

# THE ROCK GARDEN 147



July 2021

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# The Rock Garden

The Journal of the  
Scottish Rock Garden Club  
July 2021

## Number 147

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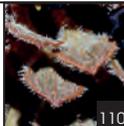
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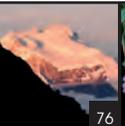
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## THE ROCK GARDEN

is published twice yearly by the Scottish Rock Garden Club  
on 31<sup>st</sup> January and 31<sup>st</sup> July

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The Editor welcomes articles, photographs and illustrations on any aspects of alpine and rock garden plants and their cultivation. Authors are encouraged to submit material electronically but articles may also be submitted in manuscript. Digital images are particularly welcome; high quality prints or drawings may also be submitted.

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The normal deadlines for contributions are 1<sup>st</sup> November for the January issue and 1<sup>st</sup> April for the July issue. These dates also apply for material for the Yearbook and Show Schedules.

Journals usually arrive in February and August. Please contact the Subscriptions Secretary in case of non-arrival (see inside front cover).

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Looking back over 2021 the glasses are misted; there is sadness but also joy. On April 7 our great



plantsman Henry Taylor died. Henry & Margaret are famous as plantspeople, travellers, collectors, tour leaders, authors, speakers, exhibitors and more. They introduced plants to cultivation – notably Himalayan androsaces – and raised numerous garden-worthy hybrids.

All who attended their talks recall their knowledge and infinite generosity of masses of plants for gifts or raffles. They shared their skill in propagation with SRGC and AGS members alike and were generous in exchanging information with plant lovers around the world, sometimes to help with wild-hunting trips. For example, they helped Matt Topsfield plan his ‘narcissus trip’ to Spain “in the footsteps of John Blanchard” and assisted many others. Their formative influence pervades the pages of this journal even to the present day, even in this present issue.

Many of us visited the beautiful garden that Henry & Margaret made, and enjoyed wonderful meals. Henry was vegetarian but Margaret catered for the meat eaters – a small example of the attention to detail that was evident in everything the couple did. Their association with the SRGC is long – the whole alpine world is diminished by the death of Henry and it is hard to think of Margaret without Henry beside her. But the world still turns, and we still see Henry’s footprints ...

There has been joy too. Janis Ruksans received an award from the RHS Bulb Committee. Its chair, Teresa Clements, wrote “The committee has chosen you as the first recipient of the annual Sir Daniel Hall Award in recognition of your significant personal achievement relating to bulbs. Your commitment to cultivation, exploration and education has produced an impressive collection of work that earned the Committee’s commendation. Thank you and congratulations! A D Hall (1864 - 1942) was a prominent figure, a government advisor in education and science, a specialist in tulips. His books, *The Book of the Tulip* and *The Genus Tulipa* are still reference works. Your interests in bulbs and politics make you worthy recipient of an award in honour of Daniel Hall, you have a lot in common.” We congratulate Janis on such news.

We write in a mood of cautious optimism. Thanks to the skills of scientists and health organisers, and despite the uncertainties of politics, we may reasonably look forward in some countries to a gradual resumption of many of our normal activities in 2022. We hope others will follow suit. If so, it is increasingly time to look to the pleasures of a spring of future flowering rather than the autumn of recent decline.

**Anton Edwards and Margaret Young**





## Breeding x *Rhodoxis* Jaap Duijs

**X** *Rhodoxis* plants are hybrids between *Rhodohypoxis* and *Hypoxis*. Most rock gardeners have a collection of *Rhodohypoxis* plants grown in pots, filled with many attractive little flowers in bright pink, red or white colours. Each year these plants flower for many weeks usually from late Spring to early Summer. *Rhodohypoxis* originates from the Drakensberg Mountains, where it grows at two to three thousand metres. At these heights, the weather is contrary to expectations for South Africa. Winter conditions are cool and dry, and in Summer there are moderate temperatures with more than enough rainfall. *Rhodohypoxis* are small cormous plants with distinct little flowers. It is especially the folding of the petals that gives them a unique closed eye effect. Each flower lasts for two to three weeks and the total flowering time is from four to eight weeks. After a century in cultivation, more than 150 cultivars have been selected out of a handful of *Rhodohypoxis* species.



*Hypoxis* flowers with a visiting bee

Within the Hypoxidaceae family, the genus *Hypoxis* is most closely related to genus *Rhodohypoxis*. About thirty of the ninety or so *Hypoxis* species occur in South Africa, where they grow in dry grasslands. Almost all species have more or less identical bright yellow flowers. *Hypoxis* species have open hypogynous flowers. In such flowers the perianth and stamens are attached to the receptacle below the gynoecium (the parts that produce ovary and seeds); the ovary is superior to these organs, and the remaining floral organs arise from below the point of origin of the carpel. The stamen and style are therefore visible. Flowers can open and close by movement of the petals. In South Africa, flowers usually close at midday. There are up to seven flowers per stem. It is mostly bees and sometimes hoverflies that pollinate *Hypoxis* flowers. The plant habit and flowering are rather untidy. The long elongated hairy leaves keep growing during the season. Long slender flower stems are often barely firm enough to hold the many flowers per inflorescence. Although *Hypoxis* plants flower abundantly for about six months, only a few plant lovers grow a limited number of *Hypoxis* species. As far as I know there has been no breeding to improve plant and flower qualities.

Twenty five years ago I found two *Rhodoxis* hybrids from seeds germinated in pots of *Agapanthus* that stood nearby. This reminded me that this also sometimes occurs in Nature. In South Africa, near Hebron Farm, three natural hybrids have been found: x *Rhodoxis hybrida*, a small plant with many little white flowers, x *Rhodoxis* 'Hebron Farm Pink' – also a small plant but with many little pink flowers; and x *Rhodoxis* 'Hebron Farm Red Eye', a slightly larger plant with white flowers and a distinct red eye. As flowers of both parental plants are so different in



x *Rhodoxis* flower

morphology, hybrids are likely to show a lot of variation. This idea is well in line with the different flower phenotypes that occur in Nature. My belief, that more diverse and potentially very beautiful flower types could be obtained, triggered me to start breeding for x *Rhodoxis*. Another goal was to determine which species and cultivars of *Rhodohypoxis*, *Hypoxis* species and x *Rhodoxis* cultivars could be crossed with one another.

In the first years of breeding, it cost me little time. In summer months I walked by the pots and collected seeds. However, over the years one can easily be overloaded by the number of pots to be taken care of as it had to be done in addition to my work as a nurseryman. That is why I tried to breed in a more effective way. I limited myself to open pollination and strict selection of the seedlings. I do not mind throwing away many seedlings every year. On the one hand I have neither enough time nor area for every seedling, while on the other hand it is my idea that each new year will bring more than enough new seedlings to select from. Further, every subsequent year more crossings with new seedlings can be made and there is a good chance their offspring will reveal even more variation.

I first give you a more detailed description of my way of breeding. As I go for natural pollination it is important to place the two plants to be crossed away from other plants. In the first weeks of July most have lots of flowers. Bees and hover flies will be busy pollinating on sunny days. From mid-July till the end of August I collect ripe seeds every day and sow them right away in P11, about 100 per pot. In six to eight weeks about 20 seeds per pot germinate. In late Autumn, pots and young plants go in a polytunnel. By the end of December, a little corm of around one

mm has grown. From then on till April the corms are in rest. Regrowth starts in April when spring temperatures are rising. In July – so within one year – the first seedlings start flowering. I am always excited to see these first flowers opening. Every day you can be surprised by flower colour, size, shape and other features. Many seedlings grow well and some of these plants have even twenty to thirty flowers in the first year. In Autumn, I make a first selection of plants that really stand out. In the next Spring, I only want to repot pots with some promising seedlings into larger two litre pots. In this way plants have more than enough growing space and can grow together for some years. Growing together with more seedlings gives a useful indication how strong the new plants are. For me selection on vigorousness is just as important as a special flower. Every year there is a further selection at the end of Summer. After three or four years, I select a limited number of plants and propagate them for a few more years until there is enough stock to start selling. Over the years I have followed several breeding lines to find many new attractive x *Rhodoxis* plants. Here is an impression of seedlings from my crossings:

### ✻ ... with *Hypoxis*

x *Rhodoxis* 'Sandy' (2012) is a cultivar with hairy long *Hypoxis*-like leaves, open white flowers with a distinct eye. Plants grow vigorously and flower from early June till the end of October with many flowers per inflorescence on sunny days. Each flower has a limited flowering time.

x *Rhodoxis* 'White Sandy'



x *Rhodoxis* 'White Sandy' (2013) is a white mutant of x *Rhodoxis* 'Sandy' (2012). It is similar to 'Sandy' but has many lovely white flowers.

x *Rhodoxis* 'First Yellow' (2019) is the first seedling in over twenty years, from crossings or back-crossings with *Hypoxis*, that has the yellow colour of *Hypoxis* flowers. Plant habit is still close to *Hypoxis*. I think it will take several more crossings before there will be a compact attractive plant with yellow flowers.



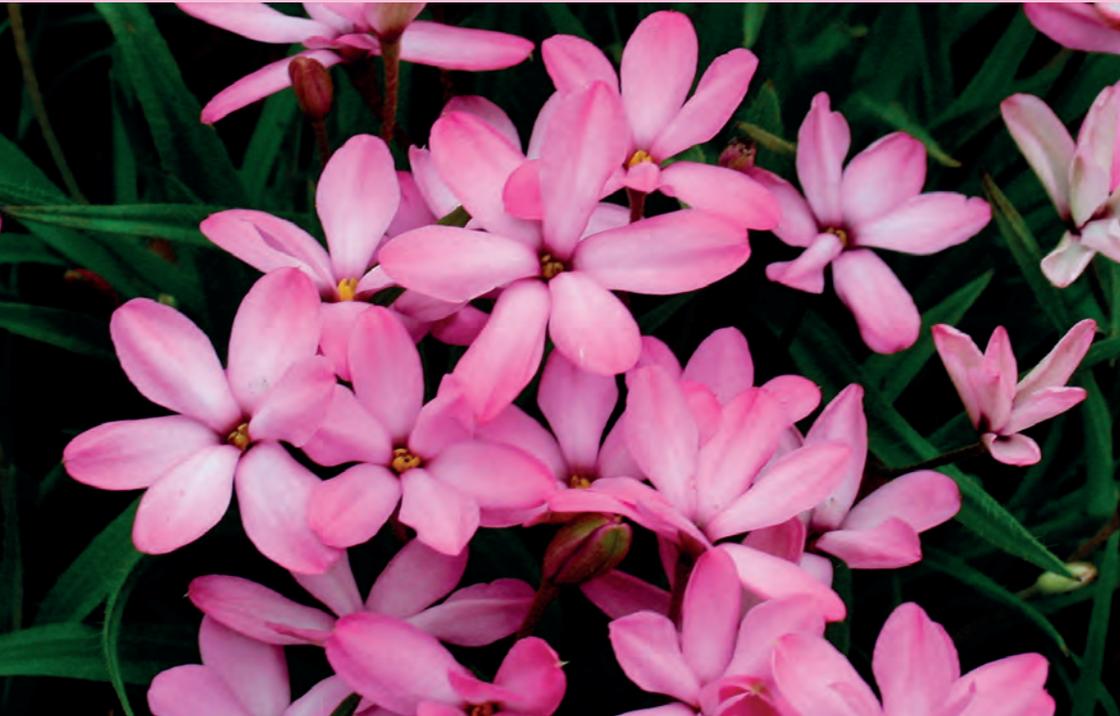
x *Rhodoxis* 'First Yellow'

I have found that crossings between closely related *Hypoxis* species and *Rhodohypoxis* or *Rhodoxis* cultivars do give me some interesting hybrids, although in rather a low percentage. Most of the seedlings I obtain are not intermediate between their parents. On the contrary, I have discovered that they are usually closer to *Hypoxis* in their leaves, flowers and larger corms. These plants flower from the end of May till in October.

✿ ... with *Rhodohypoxis*

x *Rhodoxis* 'Jenny' (2012), a cultivar from a cross with *Rhodohypoxis confecta*, is a larger plant with larger open flowers on longer stems. Its colour is light pink with blush.

x *Rhodoxis* 'Jenny'





x *Rhodoxis* 'Fairy Kisses'

x *Rhodoxis* 'Fairy Kisses' (2012) is from a cross with *Rhodohypoxis* 'Jacqueline Potterton'. A plant with many light pink flowers on slender stems, it has lovely larger flowers with small closed eyes.



x *Rhodoxis* 'Fairy Snow'

x *Rhodoxis* 'Fairy Snow' (2020) is a white mutant of *R.* 'Fairy Kisses'. Growth and flowers are similar. Flowers are pure white.

x *Rhodoxis* 'Sandra' (2012) is one of the smaller x *Rhodoxis* cultivars. It has many small pink flowers with almost closed eyes.

x *Rhodoxis* 'Sandra'





*x Rhodoxis 'Klazien'*

**x *Rhodoxis 'Klazien'*** (2019) is a firm plant with thicker leaves. The colour of the larger firm flowers is a dark pink. It is growing well.



Seedling of *x Rhodohypoxis 'Pintado'*

**x *Rhodoxis 'Pintado'*** so far has given several *x Rhodoxis* seedlings, larger plants with different bi-coloured flowers, flowering for a prolonged time and growing vigorously. In the coming years there will be enough stock of these plants.

*x Rhodoxis 'Semiplena'*



**x *Rhodoxis 'Semiplena'*** comes from a cross between *Rhodohypoxis 'Fred Broome'* and *x Rhodoxis*. I selected a seedling with semi-double flowers. So far, I have not seen another double flower like *x Rhodoxis 'Semiplena'* (2013).



x *Rhodoxis* 'Sue'

✻ ... with *Rhodoxis* 'Hebron Farm Pink'

x *Rhodoxis* 'Hebron Farm Pink' is a plant that easily crosses with several *Rhodohypoxis* and x *Rhodoxis* cultivars. After crossings with *Rhodohypoxis deflexa* I found the smallest x *Rhodoxis* cultivars so far: x *Rhodoxis* 'Sue' (2012) and x *Rhodoxis* 'Charlot' (2016). Both are growing more vigorously and have more little flowers than *R. Deflexa*.

x *Rhodoxis* 'Otterlo Ruby' (2010) is one of the largest cultivars. Its flowers have narrower petals. Larger x *Rhodoxis* plants also have larger corms. In our country more and more are planted in rock gardens with permeable soil and some have grown and flowered for over ten years.

x *Rhodoxis* 'Otterlo Ruby'





x *Rhodoxis* 'Nina'

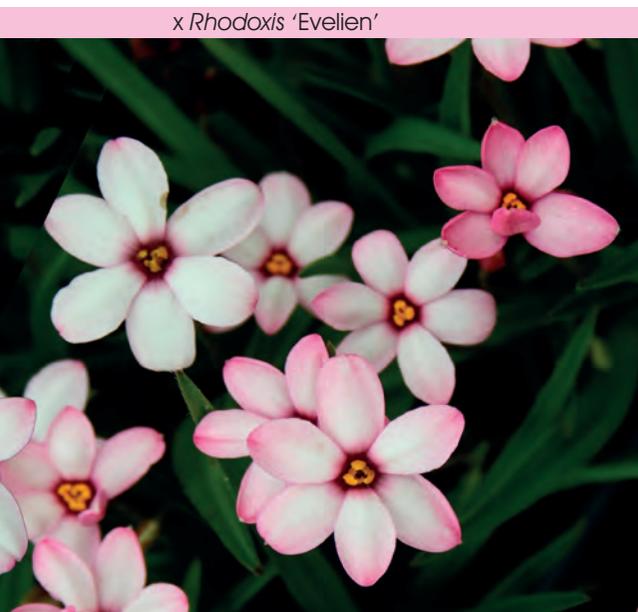


x *Rhodoxis* 'Nanda'

x *Rhodoxis* 'Nina' (2016) is a cultivar with many little flowers. The three inner petals are smaller and lighter pink than the three outer petals. This plant grows vigorously. The leaves keep growing during the season.

x *Rhodoxis* 'HF Pink' has flowers that tend to close on rainy or colder days. This feature is passed on to the offspring, and in further crossings this character is also passed on.

✿ ... with open flowers



x *Rhodoxis* 'Evelien'

x *Rhodoxis* 'Anna Maria' (2008) originates from a cross with *Hypoxis setosa* and was one of my first seedlings. The plant has a rather untidy growth habit with open flowers. Over the years it has been used in several crossings. Seedlings as x *Rhodoxis* 'Evelien' (2014), x *Rhodoxis* 'Trijntje' (2017) and x *Rhodoxis* 'Aukje' (2018) have more compact habit and firmer open flowers. The large anthers add to the attractiveness of the flower.



