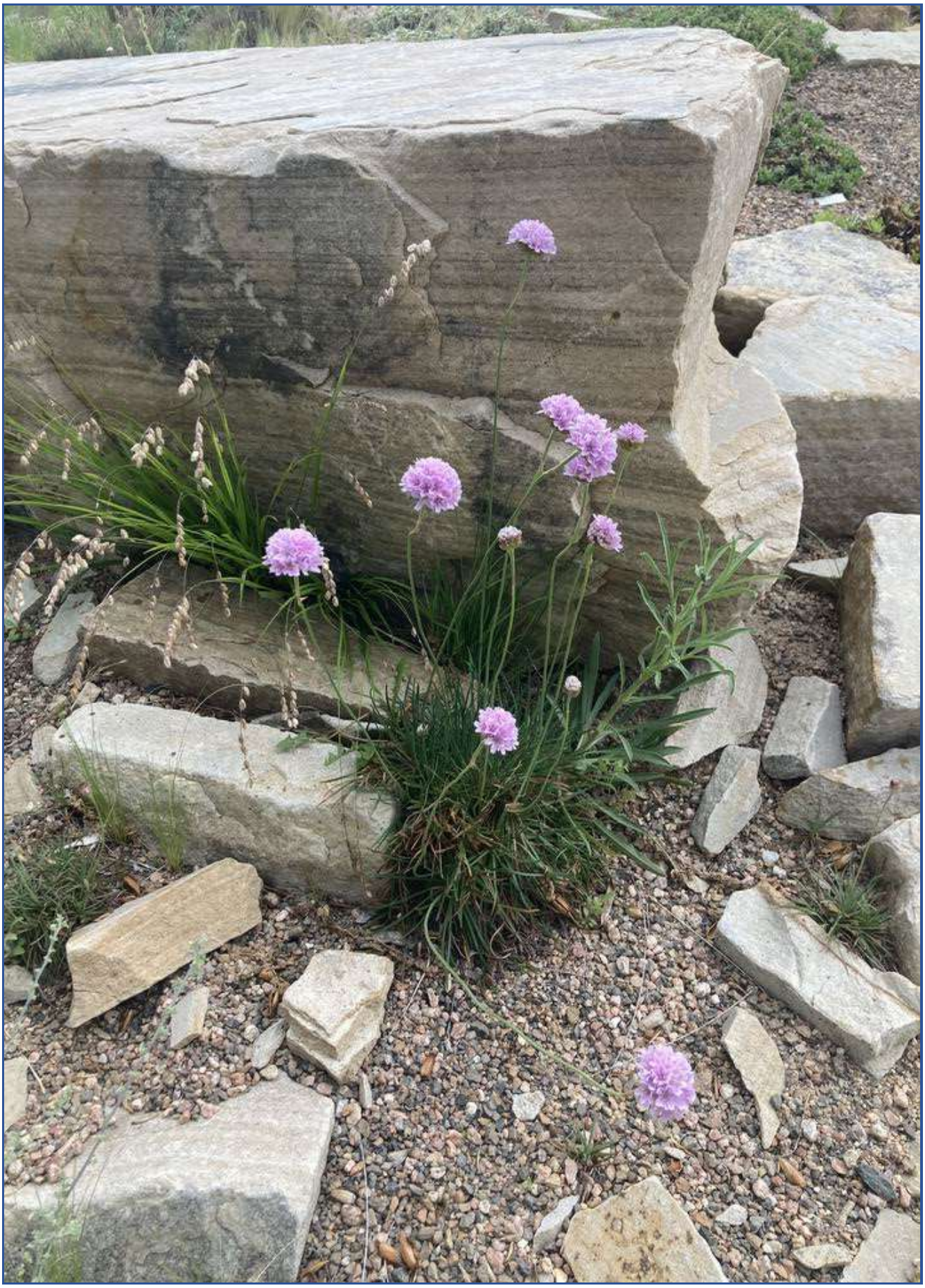
Petunia patagonica

Petunia patagonica

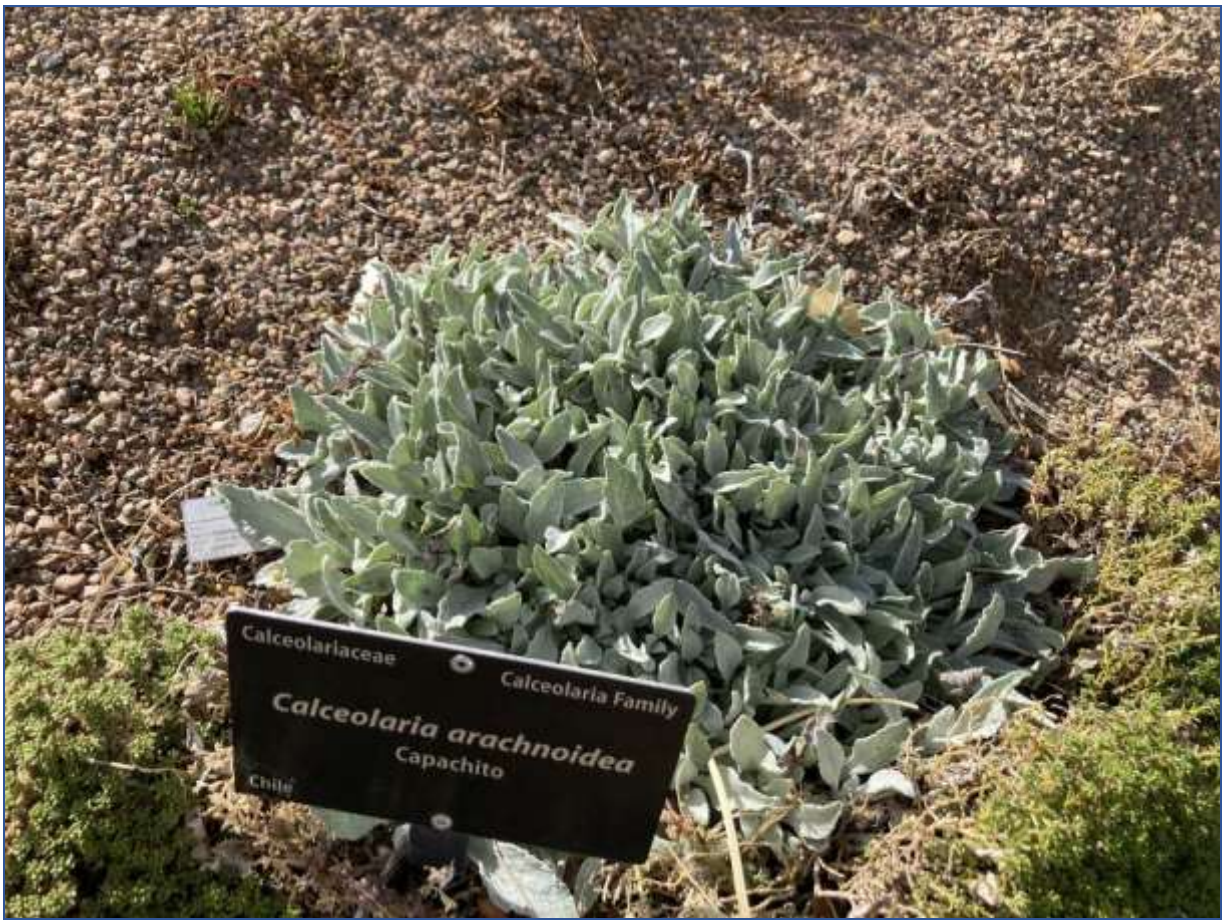


Viola cotyledon

Anemone magellanica



Armeria tweedyi



Calceolaria arachnoidea

Calceolaria arachnoidea

Junellia micrantha