*x Rhodoxis 'First White'*

### ✿... for white flowers

It took years before I found the first *x Rhodoxis* seedling with really white flowers. *x Rhodoxis 'First White'* (2012) is a smaller plant with lots of little white flowers and it flowers for months. Until this, crosses always showed a little bit of pink in the petals or a little red eye. In the following years I have found several more plants with white flowers. *x Rhodoxis 'White Ria'* (2017) is a sport of *x Rhodoxis 'Ria'* (2011). *Rhodoxis 'Fairy Snow'* (2020) has distinct white flowers and is a sport of *Rhodoxis 'Fairy Kisses'* (2012). In recent years I also have found more white *x Rhodoxis* seedlings that look very promising.

*x Rhodoxis 'Naatje'*





*x Rhodoxis 'Solène'*

### \* ... special flowers

In flowers of *x Rhodoxis 'Hendrika'* (2014) the three inner petals are much shorter than the three outer petals. This mutation gives a distinct character. In seedlings of this cultivar, flowers may be found with smaller petals such as in *x Rhodoxis 'Drieka'* (2019).

*x Rhodoxis 'Naatje'* (2017) is a cultivar with misshapen inner petals. It is a smaller plant but grows and flowers well.

*x Rhodoxis 'Nina'* (2016) is another excellent growing cultivar with smaller inner petals.

*x Rhodoxis 'Solène'* (2016) is a plant with many special flowers. The colour of the backside of the petals differs from that of the inside, giving a very distinct flower.

### Conclusion

After 25 years of breeding I think that my initial idea that hybrids between *Hypoxis* and *Rhodohypoxis* would have tremendous variation is true. Compared to parental plants there is much more variation in plant habitat, flower size, structure and flower colour in *x Rhodoxis* cultivars. Every year I still see seedlings that surprise me. Variation in *x Rhodoxis* continues to increase. I think this is a start in exploring the possibilities. There will be more good plants in the coming years. Because flowers of *x Rhodoxis* can be recognized from afar and there are so many cultivars, I think *x Rhodoxis* can be called a subgenus of genus *Hypoxis*. In my experience only a few *Hypoxis* species are genetically close enough to *Rhodohypoxis* and *x Rhodoxis* that crossings are possible. Luckily almost all offspring is fertile. *x Rhodoxis* plants are growing very well. There is certainly positive heterosis, otherwise known as hybrid vigour.

# The Yellow Peril

Brian & Shelagh Smethurst



Weeding is one of the chores of gardening we are obliged to expect and accept, but we wonder if other members of the SRGC have as much trouble with *Oxalis corniculata* as we do – at least, we think it is *O. corniculata*. W Keble Martin in his wonderful *Concise British Flora* calls it Yellow Sorrel, and it is found chiefly in southern England. But it must have travelled. Northward. Will Ingwersen writes in his *Manual of Alpine Plants*: “no one who has been pestered by this fiendish weed would knowingly allow it to enter his garden. Avoid it like the plague.” That sounds like it. There are lots of oxalis – from our own pretty wood sorrel *O. acetosella* to the beautiful ones from South America – but here in Bury we got this one!



It looks innocent enough with its little yellow flowers and trifoliate leaves. There is no square centimetre of garden that it is not in, has not been in, or will not shortly be in. The time and effort to eradicate it is considerable and could be much better spent. It does not lift the human spirit one bit. Keble Martin tells us it is an alien and naturalised – and it is certainly the latter.

To get rid of it, I (Brian) seize my old trusty two-pronged grubber, insert it, and try to tease out the roots, some as thin as cotton thread. My aching fingers push into the soil to extract them all, which I seldom manage to do; it plays havoc with my nails. This oxalis has an annoying habit of entangling itself with the roots and stems of other plants such as



mossy saxifrages, *Dianthus*, Thymes, *Erodium*, *Gypsophila* and any other plant nearby. Its removal results in more of the other plant being damaged than the oxalis. This means that the 'Fiendish Weed' also associates well with moss, pearlwort, and a variety of grasses and so, with luck, you can remove them at the same time.

I tip old compost onto beds and borders to provide an ideal rooting and germinating medium. But as oxalis will cheerfully grow through cracks between flags, it is obviously not too fussy. I use weed killer on paths, which after a few days seems to make it sulk a little, but following another week it's back. I have also tried domestic bleach – same result. I feel that Baudelaire had *O. corniculata* (if such it is) on his mind for his *Fleur de Mal*. I know that after "clearing" an area it will be back there again the following day ... taunting me. This devilish oxalis takes quite well to pot culture, either clay or plastic. Compost is immaterial. It can run around the rim of the pot or invade through the middle of the pot's legal resident. Tweezers, patience, the skill of a surgeon and luck are all required for successful removal.

We see quite a few weedy gardens on our travels, but do not often observe the villain amongst them. You do need to be close to spot it, although we can see it well enough in our own ground. A few days ago, Shelagh and I walked past a small terraced house with a tiny



front garden paved with foot-square (30 cm x 30 cm) flags. Running through every tiny gap in them was – yes, you guessed; a lady was attacking it vigorously. We stopped for a word – we are friendly folk in Bury – and the lady asked what it might be; I told her, and all we could do was commiserate.

So, *Yellow Peril*, you may be persistent but so am I: you'd better watch out; my grubber is coming for you. We hope, dear readers, that your gardens, pots, and containers are forever free of it. Fingers crossed.

Shelagh notices that the SRGC show schedules often include *One Pan Native to Scotland*. We wonder: has it made it that far? ... Hmmm



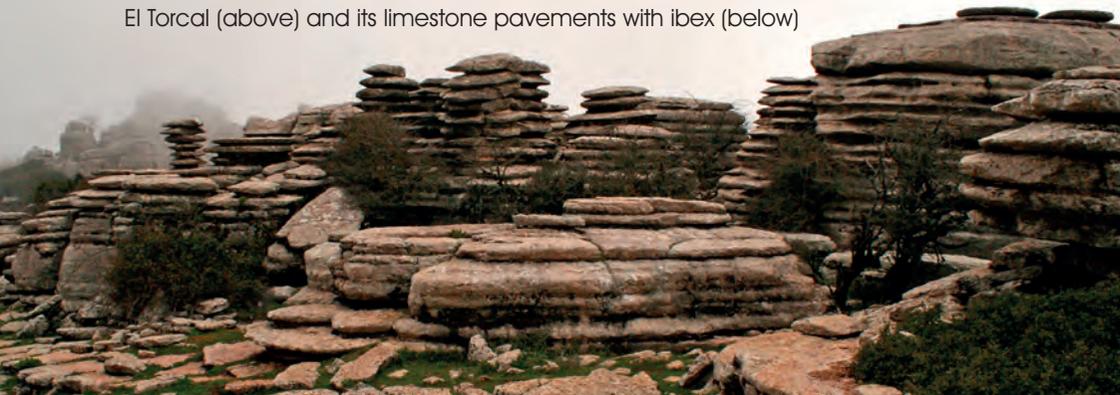
## Andalucia in Spring

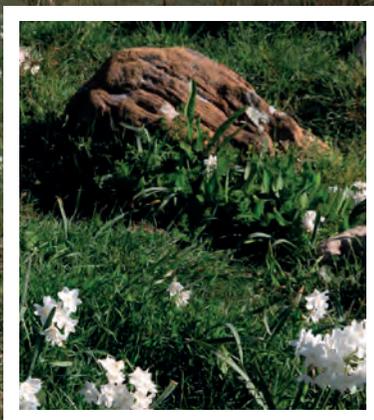
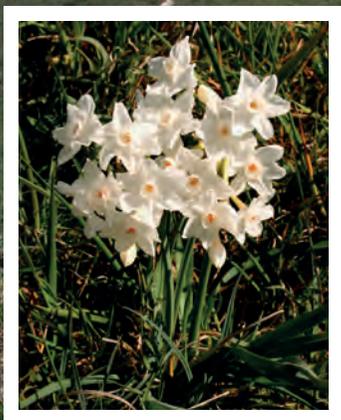
Michael J B Almond

In spring 2015 and spring 2017 we visited Andalucia, staying in the mountains north of the Costa del Sol. In 2015 we were at about 1000 metres north of Málaga from 22 to 29 March, and in 2017 we were at about 750 metres in the small town of Cuevas del Becerro, north-east of Ronda, from 24 March to 8 April. It was the first time we had been in the area since a visit of only a couple of days during a whistle-stop tour of southern Portugal and Spain in spring 1986.

Although in 2017 we spread our wings more widely, over the whole area covered in this article, during our week's stay in 2015 we concentrated on exploring El Torcal de Antequera. El Torcal rises south of Antequera to a maximum height of 1343 m. It is remarkable for its rock formations of weathered limestone and (according to Wikipedia) "is regarded as one of the most impressive karst landscapes in Europe". In Spanish, *Torcal* can be defined as a mountain with *torcas* (caves). When the rocks are wet it is difficult and quite dangerous to attempt to walk any distance from the summit car park. On two visits here, as well as a good view of a wild Spanish ibex (*Capra pyrenaica*), we saw several orchids, including *Himantoglossum robertianum*, *Ophrys lutea* and some magnificent specimens of *Ophrys tenthredinifera*. We also saw

El Torcal (above) and its limestone pavements with ibex (below)





*Narcissus papyraceus* in Los Prados

*Helleborus foetidus*, *Muscari neglectum*, *Paeonia coriacea* (leaves only – but quite different from the *P. Paeonia broteri* we saw elsewhere), *Cynoglossum cheirifolium* (with its white woolly leaves and small, dark-red flowers), *Scilla hispanica* (*Endymion hispanicus*), *Erodium cicutarium*, *Euphorbia* species (similar to *E. myrsinites* but with green rather than bluish foliage), a *Prunus* bush with a mass of white blossom, and an attractive bright yellow potentilla. On 6 April 1986 we had photographed a solitary *Fritillaria lusitanica* near the summit but saw none in 2015 or 2017. The summit is worth visiting for scenery and views but we soon discovered that lower areas were more rewarding for the plant hunter.

Antequera offers picturesque white-washed houses and spectacular prehistoric remains. We found *Asphodelus fistulosus* and *Muscari neglectum* but not much else of interest. On the lower slopes of El Torcal, however, in several locations above the town, all at about 600 metres, we found *Ophrys fusca*, *O. omegaifera* ssp. *dyris*, *O. speculum*, *O. tenthredinifera*, *Orchis olbiensis*, *Anacamptis collina*, *A. papilionacea* ssp. *expansa*, *Muscari neglectum*, *Gagea* species, *Cistus albidus* and *Iris planifolia* with one last weedy flower; it is the only juno species found in Europe and is common in the area we visited, although rarely still in flower at the end of March. Brian Matthew says that it flowers from November to February and occurs in rocky places up to 300 metres, but we saw it growing at heights of up to 1000 metres.

On the western slopes of El Torcal, in los Prados, beside the dirt road below the Cortijo Cantero, there were *Narcissus papyraceus* as far as the eye could see, together with a lot of *Ophrys tenthredinifera* and *O. bombyliflora*, and some *O. fusca* with *O. omegaifera* ssp. *dyris*. In places



Jonquils beside the road up to los Quejigales

there were *Bellis rotundifolia*, *Muscari neglectum*, *Vinca minor*, *Centaurea pullata*, *Erodium cicutarium*, *Orchis olbiensis*, bright red *Valeriana* and pale blue *Salvia* species.

Further up the same valley, towards the Puerto de la Escaleruela, at about 850 metres, we found a lot of *Orchis olbiensis* (including some white forms), *Anacamptis collina*, *Ophrys fusca*, large patches of *Erodium cicutarium*, *Helianthemum nummularium* (perhaps), *Scilla hispanica* (*Endymion hispanicus*), the delightful *Platycapnos spicata*, with its spiky, crimson and white flowers, and the leaves of *Iris planifolia*.

To the south of the pass, on the west-facing middle slopes of El Torcal, as well as flowering gorse (*Ulex parviflorus*) we found drifts of *Erodium cicutarium*, clumps of *Scilla hispanica* (*Endymion hispanicus*), more *Orchis olbiensis*, *Anacamptis collina* and a few *Ophrys tenthredinifera*. There were many *Fritillaria lusitanica* dotted here and there among the scrub of gorse and *Phlomis*, from around 900 to about 1000 metres, with considerable variation in flower size, shape and markings. On the terra rossa scree, between limestone outcrops, we also saw *Helianthemum nummularium*(?), *Iberis crenata* and the “everlasting” *Paronychia capitata*. Higher up, below the karstic pavements of the



*Dipcadi serotinum* (Photo: Saxifraga-Peter Meininger)

summit of El Torcal, there were a few patches of *Gagea*. A little further west, among the gorse below Camorro Alto, at an altitude of about 820 metres, with *Asphodelus albus* just coming into flower, we found some more *Narcissus papyraceus*, *Ophrys tenthredinifera*, *O. omegaifera* ssp. *dyris*, *Neotinea tridentata* ssp. *conica*, *Romulea bulbocodium*, *Centaurea pullata*, *Scrophularia sambucifolia*, the attractive blue and white *Salvia verbenaca*, and *Paeonia broteri* (in bud but not yet in flower on 27 March 2015 and 25 March 2017, but with a few flowers out by 6 April 2017). *Paeonia broteri* is widespread in the area and is endemic to central and southern Spain. It is similar to, and often considered as, a subspecies of *P. mascula*. Its leaves look quite different from those of *P. coriacea*, which we saw at the top of El Torcal, and the flowers differ from *P. mascula* in having greenish-white or yellow (rather than bright red) stamen filaments (not that we saw many in flower!). Its leaves vary in size and colouration and can be attractive in themselves.

A little further west again, north of la Hoya, below the hamlet of los Nogales, in a very wet area we found a mass of *Narcissus papyraceus* and, on nearby rocks, *Silene colorata*, *Iberis crenata*, *Ornithogalum reverchonii*, *Chaenorhinum villosum*, the delightful *Erodium daucoides*, with its white flowers blotched and veined with deep purple, and a very striking *Linaria*, bright purple in colour and possibly related to the local *L. anticaria*. There were more *N. papyraceus* south-west of la Hoya, alongside the road to Valle de Abdelajis.

Further west beyond Valle del Abdalajis, lies the great Garganta del Chorro, a vast gorge cut through the limestone sierras. Taking the road north from Álora up the Guadalhorce valley, you get a spectacular view of the mouth of the gorge. Here was *Acanthus mollis*, still in bud, and a little *Rupicapnos africana*. Then the road turns left up to the Embalse (reservoir) del Conde de Guadalhorce. Along the way numerous rocks and cliffs are carved into fantastic shapes by the wind and rain. Sheltering under rock overhangs is an abundance of *Rupicapnos africana* with its attractive, fumitory-like pink and white flowers, and glaucous fleshy leaves. Beside

*Paeonia broteri*





the road, in wooded areas, we also saw plenty of the ‘brown bluebell’, *Dipcadi serotinum*. In rockier areas was *Convolvulus althaeoides*, pretty pink *Echium albicans*, an attractive spreading *Chaenorhinum* species (probably *C. origanifolium*) with pale violet-coloured flowers, and another *Linaria*, this time with just one flower per stem, rich purple with a bright yellow blotch on the lip and resembling a photograph we have seen of *L. algarviana*. We also had the pleasure of being studied



intently by a fine specimen of the endemic Spanish ibex (*Capra pyrenaica*).

From the reservoir, a road leads up to the dam. In woodland near the furthest point of this dead end we saw many *Dipcadi serotinum*, along with some *Ophrys speculum*, *Leopoldia comosa* (syn. *Muscari comosum*), and *Iberis crenata*. Along the way, on the rocky walls of the road as we negotiated a cutting, we had seen an impressive display of *Chaenorhinum villosum* and a fine specimen of *Reseda suffruticosa*. Having retraced the route back to the junction, onward beside the reservoir to Ardales is a profusion of orchids (mostly bee orchids): *Ophrys speculum*, *O. lutea* and *O. fusca* (including ssp. *iricolor*), many growing under *Cistus albidus*.

The more direct road from Álora to Ardales, via Carratraca, is a pleasant and scenic drive. Along the way we encountered *Echium creticum*, the pretty pink endemic *E. albicans*, *Phlomis purpurea*, *Dipcadi serotinum*, *Dianthus lusitanus*, *Iris filifolia*, *Anthyllis vulneraria* and another very attractive, cliff-dwelling *Linaria* with deep purple flowers, possibly *L. aeruginea*. Just east of Carratraca, at just over 600 metres, the pine trees on the steep slope above

the road shaded dozens of *Fritillaria lusitanica* and above them a good quantity of *Tulipa australis*, just coming into flower. In the Tajo del Molino, near Teba, well to the north of Ardales, we found very little in flower (only *Iberis crenata* and *Antirrhinum graniticum* tentatively identified), although the gorge itself is quite spectacular.



Four forms of *Fritillaria lusitanica*

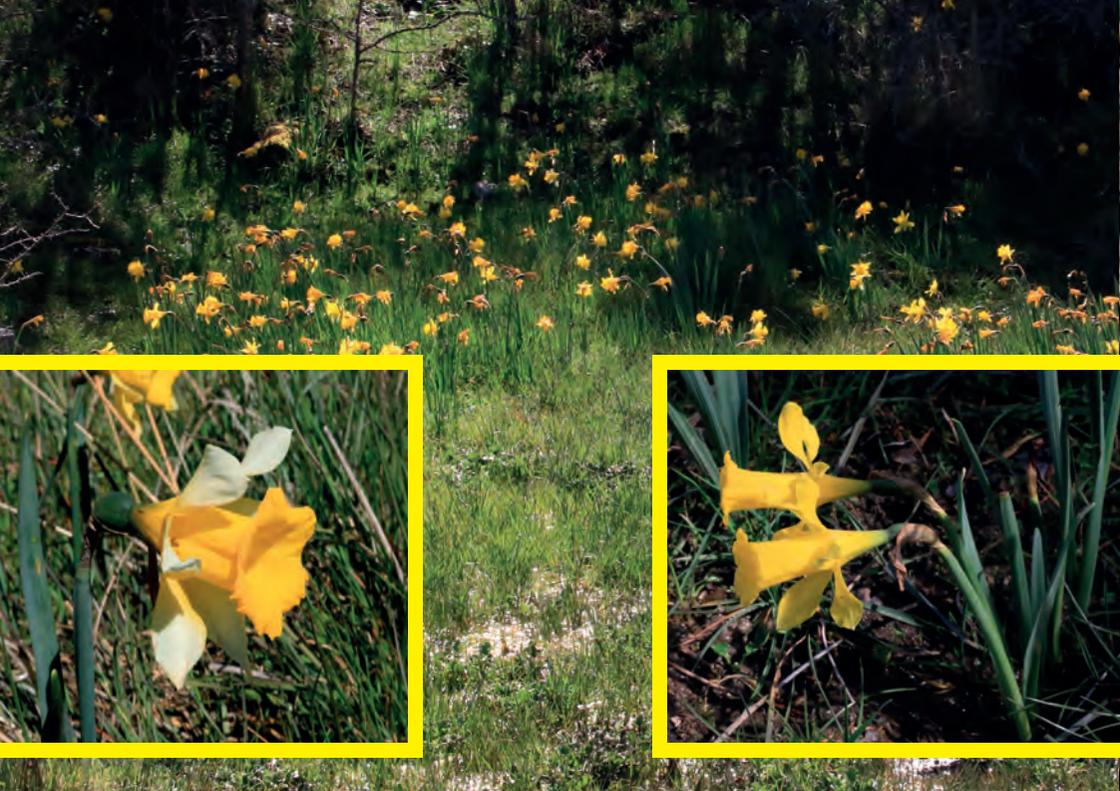


*Iris planifolia*

A road runs south-west from Ardales to el Burgo, climbing onto the northern flanks of the Sierra de Alcaparain and, soon after leaving Ardales, we found the steep banks above it festooned with orchids. There were innumerable clumps of the showy butterfly orchid *Anacamptis papilionacea* ssp. *expansa* and also several *Ophrys lutea*, *O. fusca*, *O. omegaifera* (including some ssp. *dyris*) and *O. speculum*. There were *Cistus albidus* and *Silene colorata* by the roadside. Further on, at the turning for the Casa Rural Arcos del Capellán, were a lot of *Ophrys scolopax*, together with *O. omegaifera*, *Orchis olbiensis* and bright yellow *Anemone palmata*. About half-way between Ardales and el Burgo, a road turns off south, leading eventually to Casarabonela. Along here we found more *Anemone palmata*, *Ophrys bombyliflora* and *O. fusca* (including some ssp. *iricolor*). We drove as far as the pass above and to the north of Casarabonela where, amongst the scrub, we found a

*Linaria aeruginea*





*Narcissus bugei*

couple of flowers of *Fritillaria lusitanica* (well past its best by 2 April 2017) together with *Orchis olbiensis* and *Ophrys tenthredinifera*.

The road north of el Burgo goes over the hill to el Serrato. Just out of el Burgo, it passes a small enclosed area, possibly an old gravel quarry, in which the ground was carpeted with thousands of brilliant purple *Moraea sisyrinchium*. Further up the road were large cushions of what may have been *Saxifraga globulifera* growing on roadside boulders, also some *Scilla hispanica* (*Endymion hispanicus*), and the small yellow *Viola demetria*. During a walk on the hill above and south of el Burgo, we saw several orchids – *Ophrys speculum*, *O. fusca*, *O. scolopax* and *O. lutea* – together with *Asphodelus albus*, *Papaver rhoeas*, and a fine species of *Rosa*.

A road goes west from el Burgo to Ronda. A few kilometres along it is the Mirador del Guarda Forestal, with its statue erected in 1977 to commemorate the centenary of the Forest Ranger Corps. The statue is certainly impressive, but perhaps a bit too fascist for comfort – it was probably planned before Franco died in 1975. The Mirador is at 900 metres and, as the name implies, commands extensive views over the surrounding woodland. Here we found *Scilla hispanica* (*Endymion hispanicus*) and *Ophrys fusca*. Further on by the road towards Ronda the open hillside was coloured pink with *Erodium cicutarium*.



*Romulea bulbocodium*  
*Erodium cicutarium* beside the road from el Burgo to Ronda





*Orchis olbiensis* by the road near Montejaque

Cuevas del Becerro lies north of el Burgo. Just to the south, a sizable river bursts fully formed from the rocky flanks of the Cerro del Castellón; it is channelled through the town until it cascades over cliffs into the valley below. The area proved an excellent hunting ground. On the southern flank were acres of *Iris planifolia* leaves but, as expected, no sign of a flower – just a few misleading blooms of *Moraea sisyrinchium*. On the northern side, however, although there were fewer plants, a number were still in flower (still colourful on 27 March, but at their last gasp on 3 April 2017). On the southern side (but on a north-facing slope) at about 950 metres, were scattered clumps of *Paeonia broteri*, which we understood not to flower until May. Nevertheless, by 5 April there were several flowers dotted over the hillside: *Seek and ye shall find* (if you are lucky!). Elsewhere here we found *Asphodelus albus*, *Euphorbia characias*, *Ranunculus spicatus*, *Scilla hispanica* (*Endymion hispanicus*), *Geranium robertianum*, *Hesperis laciniata*, *Salvia verbenaca*, *Ornithogalum* and *Gagea* species, one or two clumps of *Narcissus papyraceus* still in flower, some *Fritillaria lusitanica* (on open stony ground and well past its best) as well as the seemingly ubiquitous orchids: *Orchis olbiensis*, *Ophrys fusca* and *O. tenthredinifera*.

South of el Burgo and Ronda lies the Sierra de las Nieves. Alongside the main coast road south of Ronda we noted *Neotinea tridentata* ssp. *conica* and the bright blue *Lithodora diffusa*. If you go up this road south from Ronda, between the 13 km and 14 km posts you will find a turning



*Moraea sisyrinchium* north-east of Grazalema

left at a sign for the Sierra de las Nieves National Park; the turning is signed in advance to Area Recreativa Conejeras and Camping Conejeras. There is a good road from here on which you can drive up to the Area Recreativa de los Quejigales at a height of about 1300 metres. After leaving the main road, you cross the relatively flat valley floor; here the road passes through an area of evergreen oak woodland. Beneath the trees the route is lined with innumerable plants of *Paeonia broteri*; unfortunately, we saw none in flower on 1 April 2017. We did see some flowers of *Scilla monophyllos* and numerous orchids: *Orchis olbiensis*, *Neotinea tridentata* ssp. *conica* and *Ophrys tenthredinifera*. Eventually the road starts climbing fairly steeply into the mountains. Beside a sharp bend, about half-way, we found a large quantity of what I shall call jonquils, being unable to distinguish all the various small bright-yellow *Narcissus* species from each other; apart from anything else, I refer you to Brian Mathew's *Narcissus* (p132) reference to the taxonomists' "nomenclatural merry-go-round". Here they grew on a small cliff and in the ground at its base (this population may be *Narcissus assoanus*). There was also *Gagea*, more *Neotinea tridentata* ssp. *conica*, and *Orchis olbiensis*. Further up, beside the road, were *Helianthemum nummularium*(?), the ubiquitous gorse (*Ulex parviflorus*) in dazzling flower and some *Himantoglossum robertianum*.

Approaching los Quejigales, the terrain changed from open dry hillside to an enclosed and well-watered valley floor in which the picnic



*Orchis orbiensis*

*Ophrys lutea*

area is sited. Along with *Helleborus foetidus*, we noted two different narcissi beside the road: a few more jonquils and some entirely different *Narcissus bugei* (*N. hispanicus* ssp. *bugei*), which we had been informed was here. And our information was correct: *N. bugei* was in abundance all over the valley floor and some way



up the hillsides, in the open, under bushes, and often in wet and boggy ground. This narcissus has a large daffodil flower on a short stem (30 cm or less) and clearly likes damp conditions. In the same area, but not mixed in with the daffodils, we also found a large number of *Romulea bulbocodium* and, on a small cliff well above the dampest areas, a sizeable colony of jonquils. In the same general area were also *Daphne laureola* ssp. *latifolia*, *Ranunculus ficaria* ssp. *ficariiformis*, *Moricandia moricandioides* and several *Orchis olbiensis*, together with a dazzling display of *Prunus* blossom.

South-west of Ronda, on the Jimena road near the Puerto de Encinas Borrachas, seven or so Griffon Vultures (*Gyps fulvus*) wheeled overhead, above the cliffs and the prehistoric burial site. The valley floor lies at just under 1000 metres and its lower valley sides were carpeted with *Iris planifolia*,

unfortunately none in flower. There were also *Asphodelus albus*, *Erodium cicutarium*, *Centaurea pullata*, *Ophrys fusca* and *O. speculum*. At Ronda itself, in the valley below the high bridge linking the old and new towns, we found *Centranthus ruber*, *Vinca difformis*, *Convolvulus*



*Ophrys tenthredinifera*

*Ophrys scolopax*

Andalucia in Spring





*Ophrys scolopax*  
*Ophrys fusca*

*althaeoides*, several *Allium subvillosum*, a white saxifrage (probably *S. granulata*), *Iris albicans* (we only saw one flower – the rest were still in bud), *Ophrys fusca* and *O. omegaifera*.

Around Montejaque, just to the west of Ronda, on the cliffs at the entrance to the valley above and to the West of Montejaque,



we saw the massive stems and umbels of *Ferula tingitana* together with *Clematis flammula* scrambling over the rocks and displaying its “old man’s beard” seed-heads. On the cliffs were numerous groups of imposing *Ornithogalum reverchonii*, with large white flowers on stems 50 cm or more in height. At the base of the cliffs, and also on the cliffs themselves, were clumps of *Scilla hispanica* (*Endymion hispanicus*) including some with white flowers. Peeping out from under lumps of rock there were the white flowers of *Saxifraga bourgaeana*, and scrambling among the rocks was a dark-red linaria, possibly *L. aeruginea*. For some distance, *Vinca difformis* occupied the narrow verge between the base of the cliff and the road surface. There was also the occasional *Ophrys lutea*. Further up the valleys

we saw leaves of *Paeonia broteri* (but no flowers), and one or two jonquils, together with species of ornithogalum and helianthemum, *Erodium cicutarium*, *Centaurea pullata*, *Cynoglossum cheirifolium*, *Scrophularia sambucifolia* and some more *Scilla hispanica* (*Endymion hispanicus*).

Among the jumble of cliffs beside the road



*Ophrys speculum*  
*Tulipa australis*





*Anacamptis papilionacea* ssp. *expansa*

just to the north of Montejaque we saw the shrub *Rhamnus alaternus* ssp. *myrtifolius* with its gnarled habit and small yellow flowers, and the pink-flowered *Putoria calabrica* prostrate on the limestone, in addition to *Vinca difformis*, *Centaurea pullata*, *Linaria aeruginea*(?), *Antirrhinum majus*, *Anemone palmata*, *Ranunculus spicatus*, *Orchis olbiensis*, *Ophrys fusca* and *O. omegaifera*. A little further north, as we walked along the path to the great Ronda dolmen, to the west of the road to Algodonales, we saw several orchids, including *O. tenthredinifera* and different forms of *O. fusca*. Several miles north of Ronda, east of the road to Algodonales, lie the Roman remains of Ronda la Vieja. On the way there we encountered *Himantoglossum robertianum*, *Ophrys tenthredinifera* and *Silene colorata*, and the site itself was carpeted in places with *Erodium cicutarium*. Returning to the east bank of the river Guadalete and taking the secondary road to Algodonales via Zahara, you travel along the east side of the Embalse de Zahara Gastor, where we found a beautiful white cytisis species, *Cerinte major*, *Allium roseum*, *Himantoglossum robertianum*, *Ophrys speculum*, *O. bombyliflora*, *O. lutea*, *O. fusca* with unusual markings, *O. omegaifera*, *Iris planifolia* leaves and an attractive reddish-purple brassica.

West of the Embalse de Zahara Gastor lies the Sierra de Grazalema. On the road north-east of Grazalema, near Caserio Gaidovar we were greeted by sheets of spectacularly deep purple *Moraea sisyrinchium*. In rough and seasonally marshy, ground below Grazalema, together with *Ophrys tenthredinifera*, we found a few *Narcissus papyraceus*. There did not seem to be as many as there had been when we passed by in 1986, but the area had been fenced in since then and was difficult to explore. On the cliffs above the village of Grazalema, the location we had been directed to in 1986 for *Narcissus rupicola*, we found that the jonquil (now referred to by some as *N. assoanus*) was still there on 28 March 2017, but not in nearly such great numbers as on 5 April 1986; we can only hope that this diminution owes to the season rather than anything inherent. In 1986

we were told to look out for *Narcissus rupicola* ssp. *pedunculatus* (later called *N. cuatrecasasii*), which we duly found. It was not apparent to us in 2017 that there was any significant difference in the features of the few jonquils we saw above Grazalema. In addition to the jonquils, the rocks above the town were covered with a multitude of multi-coloured *Orchis olbiensis* (which we do not recall seeing here in 1986 – suggesting that the season was indeed different), together with some *Saxifraga boissieri*. North-west of Grazalema, above Puerto del Boyar, we found a few more jonquils on the cliffs, above *Orchis olbiensis*, *Helleborus foetidus* and *Paeonia broteri* leaves.

North of Grazalema, beside the road up to the Puerto de las Palomas, we found a little *Narcissus papyraceus*, a display of *Romulea bulbocodium* and some *Ophrys tenthredinifera*. At the car-park for the Sendero (trail) de los Pinsapos, there were a few more jonquils, together with *Romulea bulbocodium*, *Orchis olbiensis* and one or two *Fritillaria lusitanica*. Alongside the footpath that leads up northwards from the Puerto itself, there were a few more jonquils in flower.

North of the Puerto de las Palomas, the road descends towards Zahara de la Sierra and there are several interesting locations. At the Puerto de los Acebuches, with a view over the Embalse Zahara Gastor, we found many *Ophrys lutea* and *O. speculum*, together with *Anacamptis morio* ssp. *picta*, *Orchis mascula* ssp. *laxifloraeformis* and a considerable drift of *Orchis italica*. There were also pink *Phlomis herba-venti*, *Astragalus lusitanicus*, *Genista spartioides*, *Cistus monspeliensis*, *Centaurea pullata* and *Anemone palmata*. Alongside the path down to the Garganta Verde we found *Ophrys fusca*, *O. speculum*, *O. lutea*, *Paronychia capitata*, attractive purple *Orobanche ramosa* and bright yellow *Linaria platycalyx*. Lower down, approaching Zahara, we saw *Allium roseum* and *Centaureum erythraea*.

*Ophrys scolopax*



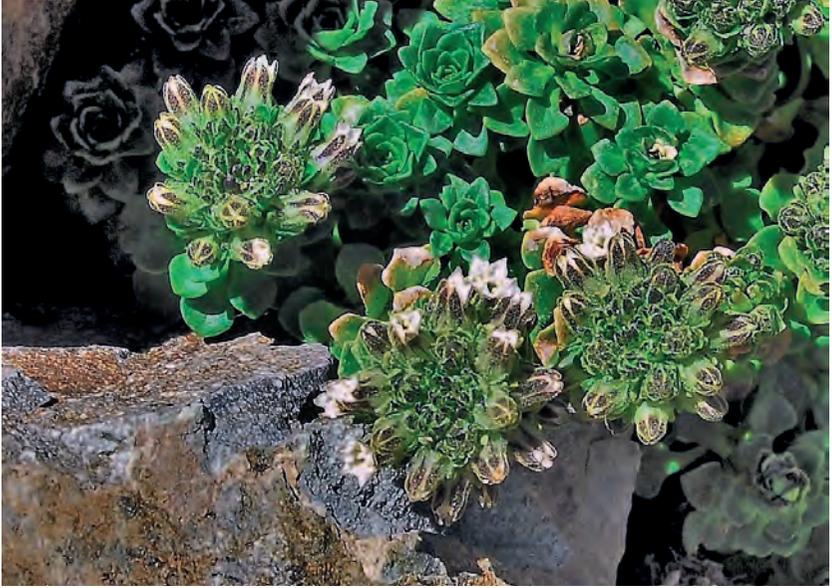
## An Essay from Argentina and Chile Ger van den Beuken

In 2017 I finished organizing tours to South America. We still remember and extend special thanks to our good friend and remarkably informative Argentinian guide, Marcela Ferreyra. It was quite emotional to say goodbye to Patagonia, to all those awesome plants and to the spectacular nature of this astonishing land. But, in issue 145 of this journal we embarked on a quite different journey of sharing our memories with you. We started with those species beginning with the letter A and we continue our alphabetic expedition here with recollections of the letters C to L. Unknown to many alpine growers, these plants may encourage you to make a start with this fantastic vegetation.

***Chloraea alpina*** is a perennial with erect flower stems 40 cm length bearing 6 cm waxy deep yellow flowers. In Argentina and Chile it frequently occurs on mountain slopes and rocky fields, at 2000 m. Propagation is from seeds.

***Chloraea cylindrostachya*** comes from the Argentinian province of Chubut and adjacent areas of Chile. It is a robust perennial up to 80 cm high. The flowers are 2 cm green-white. It is found on mountain slopes or in steppe conditions up to to 1500 m. The propagation is from seeds.





***Combera paradoxa*** is common in Southern Argentina and the Lake District to 2000 m on mountain slopes in scree conditions. Its nice violet blue flowers have white markings on their faces. It has been in cultivation for a few years now, although only in alpine house conditions. Its propagation is by cuttings or seeds.

***Cruckshanksia hymenodon*** is found from Central Chile to the Atacama Desert in the North, at altitudes more than 3000 m, and always in dry stony conditions. The two to five lilac-pink sepals together with yellow flowers on the grey-green foliage are very special. Sometimes the mats of this species are more than a metre across, 10 cm high. Propagation is from seeds.





***Embothrium coccineum*** is a shrub that grows to 5 m high. It grows mainly in Tierra del Fuego, Santa Cruz and adjacent areas of Chile in the South, on hill sides. It dominates mountain slopes with its scarlet-red, sometimes orange, flowers. The shrub is widespread in cultivation and its propagation is from seeds.

***Euphrasia meiantha*** comes from Central Chile. The species, 15 to 20 cm tall, usually grows alongside running water, and always in damp places. The flowers have white petals with purple lines and yellow centres. Its altitude is about 2000 m. Propagation is from seeds.



***Gavilea lutea*** is a beautiful orchid from southern Patagonia. These yellow flowering plants are 50 to 60 cm high and grow in forest edges, open places in the woods and on lake banks. Its altitude is 1200 m or more. Cultivation in the open garden could be a possibility and propagation is from seeds.

***Hamadryas delphinii*** is found in southern Patagonia up to 1000 m altitude. The best plants we found were on a windy scree near Stag River at 700 m. It has 5 cm pubescent leaves with rather nice solitary brown-yellow flowers.





***Hamadryas kingii*** exhibits densely white silvery leaves about 5 cm tall, bearing stemless brown-yellow flowers. It comes from southern Patagonia up to 1600 m in scree and open stony places. Its propagation is from seeds but it is one for the alpine house. (Above & Facing, above)

***Hamadryas sempervivoides*** forms a rosette cushion only 3 cm high with almost stemless yellow solitary flowers. The nice specimens we saw at the base of Cerro Fitzroy were at almost 2000 m in sand and rocks. This is a difficult plant in cultivation; its propagation is from seeds. (Below)

***Hypochaeris incana*** is a 15 cm tall species from southern Patagonia, particularly Tierra del Fuego and around Santa Cruz. The leaves are 15 cm in length and more or less woolly. The white or pink flowers are 15 cm length. This species grows mainly in sandy soil and gravel between shrubs. Altitude until 600 m. Alpine house cultivation and the propagation is from seed. (Facing, below)







***Jaborosa volckmannii*** is rosette-forming, about 10 cm tall with olive-brown leaves that have nicely scented pure white flowers in the centre of the rosette. It is a rare endemic from South and Central Chile up to 2200 m. This beautiful species is worth every effort in trying to grow it. The propagation is from seeds and it is definitely a plant for the alpine house.

***Junellia azorelloides*** grows as a soft cushion to a metre across, with pink or crimson flowers. It grows on the Patagonian steppe in very windy places. Its preferred soil is a mix of gravel and sand. Plants grow at altitudes of more than 3000 m. Propagation is from seeds and cuttings and the species is one for the rock garden and the alpine house.





***Junellia micrantha*** is a typical steppe plant 3 cm high that includes a fine pale pink inflorescence. It is from the provinces Santa Cruz to North Mendoza where it grows on rocky and sandy mountain slopes up to more than 3000 m. Plants of 60 to 70 cm across are no exception. It makes a superb plant for the open rock garden and is completely hardy. Propagation is very easy from cuttings.

***Junellia odonellii*** grows with white flowers in the East of Patagonia in windswept moorland and steppe. Here, the cushions are about 10 cm high and 30 cm across. Propagation is from seeds or cuttings and the species is for the alpine house.





***Junellia patagonica*** is a most attractive species. Silver white cushions with the white or pink inflorescence clustered are around the outer edge of the cushion. The cushions are only 3 to 5 cm high but can grow to more than half a metre across. In southern Patagonia on open steppe, they always grow in extreme weather conditions. Propagation is from cuttings or seeds.

***Junellia tridactylites*** is a fairly dominant cushion-shaped species about 15 cm high, 80 cm across and it supplies a beautiful scale of different colours from white to pale blue. Santa Cruz to Mendoza are the provinces where you can see this species abundantly in sandy or stony soil. Propagation is by seeds and cuttings.





***Junellia ulicina*** is about 20 to 25 cm tall, a species with ivory or pink flowers. It grows in Santa Cruz and Mendoza on sandy or rocky slopes more than 3000 m high. It is a species for the alpine house and is propagated from seeds or cuttings.

***Laretia compacta*** (syn. *Azorella compacta*) is a spectacular species from the high Andes in Bolivia, Peru and Chile. The biggest plants we saw on the slopes of the Volcan Taapaca in Northern Chile were growing at an altitude of 5200 metres in pure lava sand, and dust. Cushions more than 3 metres across were no exception. The four-metre cushion in our picture could be 2000 years old, according to the research on growth rate done by students of Professor Squeo from the University of La Serena. Just 2 mm, the flowers are insignificant pale yellow. Propagation is from seeds. (Overleaf 🍁)

The guanaco, an animal that is an important part of wildlife in Patagonia









***Lecanophora subacaulis*** is a rare species from the genus Malvaceae. It was discovered by accident in 2008 in the south of Santa Cruz province on a volcanic slope, at a few hundred metres. This stunning plant is just 5 cm tall with grey-green leaves and solitary purple flowers 3 cm across. Just a few plants are in cultivation, propagated by tissue culture. A plant in our alpine house is flowering every year. It may be perhaps possible to grow from cuttings. I use a mineral substrate with low pH.

***Leucheria candidissima*** is found in Chile and Argentina from 3000 m high slopes, exposed to all weather conditions. Densely woolly species carrying 8 cm long white or pink flowers. Propagation is from seeds.

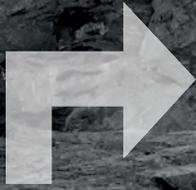




***Leucheria hahnii*** occurs in Santa Cruz and adjacent Chile from sea level to 1200 m altitude in sandy soil. A rosette-forming plant with white hairy leaves. Flowers are white or pink on 5 cm long stems. Propagation from seeds.

***Leucheria purpurea*** is a rosette-forming species with hairy deeply incised and pointed leaves. Purple flowers on 15 cm long stems. A plant from Tierra del Fuego and the South of Patagonia growing in dry sandy steppe conditions at low altitude. Propagation from seeds.





## An effort to better understand the world's most enigmatic *Ranunculus* Hamish Brown

**R***anunculus grahamii* is possibly one of the most attractive, inaccessible and unseen plants of the Southern Alps. It was first collected by – and bears the name of – Peter Graham, who was chief mountaineering guide at the Hermitage (Mount Cook resort hotel). It was first found on the Mulde Brun Range in the Mount Cook National Park and this range forms the centre of its narrow distribution. It has also been recorded on the Mount Cook, Sibbald and Ben Ohau ranges but sightings are few because it only occurs above 2000 m and the people who enter these areas are normally interested in standing on top of the pointy peaks of the mountains rather than in the things that grow on their sides. The Liebig Range lies directly between the Mulde Brun and Sibbald and contains large areas of névé, the habitat to which *R. grahamii* is restricted. While the species is not officially recorded on the Liebig Range it would seem likely that it should, and it is unofficially recorded to the south on the Gammick Range, where this story begins.





Some two years prior, two recently acquainted *Ranunculus* appreciators (Steve Newall and I) planned a trip, hiking up the Jolly river valley to search in its upper reaches for *R. grahamii*. We began in early January with a rendezvous near the Mt Cook Station homestead for an easy day walking up the Jolly valley. I thought it easy because there were no big hills and only 400 m elevation to be gained. Steve disagreed because nearly the entire distance (25 km) consisted of walking on loose alluvial gravels and boulders. Some 14 hours later we two tired hunters made camp and dreamed of the great drifts of *R. grahamii* awaiting discovery the next day. This came all too soon with a pre-dawn start with the aim of getting to Jolly saddle and exploring crags on the way back down. By mutual agreement this travel was graded harder than the previous days; it required 1100 m altitude gain over a landscape that was predominantly colluvium (scree, fell, boulders and the like) interspersed with pockets of mixed *Aciphylla scott-thomsonii* and *Olearia ilicifolia* scrub (the tallest aciphylla, and the only olearia with spikey leaves). Arriving at Jolly saddle, we agreed that it was named so because it was a *Jolly Long Way* back to the car (32 km and 22 hours of walking). From here we searched fruitlessly and returned tired to the camp to eat dinner in the dark. We had unsettled dreams of *Ranunculus* with supernatural abilities, able to sense oncoming humans and move to the other side of the rocks so they would never be seen.

On the third day we planned to search up a side valley. Steve made an *in-situ* alteration to the plan, staying in the valley floor to pick *Muehlenbeckia axillaris* seed to help cover his petrol costs. This later proved to be a ruse; his day was spent sleeping under a bush. However, loyal to the plan, I climbed up the side valley that leads to the back side of Mount William Grant. At the head is a remnant glacier with no official name although called the Scorpion Glacier by marketing-savvy heli-ski operators. Here, after another long day of fruitless searching and almost ready to return to camp, I spotted a flash of yellow on the head wall behind the bergschlund. The span of the bergschlund was too wide to navigate safely, and a mixture of tenuous stance and tired arms & legs made steady photography difficult. However, some fuzzy photos were captured, and the retrospective application of optimistic logic declared that this plant could only be *R. grahamii*. Only a *Ranunculus* has the yellow floral attributes, and of the three that are known from this area and habitat, *R. sericophyllus* and *R. godleyanus* have dark green foliage. The photographed specimen clearly had glaucous foliage, a known trait of *R. grahamii*. The remainder of the details of this trip are somewhat trivial and uninteresting except the undertaking that we gave to return and try and get some better photos of this enigmatic beauty. Oh – and Steve’s insistence that he would not walk so far next time.

Facing: *Ranunculus grahamii* seen distantly on headwall of the bergschlund



*Euphrasia cuneata*

The next two years we spent planning a follow-up expedition. From extensive map survey we identified the Ridge Glacier on the Liebig Range as the best candidate spot. It offered a high camping site (2200 m) and terrain to the north and south with feasible crag base access for non-elite mountaineers. We decided that a helicopter would save four days walking and allow us some heavier climbing equipment to tackle the more dangerous terrain. We applied to the SRGC expedition fund and gratefully received a grant that covered the cost of flying gear and people in and out. Around this time, we became very popular with many people who wanted to be our friends. We had rendezvous at the helicopter line hangars at Glen Tanner for an early start with our new friends (Joe Cartman, Doug Logan and Julian Vale). The weather was not willing to play along, as snow showers cloaked the Liebig Range. Around noon I declared the weather was improving. The helicopter pilot seemed not to endorse the statement but became sick of strange people asking him questions about plants so agreed to attempt to fly us to the camp. The most notable comment of the flight was from Steve: *"This is much better than walking"*.

A short distance from the camp the weather had not cleared quite as much as anticipated; lingering show showers made landing unsafe. Our team was offered a choice – drop off lower down and walk the last bit to the camp or fly back and try again later. Fully aware of the financial implications of the second option we chose the first and landed on the



*Celmisia lyallii*



*Myosotis suavis*

mountain side some 300 m below base camp. This would not normally be a problem but we had packed with the expectation that we would not have to carry all our gear up hill. We were partly saved because our helicopter had a weight limit, a substantial amount of which was taken up by adipose ... thus, our packs were constrained to a manageable 25 to 40 kg. The continual snow seemed to dampen our spirits somewhat. However, those great drifts of *Ranunculus* awaited discovery and, after watching the helicopter disappear into the distance, we walked up the hill and set up camp in clearing weather. That afternoon Julian and I donned crampons and ice axes and walked around the western edge of the glacier looking for *R. grahamii* at the base of the crags while the remainder of the team (Steve, Doug Logan & Joe Cartman) used long range optical surveillance techniques (binoculars) to search the upper parts of the crags.

The following day, Julian and I climbed to the top of the Ridge Glacier and then followed the ridge line along toward Mount Hutton, inspecting any promising-looking features along the way. Steve, Joe and Doug made the same careful search to the south of the glacier. Although we saw and photographed many stunning plants, none was the target and the camp feeling became somewhat deflated.

The third day started with Doug's setting out early to Rutherford pass to get a photo of Mount Cook in profile (an uncommon view) and report on what plants could be seen on the way. Breakfast was interrupted



*Leogyne grandiceps*: plant and flowers

with a call from the upper slopes, “Hey guys ... I’m stuck”. Climbing gear was shouldered, anchors were set, and a rescue was effected. A relieved Doug continued to the ridge and was rewarded with an outstanding view of Mount Cook but no *R. grahamii*. During this time Steve and Jo had searched the roches moutonnées below the camp, also without success. The afternoon saw a trip to the south to Kehua Pass with inspection of the crags below the ridge line on the way there and back. Sadly, this effort too was not rewarded.

Our focus then turned to why we could not find *R. Grahamii*. We were surrounded by known locations, we were high enough up, the terrain was right, we were searching exhaustively and were getting into some frightening positions, but to no avail. We quickly disregarded the hypothesis that the species might have supernatural person evasion capabilities. Joe offered a plausible explanation based on climate change (he was confident that Donald Trump was not in earshot). *R. grahamii* only grows on steep rock near snow or glaciers. Over the past forty years the glaciers of the Southern Alps have receded at a terrifying pace. What was close to the snow twenty years ago is now suspended high above the current high tide mark of the glaciers. While the plants are probably still up there on the inaccessible cliffs, they are not visible from glacier level and there has not been sufficient time for their progeny to colonize the fresh rock that is exposed as the glaciers recede.

Nevertheless, this trip was not a waste of time. We made an extensive search and conclude that *R. grahamii* is now only very sparsely distributed on the Liebig range. We are unaware of any such intensive efforts to search within Mount Cook National park. Although this area is frequented by climbers and skiers, they pay little attention to the plants, so we regard our finding as somewhat novel. My sighting two years prior further south on the Gamick Range must have been a lucky find of a very



*Hebe hastii*



Friendly terrain

sparse population on the Liebig/Gamick Range complex. Subsequent efforts would need a smaller team entering even more difficult terrain.

Steve and I decided on a follow up trip two weeks later to Mt Sibbald, where *R. grahamii* is known. We now discovered that our popularity had depended on the helicopter and that our list of friends evaporated when invited on to a 900 m climb up glacial moraine and outwash. On to new friends, we recruited Michael Midgely, an experienced mountain plantsman and 4wd drive expert. Michael drove us into the Macaulay Hut, to be met by Johnny Wheeler, manager of Lilybank station. And here is an interesting tangent to another Scottish connection: The station, at the south end of the Sibbald Range, was named for the profusion of so-called Mount Cook lilies (*Ranunculus lyalli*) that grew on the mountain side. These so-called lilies are actually the largest species of *Ranunculus* and carry the name of prominent Scottish botanist David Lyall. Although I am not certain of the exact movements of Lyall while he worked in New Zealand, Mount Erebus at the southern end of the Sibbald Range is presumably named after the ship on which he served, suggesting that he spent time in this same area. *Celmisia lyallii* is also a dominant cover in this area.

Our much-reduced team climbed to the base of the cliffs that ascend the southern side of Sibbald. We lugged climbing gear up the hill, but it was almost useless as the rock was insufficiently solid for safe anchor points. However, to our delight and relief, after initial failure, we came upon a considerable population of the plant that we had sought for so long. It comprised a few large and mature plants growing high up in cracks on the steep faces of crags, and numerous seedlings in loose debris on ledges below these plants. Those on the cliff faces bore immature seed heads, showing recent flowering. The many seedlings below showed that they seed around quite freely. So why are they not more common?



*Raoulia youngii*

Facing: *Ranunculus grahamii*

Every story needs a villain and ours is the Himalayan Thar (a species of goat). Threatened and declining in its Himalayan home, the Southern alps is the only place in the world it has naturalized and thrived, being considered a noxious pest. Its climbing skills and agility are remarkable and its taste for the soft foliage of New Zealand's alpine plants (which evolved in the absence of heavy grazing) is insatiable. The fact that the only mature plants that were found were on inaccessible parts of the cliffs suggests we can thank the Thar for the very limited distribution of this (and indeed many other) fantastic alpine plants.

We searched as far as our nerves allowed but were not able to find a plant in flower. Thus, our study of *R. grahamii* remains unfinished. We have made progress and we have located a population some of whose members are safe from grazing and accessible with acceptable levels of risk.

In our application to the SRGC we promised an article for the journal. This then is our account so far, but we are also determined to seek close up when *Ranunculus grahamii* is in flower and will return to this site to fulfil this desire and complete this journey. Watch this space ...

We are immensely grateful to the SRGC for the support that made our expedition possible. We had no other grants and provided our own travel, cooking, camping, climbing and other equipment.



# *Tulipa bactriana* ( Liliaceae)

## A New Species of *Tulipa* from Uzbekistan

J J De Groot & K S Tojibaev

In our yearly tour to central Asia, in 2007 we visited Uzbekistan's southernmost province, Surxondaryo, bordering Afghanistan, Tajikistan and Turkmenistan. It contains many wild tulip species, among them several with red flowers, and in many cases difficult to distinguish. In the hills by the road towards Derbent, *Tulipa nitida* was abundant in bare red sandy places, while *Tulipa tubergeniana* flowered in low surrounding grass; all were short, almost without a visible stem, and with very crinkly leaves. Between individuals of *T. tubergeniana* was a different plant: it had a long stem, arched and noncrinkled leaves, and on the tepals of its red flowers were long cusps, almost equal on the inner and outer tepals. In the grass around our hotel on the outskirts of Baysun, we found several red-flowering tulips. At first, we thought them to be *T. tubergeniana* but, when the bulb that I dug up with hotel permission flowered, it turned out to be a form of *T. lanata*, also known from that area.

Several non-flowering tulips grew in the sand that had been used to level the area around the hotel. They had single long narrow arched leaves and Wim Lemmers, our tour leader, suggested them as *T. hoogiana*, a species that he had seen in northeast Iran. But although *T. hoogiana* has similar leaves, the distance to its natural growing place in the western Kopet-Dag of Iran and Turkmenistan is quite large, so it seemed unlikely that it could be this species. The next day, as we left Baysun, going south to Sherabad, we explored a hilly area near the road

*Tulipa lanata* at Baysun





*Tulipa bactriana* with its characteristic arched leaves, found near Derbent during a roadside stop. On top of a red rock about four metres high was a red tulip. It was past its prime, with the same narrow arched leaves as the tulips near Baysun. It was inaccessible because the eroded rock surface was slippery as cheese, but at the rock's foot I dug up a bulb. In its woolly tunic I found two small young bulbs that I later cultivated on return to the Netherlands – to give me flowering-sized bulbs.

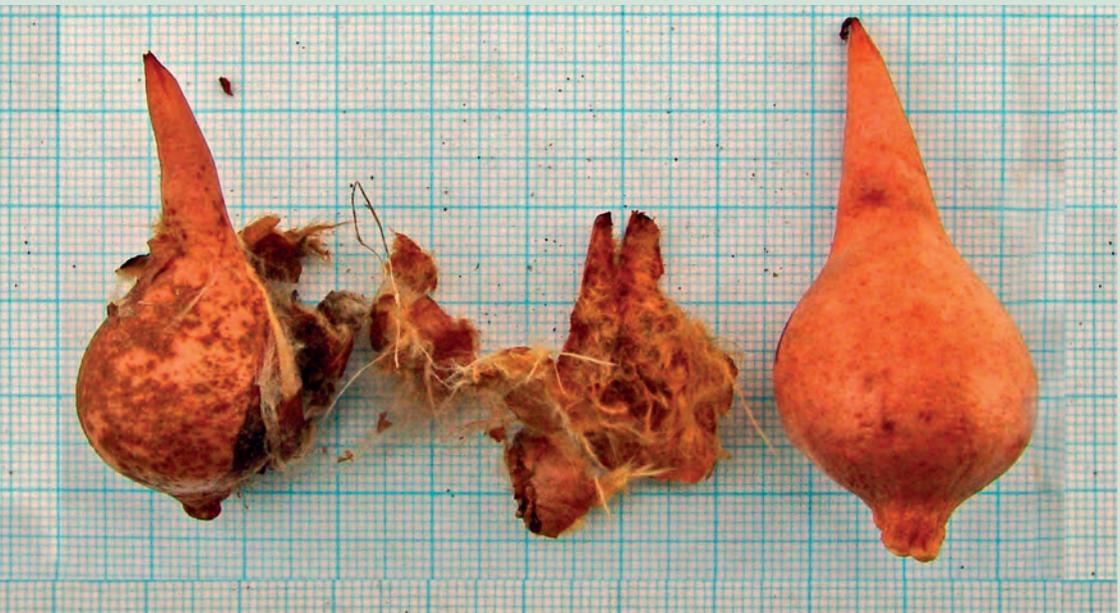
*Tulipa tubergeniana* in Derbent grass and in the Kugitang Mountains (inset)





This page and facing: *Tulipa bactriana* flower, bulbs, petals and seed head

Once in flower, it turned out to be the tulip that we had seen near Derbent, with similar long cusps on the tepals. Unfortunately, in contrast to *T. tubergeniana*, it made no offsets. Years later, during another Uzbekistan tour, we met the Uzbek botanist Komiljon Tojibaiev. When I told him about this tulip, he mentioned that he had seen them in the Kugitang Mountains on the border with Turkmenistan. He asked me to





describe them as a new species – *Tulipa bactriana*, named after the ancient kingdom of Bactria, which covered the area where it grows.

At first, I didn't want to offer the only remaining plant to the herbarium, and have not so far done so. Fortunately, during spring a few years later, I had an accident with herbicide that I was spraying on weeds on bare land beside my tulips; a gust of wind blew a small amount of this stuff over a row of tulips that had never wanted to make offsets. It was not enough to kill them but, to my surprise, when I dug up the bulbs for summer rest, five to six of them – all different species – had formed daughter bulbs. The following year, *Tulipa bactriana* made another daughter bulb, after which it grew normally. Now the bulbs needed only to reach flowering size before their sacrifice to the herbarium ...

## Type Description

*Tulipa bactriana* J J de Groot & K Tojibaiev sp. nov. Type: clonal stock G07-1, grown from a wild collected bulb, and is found in South Uzbekistan in the valley of the Surxondaryo and Sherabad rivers 37.41.57.53 N and 67.26.52.69 E, on an altitude of 420m. The type form (holotype) of cultivated plants G07-1, from the collection of J J de Groot, is in the National Herbarium Netherlands nr L.3993359

**Diagnosis:** *T. bactriana* belongs to the section *Tulipanum* Rebol and it can be recognized in the wild by its long cusps on all the tepals, in contrast with other red flowering species in the same growing area, that have only long cusps on the outer tepals. It differs from *T. tubergeniana* also by the longer stem with long arched and straight leaves; from *T. lanata* by its more slender habit and the covering of the bulb tunic; *T. lanata* has a thick layer of shaggy long hairs whereas *T. bactriana* has a woolly coating.

**Description:** The bulb is up to 44 mm diameter, covered in a brown coriaceous tunic, with elongated nose and a thick coat of felted material inside. The stem in cultivation is about 55 mm long including a flower-stem of 45 mm at start of flowering, extending later; the flower-stem is covered with short hairs. Leaves: usually four. Basal leaf 156 x 42 mm is at soil level, second 160 x 27 mm, third 135 x 17 mm, fourth is 133 x 13 mm. The glaucous-green leaves with waved margins are slightly channelled and arched, the margins are partly covered with short hairs.

**Flower:** the oval outer tepals 75 x 46 mm, are tapered to a sharp whitish tip, on the margins near the tip are some short hairs. On the outside is a small pale-yellow spot on the base surrounded with dull purple-red; the broad margins are orange-red. The inside is bright orange-red with a

*Tulipa kuschkensis*, Badghiz



black-purple spot on the base of approximately 37% of the tepal length surrounded by a pale yellow margin. The obovate inner tepals are 78 x 39 mm, ending in an acute white tip. The outside is bright orange-red; the basal spot over 40% of the tepal length is pale yellow. Inside, the colour is similar to the outer tepals. The margins of the inner tepals are commonly inwards curved. The stamens are 20 mm long including filaments of 8 mm, the triangular filaments are black with a yellowish base and the twisted anthers are black with yellow pollen. The straight ovary is green with pale-yellow stigma; the edge of the lobes is pale purple.

### Habitat & Ecology

*Tulipa bactriana* grows on red clay hills and in grass at the foot of these hills. It grows between short grasses at a depth of about 20 cm. Other geophytes on the same location are *Gagea* species and a small Juno *Iris*. Most leaves are eaten by cattle. The value of the nuclear genome size of this tulip is 56,1 pg.

### Differences between *Tulipa bactriana* and related species

*Tulipa bactriana* is distinguished from *T. tubergeniana* (growing nearby) by its narrower, more arched and longer leaves. *T. tubergeniana* has more adpressed and crinkled leaves and straight anthers with purple-brown pollen. The flower of *T. bactriana* has more pointed and incurved tepals, and twisted anthers with yellow pollen; the flower as a whole is narrower than *T. Tubergeniana* and the bulb has a longer nose than *T. Tubergeniana*. The value of the genome size: 56,1 pg for *T. bactriana*, and 54,0 pg for *T. Tubergeniana*.

*T. bactriana* differs from the larger and later flowering *T. lanata*, also growing in the same area, by cusped flowers and the size of the plants.

*T. bactriana* flowers three weeks earlier in cultivation, under the same circumstances, as *T. kuschkensis* from Turkmenistan. *T. kuschkensis* is larger; the bulb of *T. kuschkensis* is similar but also larger. The value of the genome size of *T. kuschkensis* 53,8 pg.

Both species multiply only by seeds whereas *T. tubergeniana* and *T. lanata* also propagate vegetatively. Paul Furse, in the *Tulip and Daffodil Yearbook* 1964, found similar tulips in northeast Afghanistan with field numbers PF 6145, 6146, 6141 and 8143, perhaps the same species.

Comparisons	<i>T. bactriana</i>	<i>T. lubergeniana</i>	<i>T. lanata</i>	<i>T. kuschkensis</i>
Bulb covering	woolly	woolly	long untidy hairs	woolly
Number of leaves	four	four	three to five	four
Hairs on leaf margins	upper half	near the tip	whole margins	whole margins
Form of the leaves	straight	curled	straight	straight
Flowering time in cultivation	early	mid	late	mid
Long cusps on tepals	all tepals	outer tepals	outer tepals	outer tepals
Inner tepals	incurved	flat	flat	incurved
Anthers	twisted	straight	twisted	straight
Pollen	yellow	purple-brown	purple-brown	purple-grey
Vegetative propagation in	no	yes	yes	no

# A New Zealand Visit

Ann Sinclair &  
Judith Stephens



We have visited New Zealand twice now and both times spent some of our last hours there in Christchurch Botanic Garden, a garden originally laid out in 1864. The first visit was in lovely weather and we enjoyed daunerin' among the trees – the cardiocrinums were particularly fine but ... but the rock garden ... *it wisnae the Botanics in Embra'*.

When planning for our second trip started, Maggi Young put me in touch with New Zealand Rockers, which is how I found Judith Stevens – and enlightenment (of a sort). Seemingly, there was a celebration coming up: Rockers NZ was going to be sixty. Judith was talking of a study weekend (I didn't manage it), of giving travel grants, scholarships ... a legacy, and then someone came up with the idea of becoming more involved with Christchurch Botanic Gardens, which really needed a boost after the earthquakes. It was then that realization hit. Of course! We had seen the Botanics in that huge void after a catastrophe where everything is focused on rebuilding shattered lives, houses, businesses. Now NZ was breathing again and looking forward to more, and Rockers were hoping to find a way to engage in a project publicly. We hoped to go along and take in exactly what was going to happen. Meanwhile, planning was afoot.

*Cardiocrinum giganteum*

After earthquakes, restructuring of staff and financial pressure from infrastructure repairs that needed attention after years of delays and underfunding, the Botanic Gardens needed a boost. The rock garden area had been sadly neglected and was full of weeds, seedlings, and overgrown plants. The concept of crevice gardening was in our minds – Kenton Seth from Colorado was already coming to New Zealand as Steve Newall's annual international guest and was open to helping create a garden. Hamish Brown, president of the NZAGS, talked to Wolfgang Bopp (Botanic Gardens director), Grant Mathieson (rock garden manager), and their staff about the idea and all were supportive.

Halswell Quarry, where rocks previously used in the garden had been obtained, operated from 1861 to 1990 and provided cut stone for many of the city's important building projects as well as being crushed for road making. Driving around Christchurch it is easy to find the distinctive blue-grey stone in walls, historic buildings, garden structures, paths and doorways. As a quarry it was working for 130 years and now is a popular place for picnics, walking tracks and recreation. The quarry itself has been closed to the public for a number of years but the stone may still be used for approved building repairs or significant city structures.



A day in February saw a few Alpine Garden Society members and Botanic Gardens staff, along with Nigel Morrirt, the City Council Ranger for the area, meet in Halswell Quarry to extract the stone to build the new crevice garden next to the old rock garden area – our garden was deemed to fit official criteria. Early on Saturday morning February 22 2020, four-wheel drive vehicles, trailers and people assembled in the quarry to load 29 pallet loads of stone and move them to the gardens. A shuttle service was set up with a team of strong young men and by two in the afternoon there were many tired bodies but many heaps of stones transferred ready for assembly. The group worked out where these piles of stones should go and there were some weeks of planning before work could begin – location, orientation for sun and shade, assembling essential ingredients. Trailer loads of gritty potting mixes and small chips were imported; laser levels, shovels and hand tools were put on hand. Kenton Seth had designed the new crevice garden and along with a small NZ team built it over the weekend of 13 to 15 March – lots of muscle power lugging some very heavy slabs of rock into desired positions. There is no better way of learning than watching an expert in action. To travel to the other side of the globe to do so is not exactly commonplace but I do so much love New Zealand. Having persuaded a husband once, it was a bit easier to do a second time. *Aye, righte ...*

We arrived early on Sunday morning to find a site with cast-off headgear, tools and even plants (only in NZ!) abandoned at the end of the previous heavy day – but what a start. There had been a lot of planning beforehand. The rock garden is in an open area but is surrounded by a collection of wonderful mature trees. A new pathway was also under construction. Here were pallets of the Halswell stones, most of which were now crawling up a short rise; there was a shocking pink trug contrasting with a huge heap of quarry waste and grit; and there were new plantings of heathers and new trees.

Rockers arrived – workers, garden staff and local group members all anxious to learn the secrets of decent crevice building. And, using the previous day's work and what was being done in front of him, Kenton gave a superb masterclass, free with his wealth of experience. But it was very apparent to one sitting listening that rocks rock and that these rocks rocked exceedingly. They had the appearance of dragon skin and, planted in the Seth fashion, they even took on the appearance of a Smaug; very appropriate. Kenton and the volunteers placed the beautifully coloured and shaped slabs of stone meticulously and he used the 'abandoned' plants to explain the method of planting and the plants' siting.

The small crowd enjoyed the question and answer session and a few were able to plant some specimens but as it had been so dry it was decided to wait until mid-May to do the main planting. Sadly, Covid 19 shut down NZ and the hoped-for planting did not happen. However,

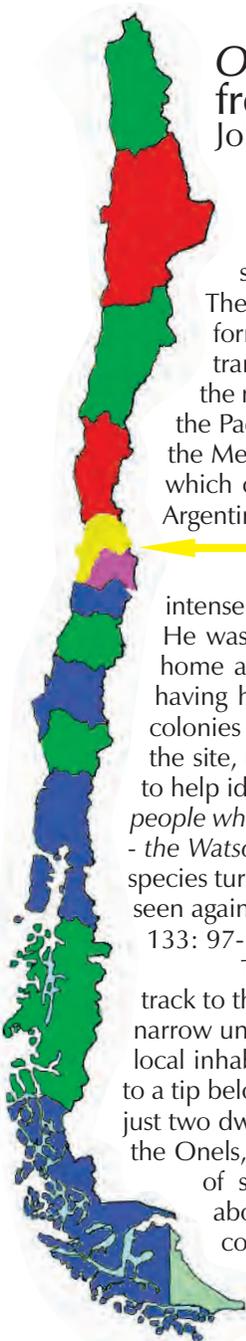
Judith tells me that the garden staff planted up in June. They also have a few keen members who spend their Monday afternoons volunteering – weeding and reshaping the original rock garden, hoping to bring it back to its original 1937 condition. Keep an eye on the NZAGS website and Facebook page for up-to-date progress at [www.nzags.com](http://www.nzags.com).

So, if you go down through the woods sometime soon (we hope) in a garden in Christchurch, *gang warily*. Under the tussle of flowers and plants there be a dragon.



# *Oxalis ranchillos*: a New Species from Central Chile

John and Anita Watson



Discovery of this Chilean novelty owes to an amateur naturalist, the late Carlos Celedón of Los Andes. He visited the site many years ago when a young man searching with his father for native Amerindian artifacts. The exact location lies just west of the Cuesta de Chacabuco, a former main pass over the Cordón de Chacabuco, one of several transversal ranges branching at right angles and westwards from the main Andes, running partially across the central valley towards the Pacific littoral. The crest divides our own Valparaiso Region and the Metropolitan (Santiago) Region. The important Chacabuco Pass, which connects traffic between Santiago and the major crossing to Argentina, is a mere 7 km south of us (Calle Larga, Los Andes), in the extreme southwest of Aconcagua Province.

By 2012, then in his early 40s, Carlos had developed an intense interest in natural history, becoming a skilled photographer. He was a tireless explorer of the Andes and their foothills near his home and thought nothing of climbing 2000 m and back in a day, having hitch-hiked to his footslog starting point. He recalled seeing colonies of a small annual rosulate viola when with his father, revisited the site, took photos of the flower and asked a botanist in Valparaiso to help identify it: "Why ask me when you live almost next door to two people who know more about those violas than anyone else in the world - the Watsons!" We drove with him on the 10th October 2013 and his species turned out to be *Viola chamaedrys* (below), which had not been seen again since its discovery about 150 years earlier (*The Rock Garden* 133: 97-101). Quite a coup!

The locality of the viola was fascinating. It lay off the beaten track to the west of the main pass at a place called Los Ranchillos on a narrow unadopted road, at that time used mainly an access for the few local inhabitants as well as a connection for dust carts running rubbish to a tip below by Chile's main north-south dual carriageway. There were just two dwellings, occupied by helpful and friendly local stock farmers, the Onels, with their goat corrals. The site is on their land and consists of several close-set dark or red consolidated iron clay areas about five metres across. These, in contrast to the surrounding countryside, are almost bare of vegetation other than local native taxa, including the little annual viola and at times a few aggressive adventives. These self-contained 'Patch'



environments (below) cover a triangle some 3 km wide and high. The Onels call them *tierra muerta*, 'dead land', for no animal feed grows there and, when the clay is saturated after rain, goats have even sunk to their deaths. Our own perception was dead opposite, even more so when we saw exciting extensive close-packed colonies of an alstroemeria's glaucous and sterile shoots, unlike any we knew. They inhabited the bare clay and nowhere else. Two months later we returned and found the shrivelling pallid mass of sterile foliage punctuated here and there by short yellow inflorescences. We recognized this plant as new to science and it became our *Alstroemeria piperata* (*International Rock Gardener* 103: 26-55), adding a new endemic to the flora of Chile, increasing the *Alstroemeria* species of Valparaiso Region from 18 to 19, and providing the region with its second endemic of the genus.

Information concerning the genus *Alstroemeria* is chaotic, varying from source to source. All concur that there are two main centres of distribution: one Atlantic, centred on Brazil; the other Andino-Patagonian, most of its taxa in Chile. There is agreement that the totals of both are roughly equal, although cited species numbers range from about 40 to the low 60s. We cannot speak for the Atlantics but agree a count of just over 40 for the Andes and adjacent areas. Chile contains at least 37, many of which are well known in gardening circles, the most familiar being *A. aurea*, which could hardly be more different from *A. piperata*. Another, an infraspecific variant of *A. angustifolia*, its variety *venusta*, accompanies *A. piperata* as a solitary minimal population in the patch system, but is also known from Coquimbo and Santiago regions.

But the Los Ranchillos story doesn't end there. From 2013 to 2015 we discovered more undescribed 'clay endemics': the oxalis presented here; a *Hypochaeris* species (Asteraceae); and a possible third, an *Adesmia*. During this time Carlos did not rest on his laurels. He encountered a rare and unique perennial rosulate *Viola* species at over 3000 m in the Aconcagua Andes; we published it under the name *V. regina*, Queen of the Violas (*International Rock Gardener* 122: 17-59). Tragically, Carlos died of a heart attack in 2015 at the too early age of 46. We miss him. We had planned for him to be our plant-hunting legs and eyes, and for us to be his identifiers and publishers for many years to come. In consequence we named his latest and last discovery *Cistanthe celdoniana* (*International Rock Gardener* 132: 3-58) as a celebration of his achievements and as our farewell *in memoriam*.





*Alstroemeria angustifolia* var. *velutina*

### Purple Patches

The *tierra muerta* assemblage is surrounded by typical Chilean Central Valley *Acacia caven* low savannah, defined formally as xeric Mediterranean interior spiny matorral. The clay habitat comprises confined areas of closely adjacent dense iron-clay, each forming a land archipelago about 300 to 400 metres long, with lesser width. We have found three such clusters. Limited 'island' areas with a distinct exclusive flora, such as these clay clearings, are known technically as 'patches', and the overall vegetation type that contains them is a 'matrix'. Interaction between the two systems, and with any outside influences or intrusions, is known by ecologists as 'patch dynamics'.

The soil of these patches forms a liquid mire when wet. It flows over the surface, rapidly setting when dry to a hard impenetrable crust, excluding light and air until fractured by shrinkage or perhaps by animals trampling. Even then, much remains caked into almost unbreakable solid accretions. These conditions are inimicable to most of the surrounding



*Alstroemeria piperata*, red form, at Los Ranchillos

dominant vegetation. Despite this adverse medium, a specialised flora has vigorously adapted to - and colonised - sectors of these patches, taking advantage of their otherwise almost vacant terrain and consequent lack of aggressive competition.

As well as the three known large close-set clusters, other widely scattered and isolated *terra muerta* patches – often solitary and small – exist in the landscape. Apart from the outlying easternmost *O. ranchillos* site they have not been much colonised by the more restricted and specialised patch taxa. Close patches and sufficient size are needed for positive interactions, and remoter patches lack the first or both of these features.

#### **Taxonomy and conservation of *Oxalis ranchillos***

A full botanical definition of our new species is too long to provide here but is published in *The International Rock Gardener* (138, June 2021). There, we describe the geographical location, the diagnosis, description, species context, etymology, distribution, phenology, pollination, environment and conservation. This latter is interesting.

Despite its restricted range and the presence of goat flocks at two of its sites, we believe that *O. ranchillos* is not under immediate threat. Its ability to flourish on ground that no more than a few other non-aggressive native species have colonised significantly so far confers a considerable advantage. In addition, its annual lifestyle and copious seed production – some expelled well distant from the mother plant – allow for the possibility of further colonisation as well as providing an ample seedbank. As we have seen, limited herbivory by mammals such as goats and introduced rabbits often fails to destroy the growing point of the plant, which may rejuvenate and flower for a second period. A possible cause for concern is increasing invasion of the patch areas by adaptable and dominant alien elements, in particular *Erodium cicutarium*. Nevertheless, *O. ranchillos* maintains healthy populations and seems able to co-exist with that recent arrival, particularly in its easternmost population. This situation requires careful monitoring over time. Much of the terrain on which it occurs is owned by a large commercial consortium (under economic threat from COVID), but the evident lack of a water supply suggests that extensive development is most unlikely in the immediate future. There are also regular and growing off-road motorbike meetings, the tracks of some passing over the patch systems.

Based on the formal red list classifications of the International Union for Conservation of Nature, *O. ranchillos* ranks as Critically Endangered (CR). Considering the similar status of numbers of taxa of the biodiverse and vulnerable flora of the entire sector of the Cordón de Chacabuco, above all at Los Ranchillos, we hope for some initiative to provide formal protected status for the pass area as an immediate priority.

*Oxalis ranchillos*, F.& W. 12882





Above: *Oxalis ranchillos*

Below: *Oxalis ranchillos* in an *Erodium* infestation





## Understanding *Primula bracteosa* Craib Pam Eveleigh and Phuentsho

Plant hunting these days is much more than randomly finding plants in the wild. We can arm-chair travel, covet wild plants shown in forum images, and discuss their identity. Phuentsho had recognized images posted on Facebook and in the citizen science web portals [iNaturalist.org](https://www.naturalist.org) and [biodiversity.bt](https://www.biodiversity.org) as the same plants he had seen multiple times around Trongsa and Wandue Phodrang in Bhutan. Pam identified them as *Primula bracteosa*. We wanted to know more and decided to collaborate to understand more about *P. bracteosa*, with Pam researching historical documents online from Canada, and Phuentsho doing field studies in Bhutan.

### ***Primula bracteosa* in literature and herbarium**

The history of *Primula* section *Petiolares* starts with *Primula petiolaris* and *Primula nana*, both from Nepal, described by Nathaniel Wallich in 1824. Many plants were subsequently lumped under the name *Primula petiolaris* but W G Craib revised this entire group in 1917. His revision comprised two articles, the first describing eleven new species, while the second detailed the history of the section, grouped closely related species, and provided a key describing distinguishing characters. For his analyses, Craib used herbarium sheets assembled from the Royal Botanic Gardens in Calcutta, the Royal Gardens at Kew and the Royal Botanic Garden Edinburgh; and the specific sheets he examined are listed under each species in the second article.

One of Craib's new species is *Primula bracteosa*, distinguished by the character of petioled leaves (not bracts), which grow at the top of the scape as the plant goes into fruit. Recent images show that as these scape-leaves grow heavier the scape bends down and, given suitably moist conditions, will root to form a new plant. These scape-leaves are also a

*Primula bracteosa*: flower variation Above: Bhutan & Location of Dochu La





*Primula griffithii*  
(Photo: George and Liz Knowles)



*Primula griffithii*, scape-leaves  
(Photo: Margaret Thorne)

feature of *P. griffithii*, a more robust member of the section *Petiolares*, also found in Bhutan. *P. griffithii* is distinguished by its large farinose resting bud, triangular mature leaves with a pointed apex, and flowers usually of a blue-purple tone.

When *P. bracteosa* flowers it resembles other section *Petiolares* species. Hiroshi Hara suggested that another of Craib's species, *P. boothii*, is indistinguishable from *P. bracteosa*. *Flora of Bhutan* adopted this, citing *P. boothii* as a synonym of *P. bracteosa*. The main differences given for *P. bracteosa* / *P. boothii* are the presence / absence of scape-leaves, and the absence / presence of farina. Type specimens for *P. bracteosa* are in fruit while those for *P. boothii* are in flower. Could *P. bracteosa* and *P. boothii* be the same species at different stages of growth?

Searching through the specimens examined by Craib, we found that Griffith's collection 3514 at Kew, from the east side of the Dochu La, was listed under both *P. bracteosa* and *P. boothii*. That herbarium sheet has two specimens, with the bottom plant's fruiting scape showing scape-leaves while the upper plant's does not. Craib also lists Cooper's collection 3917 from Dochu La, and Cooper wrote in his report on his botanical tours in Bhutan in 1914 and 1915 that just below the Dochu La, *P. bracteosa* (C. 3917) and *P. boothii* (C. 3919, "profuse to the east of the pass") are both found. Craib must have been conflicted about whether the two species were distinct, as he marked two sheets



*Primula bracteosa* showing flowering scape

in Kew as *P. boothii* var. *bracteosa*. As Dochu La is very accessible to Phuentsho, we decided that the field study would centre on this location.

### **The Dochu La and the ancient trail**

Dochu La is a pass between the Thimphu and Punakha valleys at an altitude of ca. 3100 m. Before the 1960s construction of motor roads, people traversed it via a well-established footpath. The trail was the main highway from Thimphu to Punakha and Wangdue valleys. Both Punakha and Wangdue Phodrang were former capitals of Bhutan before a shift to the current capital at Thimphu. The footpath has been used by common people as well as lamas, clergy and important bureaucrats. It is evident that many foreign visitors and plant collectors who travelled from the west to central and eastern Bhutan also used this trail.



*Primula bracteosa* scape-leaves

One of the oldest accounts of the Dochu La is in the biography of the Lama Drukpa Kunley (1455-1529), who is known to the western world as the *Divine Madman*. He is said to have subdued the demoness who resided at Dochu La and harmed travellers, putting her under a stupa near the Chimi Lhakhang in Punakha. The central monastic body of Bhutan used the trail for their annual migrations, spending summer months in Thimphu and the cold winter months in Punakha. This migration is still practiced, but the entire monastic body travels by car.

The historic route is now a hiking trail, starting from the Dochu La and descending east towards Lamperi, where a small botanical park has been established, and then continues to Lumitsawa. The pass is dominated by conifers (*Tsuga dumosa*, *Taxus wallichiana*, *Pinus wallichiana*) and rhododendrons (*Rhododendron arboreum*, *Rhododendron kesangiae* (endemic to Bhutan), and *Rhododendron falconeri*). On a clear day, there is a beautiful panoramic view of the higher Himalayas in the north. The pass is adorned with 108 Buddhist stupas and a Buddhist temple. The stupas are called Druk Wangyal Chorten, translated as “the stupas of victory”, and were constructed by Her Royal Highness the queen mother Ashi Dorji Wangmo Wangchuck after a Bhutanese victory over militants in the southern parts of Bhutan.

Besides being an administrative boundary between two districts in Bhutan, the pass is also a boundary where we can see two different vegetation and climate zones, one on either side. The eastern Punakha side of the pass is warmer, humid, descends lower and has dense vegetation, while the western Thimphu side is drier and dominated by *Pinus wallichiana*. It is on the eastern side that enormous numbers of *Primula bracteosa* grow.



*Primula bracteosa*

### **Encounter with *Primula bracteosa***

Phuentsho planned to visit places around Dochu La-Lamperi with his knowledgeable friend Sangay Wangchuck, who works in the Botanical Park in Lamperi. On the day, Sangay was unavailable but his friend Cheten La accompanied Phuentsho to show him where these plants may be seen in abundance. Numerous images and some specimens came from Sergizamchu, below the national highway in Lamperi. That was in February, 2020. Most of the plants were in flower and some that had finished flowering were developing small leaves from the top of the flower scapes. A few flowering plants were brought to the National Biodiversity Centre office and planted in a pot for close observation.

Dochu La



Later in March, Phuentsho made two visits together with Sangay Wangchuck and on the first they found *Primula filipes* on a rock face in Lamperi. They decided to walk from Dochu La to Lamperi on the ancient trail and look for the plants there. As soon as they descended from the pass, they saw *Primula bracteosa* in masses and with many colour variations. The ones growing on sandy soil in the direct sunlight were stunted while those in shady areas were robust. The plants were all over the forest floor and nearby footpath. Further down from the pass they came across a plant that was still attached to a second plant by the old scape and was hanging over a boulder on the footpath. They collected a specimen of that plant and took photographs.

Then, in May, two short visits were made to the east side. Below the Dochu La all the plants were in fruit, with the flower scapes elongated and crowded at the top with scape-leaves. Phuentsho estimated that 70-80% of the plants had scape-leaves. However, there was no formation of new plants from the scapes at that time. The three plants in the pot at the office also started to show scape-leaves. In August another visit was made and they found some plants that had scapes which had fallen on the moist substrate and formed roots. The scapes were still attached to the new plants but were becoming old and some were rotting off. Plant specimens for the national herbarium were collected and multiple photos taken.

#### **Phuentsho's observations and images show:**

- *P. bracteosa* is farinose on the flower buds, pedicels, calyx and young leaves but this farina quickly washes off. By fruiting, plants may appear efarinose-glandular or may have just a sparse amount of farina remaining.
- Not all plants form scape-leaves, perhaps depending on the age or vigour of the plant.
- Flower colour varies from light pink to dark pink; the eye colour varies from pale yellow-green to deep orange, sometimes with a narrow, diffuse, white ring surrounding the eye. Flowers are heteromorphic and annulate. Corolla lobes vary from shallowly to deeply 3-toothed.
- The scape is very short when the plant flowers but elongates with age.
- Leaves are dimorphic. Young leaves are spatulate with a short broadly winged petiole. Later leaves are distinctly petioled with an ovate to oblong-ovate blade and truncate to subcordate base. The margin is irregularly dentate.

#### **Connections with *Primula boothii***

In the description of *P. boothii*, Craib listed type herbarium sheets, thought to be collected by Booth, in "Bhutan" at Chardwar, Meru mountains and Tengepane. Tengepane is a river rising near the eastern Bhutan border and flowing east towards Tenga. Chardwar, or Char Dooar, refers to an area in western Arunachal Pradesh as labelled in a map by Captain R B Pemberton. Frank Ludlow researched Booth's

collecting localities and made a strong case for Booth's primula collections being made in the border area of Eastern Bhutan (near Merak) and Western Arunachal Pradesh.

Unfortunately, our study did not extend into Eastern Bhutan and Western Arunachal Pradesh, but we have been able to gather images from travellers who have been to those areas. In particular, images taken in March 2020 by Pete Boardman at Naga GG, Arunachal Pradesh, just east of the Bhutan border, show flowering plants consistent with the plants at Dochu La. It is fortunate that Margaret & David Thorne visited this same place in July 2013 and photographed and videotaped the plants forming scape-leaves. This is within Booth's collecting area, so we now have proof that *P. bracteosa* grows there. An image by Pema G Bhutia, from near Labdang in western Sikkim, shows that *P. bracteosa* is distributed that far west, but we have not seen images of scape-leaves in images or specimens from Nepal, though it is reported to grow there. The Nepal – Sikkim border area overlaps with related species *P. scapigera* and *P. irregularis* and their relationship to *P. bracteosa* requires more investigation.

From our field study, we have concluded that all characters given by Craib for *P. boothii* could be observed in *P. bracteosa* and that any differences given between them are explained by the stage of growth (flowering versus fruiting) of the specimens. We agree with Hiroshi Hara's assessment that *P. bracteosa* and *P. boothii* represent the same species. Both were described in the same article and so either species may be designated the species and the other the synonym. Craib placed emphasis on *P. boothii* by annotating "*P. boothii* var. *bracteosa*" while Hara chose to emphasize *P. bracteosa*. We choose to follow the *Flora of Bhutan* and recommend the continued use of *P. bracteosa* as the preferred name for this species, with *P. boothii* as a synonym.

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## Southern Slopes of Annapurna: The Lamjung Himal

David & Margaret Thorne



By mid-morning on 8th July 2016, day 17 of our trek, we were still in the valley of the Seti Khola, sitting beneath a Pipal tree (*Ficus religiosa*) on a porters' *chautara* (resting platform) while Dawa, our cook, went recruiting in the nearby village. To supplement our core group of a dozen porters, the trekking company's plan was to temporarily recruit local people to carry for us when food stocks had been replenished, and to release them once supplies dwindled. In practice, recruitment proved difficult because nearly everyone was involved in planting rice, the second crop of the year. One man rebuilding a stone wall nearby packed away his tools and came to test the weight of the designated load; he soon picked up his bag of tools again and returned to the more relaxed business of constructing his wall.

Growing at the edge of the river where water flowed down the bank was *Pentasachme wallichii*, with clusters of white flowers in the axils of its opposite leaves. Nearby were several plants of maroon-flowered *Didymocarpus pedicellatus* while later that day we found another Gesneriad, *Chirita pumila*, in similar conditions. In damp areas were the familiar patterned leaves and



Above: *Pentasachme wallichii*  
Left: *Didymocarpus pedicellatus*  
Centre: *Ficus religiosa* & porters



white or pink flowers of *Begonia picta* and less showy *B. rubella*. *Callicarpa arborea*, a tree with purple flowers reminiscent of *Buddleja*, was closer to the village where two young girls standing in a doorway smiled at us and giggled as we photographed tobacco plants, *Tabacum nicotianum*, growing on the verge outside their house, and the impressive white flowers of the ginger, *Hedychium ellipticum*, with long orange staminodes. As we were still at only 1230 metres, we were anxious to be on our way and regain altitude. Eventually, two men were hired to carry some of our food direct to Sikles while we set off on a longer route up and over another ridge, Tara Hilltop, to reach the same village in four days' time.

We spent that night in a lodge above the cultivation and the other houses, at the very top of the village of Ghalekharka, whence we had a glorious view of Machapuchare,

Above: *Begonia picta*

Right: *Callicarpa arborea*

Below: *Chirita pumila*





*Hedychium ellipticum*  
*Aeschynanthus hookeri*

Annapurna and the route by which we had come. Next day we passed two massive trees, *Sorbus vestita* with broad entire leaves, and an equally impressive *Albizia chinensis* with contrasting pinnate leaves, both still with masses of white blossom. These were just as we entered a protected 'Natural Zone' and for the following two days we walked through mature and extensive mixed broadleaf woodland that clearly provided a valuable resource for local people who were returning to the village with their baskets fully loaded, as far as we could see, with bamboo. There was still some *Rhododendron* but also a much wider range of mature broadleaved trees covered with mosses, ferns, climbers and other epiphytes including *Aeschynanthus hookeri*,





*Strobilanthes wallichii*  
*Meconopsis gracilipes*



its curved scarlet flowers with exerted stamens and a conspicuous dark stripe. On the forest floor, *Goodyera repens* with its reticulate pattern of leaf marbling and *G. vittata* with a wide white central leaf stripe were in bloom as was *Malaxis acuminata* with broad leaves sheathing a spike of maroon shield-like flowers. There was a lot more *Calanthe tricarinata* than we had seen previously and the far less colourful *Platanthera bakeriana* but, apart from these orchids and the blue funnel shaped flowers of *Strobilanthes wallichii*, there was little still in flower in the dark conditions beneath the forest canopy. Tara Hillside proved to be a small clearing in the forest at a lower altitude than our maps had suggested and therefore of little additional botanical interest.



*Neohymenopogon parasiticus*

Here we met the porters hired to carry extra loads to Sikles who, having encountered a landslide, had abandoned their burdens and were now heading home. Much debate ensued and we retired for the night unsure if, on the following day, we would be able to continue our intended path.

An advanced party of fit young porters set off early next morning to assess the route while we followed more slowly, photographing *Lilium nepalense* at the top of the ridge before we descended into *Rhododendron* forest. Here on the steep slopes either side of the path we found *Meconopsis gracilipes*, scarcely a metre tall with pale yellow petals and filaments, its finely divided unspotted leaves almost lost in a green sward of ferns and leafy herbaceous plants. Dawa met us at a path junction, a point of possible diversion, to say that our porters had managed to circumnavigate the landslide; so we continued on our way through numerous streams which, after several days of pouring rain, had become raging torrents. After climbing high above the place where the hillside had been swept away into the forest below, we re-joined the path to drop gently down into the grazed land above Sikles and finally to Namaste Guest House.

On 12<sup>th</sup> July, we descended steeply from Sikles to cross the Madi Khola and were pleased that this was by means of a substantial metal suspension bridge rather than the adjacent dilapidated structure it had evidently replaced. The river roared way below us through a steep sided gorge, and a hydro-electric installation to harness its power was being built, causing considerable disruption on the river bank. Over six days we planned to climb the 3000 metres to our next high camp at the eastern end of the Taunja Danda at 4410 metres, taking care to limit our daily gain in height to 500 metres to avoid any problems associated with the altitude.

Our path led steeply upwards past a sign indicating we were entering a National Trust for Nature Conservation 'Wilderness Zone and Highland Pasture Area' without any human settlements or hotels. Once again, we were in mixed deciduous forest with mature trees but the canopy was



*Leptodermis kumaonensis*

much more open and there were grazed clearings that allowed a greater diversity of plants to thrive. The epiphyte, *Neohymenopogon parasiticus*, had white waxy star-shaped blooms. *Leptodermis kumaonensis* bore both young white flowers and older pink ones on the same plant while berries were beginning to form on the daphnes and viburnums. *Hydrangea heteromalla* still had its panicles of white flowers with large sterile florets surrounding the smaller fertile inner ones. In grazed clearings we found yellow-flowered *Meconopsis* plants over two metres tall with long panicles in the upper half only, though buds were still to open in the lower leaf axils. Their leaves were far less divided than those of *M. gracilipes*, which was also present but in more shady places and with clear differences in their seed capsules. The taller plants were *Meconopsis paniculata* and the distribution of the two species overlapped in the altitudinal

*Meconopsis paniculata*





range of 2700-2890 metres without any apparent hybridisation.

As we climbed we found familiar purple-blue flowers of a delphinium, later identified as *D. himalayae*, and two species of *Thalictrum*: small white panicles of *T. virgatum*; and *T. chelidonii*, a striking plant with much larger lilac blooms. There was the bright pink *Geranium polyanthes*, no fewer than three yellow-flowered species of *Corydalis* and several *Pedicularis*. In the early afternoon of 14th July we were emerging from forest into more open habitats when, having already climbed 700 metres in altitude in one day, Margaret started to get cramps in her



*Meconopsis paniculata* seed heads; *Geranium polyanthes*; Facing: *Thalictrum chelidonii* 🍀



Two flower forms of *Primula wigramiana*: toothed funnel-shaped (Below & Facing) and untoothed bell-shaped (Facing, below)



hands and legs. After resting for a while, we continued to a dharamsala (pilgrim hut) to spend the night rather than continuing to Kori, a further lift of 300 metres, where we could see the camp was already set up. Four of our porters returned with food and a tent, which was pitched inside the hut to give us a separate space in which to sleep. It poured with heavy rain all night but we woke to the sunniest morning of the trip. We will never forget the sight of bumble bees pollinating two-metre-tall *Meconopsis paniculata* set against the backdrop of snow-capped Machapuchare and Annapurna's peaks II and IV immediately above us.

As we set off for a leisurely day's walk up to Kori to join the rest of our crew, we found the characteristic leaves and seed heads of a petiolarid primula, possibly *P. irregularis*, the aptly named orchid, *Bhutanthera albomarginata* – its green sepals bordered white, and the pink-flowered *Pedicularis flexuosa* with noticeably longer tubes than those we have seen in Bhutan. On the rocks were large patches of *Primula primulina*, each blue flower with a tuft of white hairs at its centre, and in crevices we found yellow-flowered, hairy-leaved *Saxifraga hispidula*. In damper places *Parnassia chinensis* grew with delicate white fimbriate petals, with its close relative *P. pusilla* and *Pedicularis regeliana* with its bright pink flowers above compact deeply cut leaves. We continued parallel to but below the ridge of the



Taunja Danda and were again among the mix of *Primula strumosa*, *P. stuartii* and *P. obliqua*, as we had been on the ridges of the Mardi Himal. *Gymnadenia orchidis* and *Leontopodium himalayanum* were in full flower while *Bergenia purpurascens*, *Arisaema griffithii* and *Maianthemum purpureum* reminded us that these grazing meadows had once been part of the forest. Just as we reached our camp for the night we found our first plant of *Primula wigramiana* and next morning woke to discover them all over the site albeit badly battered by the torrential rain. Their broadly funnel-shaped exannulate flowers were pure white, contrasting starkly with deep purple calyces. The inside of the tube was pale yellow and there was fine stippling on the inner surface of their petals, which were toothed along the whole edge. They grew in clusters of three to five flowers on relatively long stems from a rosette of leaves with very short petioles and hairs on both upper and lower surfaces. They reminded us more of *P. eburnea* from Bhutan, known to us only from photographs, than of *P. reidii* with which they are usually compared.





*Leontopodium himalayeanum*

Mardi Himal. They were taller in proportion to width, flowers less cupped and seed capsules a different shape, ovate rather than oblong. The four petalled flowers were up to 16 centimetres across when expanded, with pale yellow filaments and a deep purple stigma. Though the leaves of both species were similar, with an elliptic lamina and finely toothed edge, they were markedly and consistently different in colour, those of *M. taylorii* grey-green with white hairs, and *M. regia* yellow-green with a sheen of golden hairs. Nobody who had seen hundreds of plants of each, as Williams had

In the first hour of the day's walk, we enjoyed thousands of plants of *Primula wigramiana* looking glorious alongside the occasional blue-flowered *Corydalis cashmeriana* ssp. *longicalcarata*, and then we came across the basal rosette of yet another plant of particular interest, *Meconopsis regia*. We scanned around with binoculars and spied a boulder field some way off the path with tall yellow-flowered plants scattered across a wide area. We felt this a necessary detour so we spent the next two hours checking dozens of plants for any variation. Apart from the obvious difference in flower colour, these yellow-flowered *M. regia* had different growth form from the pink-flowered *M. taylorii* on the

*Meconopsis regia* x *paniculata*





*Primula sikkimensis* var. *hopeana*

done before describing *Meconopsis taylorii*, could possibly have doubted that these were two distinct species.

Eventually we made our way back to the path, crossing a watercourse lined with white flowered *Primula sikkimensis* var. *hopeana* accompanied in these wetter areas by *Lagotis kunawurensis* and *Cremanthodium oblongatum*. There was also a stand of striking pink *Bistorta affinis*, mounds of white-flowered *Androsace lehmannii*, the eyes

*Primula buryana*



of which turn from greenish-yellow to red when pollinated, mat-forming blue borage, *Trigonotis rotundifolia* and several of the dwarf pink flowered lilies, *Lilium nanum* ssp. *nanum*. It had already been an exciting day for us botanically but there were new discoveries still to come. First, delicate blue flowers of *Delphinium brunonianum* and then, perched up on the rocks, another white-flowered soldanelloid primula that we had not expected to see, *P. buryana*. This was first collected by Wollaston during the 1921 Mount Everest Expedition. It is most frequently recorded in the vicinity of the Thorong La, in drier areas than these south-facing slopes that take the full force of the monsoon. Many of the flowers had been marked by the rain and the *Saxifraga hemisphaerica* alongside was past flowering and beginning to set seed. We subsequently found a single plant of *Primula buryana* var. *purpurea*, which provided an interesting comparison with its white fellows. We next came across *Anemone rupicola*,



*Delphinium brunonianum*  
*Cremanthodium oblongatum*



*Corydalis meifolia* around the holy lake, Dudh Pokhari



which we would love to grow in our garden – particularly the lovely forms like these with purple colouring on the reverse of their petals. We have ordered the seed from several exchanges but never received the correct species and wonder if it is still in cultivation.

*Primula munroi* grew at our campsite that night at the eastern end of the Taunja Danda Deorali, our highest before crossing the 4530 metres pass, the boundary between Kaski and Lamjung Districts, and then descending 500 metres to Thorchu. The path soon disappeared into a rockfall and the difficult underfoot conditions, as well as a whole new range of plants, slowed us down considerably. The most attractive of these was *Corydalis meifolia* with finely cut foliage and rich golden flowers, though they can sometimes be orange or even brown. *Saussurea gossypiphora*, *Rheum moorcroftianum* and *Cremanthodium purpureifolium* were not yet in flower but a *Meconopsis horridula*, its single blue flower made translucent by the rain, stood out on the cliff above us. There was *Chrysosplenium carnosum* with reddish brown flowers and matching stems, *Potentilla argyrophylla* in yellow and orange and several yellow-flowered ciliate saxifrages. Of these, we recognised *S. saginoides* with its distinctive linear leaves and widely spaced petals, *S. jacquemontiana* with hairy edged leaves in small rosettes, and another with red stolons was possibly *S. tentaculata*. Others have defied identification, as we find our photographs of living saxifrages particularly





Facing: *Meconopsis horridula*

*Saussurea gossypiphora*

difficult to relate to herbarium specimens and we certainly found more species in Lamjung District than are recorded in the *Flora of Nepal*. On the Mani stones (wayside devotional stones) at the pass grew *Primula tenuiloba*, its skeletal purple-blue flowers fading into a hairy white centre over tiny deeply cut leaves. Downhill from the pass, *Primula stuartii* and *P. sikkimensis* var. *hopeana* carpeted either side of our path, with *P. buryana* on the rocks above in both its white and blue forms. There were more hummocks of *Androsace lehmannii* but, unlike ones we had seen before, these had their summer leaves, edged with cilia and formed into small rosettes, quite unlike the more uniform winter foliage. Then we traversed an area dominated by the unusual and most attractive white flowered *Potentilla coriandrifolia* with deep-red centres, at which

*Potentilla coriandrifolia*



point we suddenly stopped botanising as we realised that our guide did not know which way to go. There was no crew member here, as arranged, to direct us and visibility was poor, so our guide ran off to find the camp, leaving us to shelter as best we could. We tucked ourselves under a large boulder, having left a walking pole in the middle of the path to indicate our whereabouts, and waited to be found. After a couple of hours and just as it was beginning to get dark, we heard the voices of two of our porters who then led us for only about twenty minutes to some buildings we had glimpsed through a break in the clouds several hours earlier. The failure of the trekking company to provide us with a guide who knew the route, or a crew prepared to co-operate with the guide, had once again put us in jeopardy.

We were now in the heart of the Rambrong Danda, an area whence many collections had been made during the 1954 Stainton, Sykes and Williams Expedition. Our agreed plan was to botanise northwards to the Namun Banjang, a 5560 metre pass and the highest point of the trip, before returning to Rambrong via a holy lake, Dudh Pokhari. This would leave us with three days to walk out south and east to the roadhead at

*Silene vautierae*



Khudi. We set out next morning, 19th July, on a gently upward sloping path which took us onto a lateral moraine. To our right (east) a noisy river flowed in the rocky bed of the retreated glacier and to our left a stream meandered through a grassy valley full of pink *Pedicularis* and yellow *Primula*, probably *P. sikkimensis*. On grassy slopes beside the path were two species of *Cremanthodium*, *C. oblongatum* like miniature slightly nodding sunflowers, and *C. arnicoides* the more robust plant with multiple flowers on each stem. On the rocks grew the tiny eyebright, *Euphrasia himalayica*, broad-leaved *Rhodiola bupleuroides*, *Saxifraga andersonii* and two trifoliolate species of *Potentilla*. These were orange-flowered *P. argyrophylla* var. *atrosanguinea* and yellow *P. eriocarpa* var. *eriocarpa*, neither recorded for this district in *Flora of Nepal*. As the valley turned to the right we went straight up the steep slope in front of us to the valley shoulder where we could look into the upper part of the valley. We followed the rim to a small open area and were disappointed to discover that our camp had been pitched, although only at 4376 metres and by midday. Dawa had told us that camping at the Dudh Pokhari was prohibited because it was holy, but we now realised that he had no intention of using the site above the lake closer to the Namun

*Primula tenuiloba*



Banjyang where our guide had stayed on a previous trip. Once again our itinerary had been compromised but we had to make the best of things. All around the tents were white flowered soldanelloid primulas, at first glance *P. wigramiana* but, on closer examination, significantly different from the ones we had previously seen that matched the type specimen. Each of these flowers was bell-shaped, much more like *P. reidii* than the first group of plants, and the petals of these were untoothed but with one tiny notch at the apex. However, these plants were exannulate, like *P. wigramiana*, with the same shape and colour of calyx, so they are, perhaps, just a distinct variety of that species.

We spent the rest of the afternoon exploring above the camp and set out next morning on the same path to climb as far as Dudh Pokhari. We were again walking up the lateral moraine but had occasional glimpses of the glacier itself and the small lake below it. There was plenty of *Meconopsis horridula*, both scapose and racemose forms, and *Arenaria glanduligera* was in flower but *Saxifraga hemisphaerica* once again was over. We then came across two species new to us: white cushions of *Saxifraga coarctata* and *Silene vautierae* with attractively pink veined inflated calyces. *Primula tenuiloba* and *P. muscoides* were both only in white-flowered forms and some were growing intermingled with deep blue *P. reptans*, which we were surprised to find this far east, being so much wetter than Himachal Pradesh, the only other place we have seen it. The area around the lake was tranquil,

*Gentiana phyllocalyx*





*Pedicularis roylei*

beautiful and full of glorious plants which we photographed while Mahindra went to meditate at the water's edge. The most conspicuous plants were the many *Corydalis meifolia* in colours ranging from pale yellow to orange, with *Cremanthodium decaisnei* and *Micranthes pseudopallida* thriving in the damper areas. White woolly heads had formed on only a few of the *Saussurea gossypiphora* alongside *Rhodiola wallichiana*, with *Potentilla microphylla* and white *Primula tenuiloba* looking attractive against the dark rock. *Pedicularis roylei* was particularly small in stature and it was good to see our first perennial gentians of the trip, *Gentiana phyllocalyx*, although all closed. Just as we headed back to camp, it began to rain heavily and, having seen all the plants in better conditions on the way up, we took advantage of a section of scree to make a rapid descent and were back within an hour.

*Meconopsis bulbilifera*





This gave us opportunity to catch up with diaries and identifications and by the time we emerged from our tent for dinner the weather had improved. To the east we could see across the ridges to a snow-covered rounded top but in minutes the cloud thinned and lifted to reveal a much higher tent-topped peak to its north. The consensus amongst the crew members was that this was Manaslu and as we watched this snow-covered peak, the sky behind it suddenly deepened through shades of blue to purple.

Next day we returned southwards only as far as the Rambrong Danda Deorali. Because the route was different from the way we had come, we saw several species for the first time. In grassy areas, we found the white reflexed petals and prominent pink styles of *Geranium refractum*, *Codonopsis thalictrifolia* with pale blue funnel-shaped flowers and just a few plants of *Lloydia flavonutans*, although many clumps of white *L. longiscapa*. We sheltered a while from the rain in the Thorchu hut before following a huge arrow carved in the turf by our porters to indicate the path from the pass down which we should have come two days previously. This shortcut comprised a steep well-constructed flight of stone steps that now took us past cliffs and crags with a tantalising selection of plants. In the pouring rain it was difficult to look up and identify them, let alone examine them through binoculars or to take photographs, but we certainly saw *Meconopsis bella* here. In a rock cleft closer to the path was *Silene helleboriflora* with large inflated calyces and attractive maroon flowers which unfortunately were not yet fully expanded. The pure white flowers of *Nardostachys jatamansi* looked particularly attractive against the dark rock and there was plenty more *Anemone rupicola* and *Potentilla eriocarpa*. We saw *Cassiope fastigiata* and *Chrysosplenium nepalense* in flower for the first time before reaching the pass around noon and found the cook tent pitched in a dip just beyond with all the crew waiting for us inside. Although it might have been wiser to have walked a bit further and split the distances more equally, the conditions were vile so we settled for hot chocolate before writing up diaries, dinner and an early night.

There was torrential rain as we left next morning, but we knew we could not delay. We would be walking down the pilgrims' route from Dudh Pokhari and there were several dharamsalas along the way, but we did not know exactly how far we would be going before we stopped at one for the night. We found our first *Meconopsis regia* plants about two hours after we left camp and shortly afterwards the really puny blue-flowered *M. bulbilifera*; this grew by twining round other plants and had trifoliolate leaves with bulbils in their axils. We only spotted this species because it was close to the path; only by unwinding one were we able to identify it. We saw both species



until early afternoon, over an altitudinal range of 3950 – 3650 metres. While studying a group of *M. regia* plants at 3800 metres, we noticed a single *M. simplicifolia* basal leaf rosette with empty scapes but could not tell whether the flowers or capsules had been removed by man, bird or other animal. In the early afternoon we started to see *M. paniculata* and for the rest of the day there were plants with varying sizes of yellow flower and degrees of leaf lobing which appeared to be hybrids with *M. regia*. Once we reached woodland, we found a single spike of *Notholirion bulbuliferum*, yellow-flowered *Clematis connata* growing through *Viburnum grandiflorum*, *Thalictrum chelidonii* and, in clearings at the edge of a stream, *Cremanthodium thomsonii*. It was nearly five o'clock when we eventually reached a kharka with three sheds, one of which had coloured garments hanging from the supports of the veranda. We squelched across the pasture to find sight of familiar faces; the kettle was on and we were pleased to have reached our stop for the night.

Next day, 23rd July and day 32 of our trek was a long hard slog as we walked for ten and a half hours on a stone-paved path from our dharamsala to the village of Nayan, arriving in the very last of the daylight at seven o'clock. We were cheered on our way by the sight of many great plants, the vast majority of which we recognised from previous days, but we stopped to photograph very few of them on account of not knowing quite how long the walk would take us. There was a certain irony to this, as it was the only day of the whole trip on which it did not rain until we had arrived at our destination and the light conditions could not have been better.

On the following morning, our last day of the trek, David was able to buy a new umbrella and repurpose the blue plastic sack he had been wearing for the past seven days. As he emerged from the shop and opened the umbrella, the rain stopped and by the time we left at seven, it was sufficiently hot and sunny to need its use as a parasol. After an hour walking through forest, we came to the cultivated land of the Khudi valley, a tributary of the Marsyangdi with rice paddies, grazing animals and farmhouses and here we joined a dirt road that led to the village. The hotel into which we were booked turned us away because they did not want our crew camping and cooking in their grounds. Just as we had settled into the shack we were offered as an alternative, a message came from the trekking company in Kathmandu. There was to be a nationwide strike of taxi drivers the following day and we would not be able to travel, so a Land Cruiser was already on its way to pick us up. We presented the crew with their tips, said our hasty goodbyes and were soon on our way back to Kathmandu, arriving at the Shangri La Hotel just before the midnight shutdown to celebrate the completion of one more successful Himalayan trip.

## The Distribution of *Meconopsis* on the Mardi and Lamjung Himal

We found nine species of *Meconopsis* during our visit, four of which have a wide Himalayan distribution: *M. bella*, *M. horridula*, *M. paniculata* and *M. simplicifolia*. Four others, *M. bulbilifera*, *M. regia*, *M. staintonii* and *M. taylorii* are endemic to Nepal and have relatively small distributions within the country; *M. gracilipes* is nearly endemic with a single record from just over the border in Tibet.

Our particular interest was in studying *M. regia*, *M. staintonii* and *M. taylorii* and how their distributions related to each other. We found *M. staintonii* and *M. taylorii* on both ridges of the Mardi Himal to the west of the Seti Khola but neither on the Lamjung Himal to the east. *M. regia* occurred only on the Lamjung Himal and not on the Mardi Himal, so there was no overlap at all between *M. regia* and the other two species. These discrete populations are separated by a considerable distance and physical barriers comprising several deep river valleys and intervening ridges. The same species distribution was found by Williams in 1954 over this geographical area. At that time *M. staintonii* had not been separately named and was known as *M. napaulensis*, but we have used current nomenclature for clarification.

In addition, on the Mardi Himal we discovered hybrids between *M. staintonii* and *M. taylorii*, and on the Lamjung Himal hybrids between *M. regia* and *M. paniculata*. Williams, however, recorded hybrids only in the latter location. He made two collections, one with red flowers, the other with petals of pale yellow at the base and pink towards the tips. In consequence, it has been suggested that *M. staintonii* was one parent,

Manaslu from the campsite below Dudh Pokhari

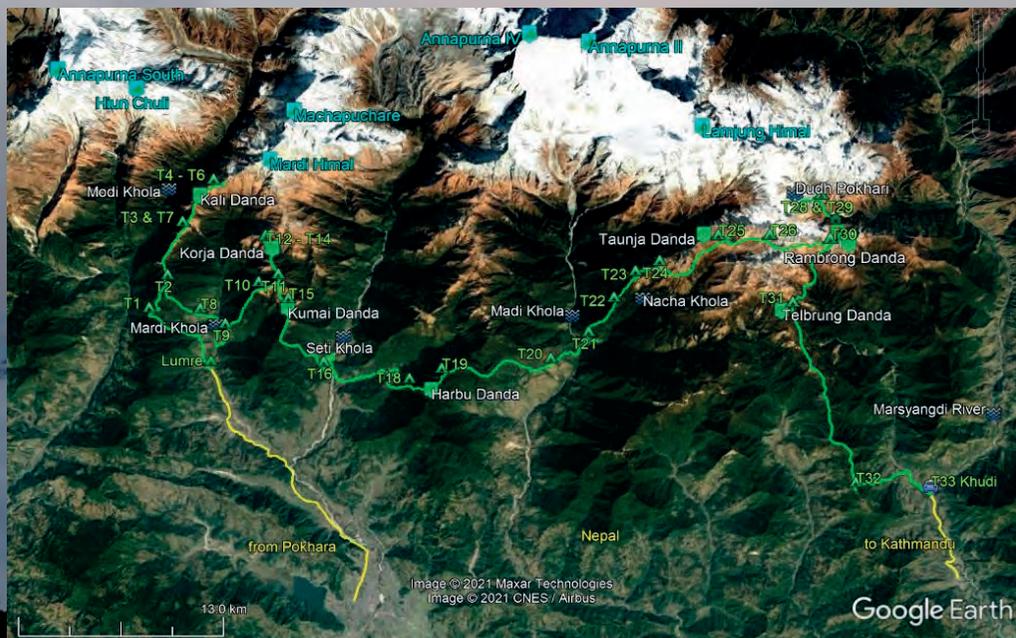


despite the fact it has never been recorded on the Lamjung Himal. Our own *Meconopsis* studies suggest that the red flower colour is more likely to have arisen in *M. paniculata*, since we have now seen pink- or red-flowered plants in several populations of this species, or possibly in *M. regia*, which is very closely related and may share this tendency. Since Williams made collections of *M. regia* and *M. paniculata* growing together, and of *M. regia* with red flowers, this is a far more likely explanation than that *M. staintonii* was involved.

Our discoveries differed from those of the Stainton, Sykes & Williams expedition in only one major respect. We found red-flowered *M. staintonii* on the Mardi Himal but the predominant flower colour was white and there were also intermediates. As far as we are aware, none of the collections made of this species in 1954, either on the Mardi Himal or further west, was recorded as white, though some did arise in cultivation soon afterwards from seed collected during the expedition. We wonder if the white-flowered forms have been caused by introgression from *M. paniculata* since the two species occur in close proximity in the wild and this clearly occurs in cultivation. We hope future studies will shed light on this and other outstanding conundrums.

We thank everyone who has helped us identify plants from our Himalayan trips including Pam Eveleigh, Magnus Lidén, Patrick Kuss and Pascal Bruggeman. We may be contacted at [species-gallery@themeconopsisgroup.org](mailto:species-gallery@themeconopsisgroup.org) and for more *Meconopsis* photographs, see <https://themeconopsisgroup.org/species-gallery>

The route of our whole expedition (Part 1, Issue 146; Part 2, this issue 147)



# Where have all the Green Fingers gone?

Stuart Pawley

The title poses a forlorn question, following my call to duty in the final pages of *Meconopsis for Gardeners* (M4G). Evelyn Stevens had encouraged me in my experiments, knowing that I had started by germinating seeds from *Meconopsis* 'Jimmy Bayne', giving plants which turned out to look just like 'Lingholm'. She sent me a capsule from her 'Jimmy Bayne' to compare with mine, in which there were a few seeds. These investigations are now more relevant following the differentiation of *gakyidiana* and *grandis* as separate species.

I had planned to continue experiments at Keillour but when we moved to York we found growing conditions not favourable for the blue poppies, which are now gradually bulking down. Sadly, in spring the River Ouse had other ideas and whisked away all but one of my seedlings. The one surviving specimen came from *grandis* ssp. *grandis* given to me by Evelyn in 2007, which I refer to hereafter simply as *grandis*. The isolated plant is not self-sterile but regularly gives a small quantity of seed, consistent with the 'gametophytic self-incompatibility' described by Christopher Grey-Wilson in his 2014 book *The Genus Meconopsis*. Evelyn's gift was in a bed where *baileyi* had been seeding prolifically, and had itself most probably produced two nearby seedlings. David Rankin has grown another open-pollinated seedling that appears to be a form of  $\times$  *sheldonii*, which is consistent with the 'self-incompatibility', as pollen from another plant gets precedence. Thus, isolated *grandis* readily gives the unbalanced hybrids, as presumably also does isolated *gakyidiana*.

My original aim was to cross plants grown from the seeds of 'Jimmy Bayne' and 'Barney's Blue' and get back to the species, thinking then that

The first flowering in 2014 of many



GS600 plants were pure species. I think Grey-Wilson may have had the same notion and perhaps this was the original thinking of the Meconopsis Group, initiated by Evelyn with the late Mervyn Kessell in 1998. They introduced a 'Blue Group' scheme for classifying the hybrid clones depending on whether they were fertile (FBG) or infertile (IBG), but they placed clones with GS600 origin in a separate group, the George Sherriff Group (GSG; M4G p139).

IBG was defined as excluding GSG clones, thus requiring any clone to be attributable to *grandis* rather than *gakyidiana*. Thus, IBG includes clones with *grandis* parentage, such as those formerly classified as x *sheldonii*. IBG(g) would include 'Keillour', the clone I presented to

*Meconopsis* 'Keillour Violet' grown by Jim Jermyn from seed



the *Meconopsis* Group, and one which may have been with Mary Knox-Finlay since before her time as George Sherriff's best grower, as it survived in her garden for years without the care and attention given to the 'Dream Poppy', survived when the 'Dream Poppy' collapsed, was given to Jim Aitken, and eventually was given to me, to Evelyn, and to horticulture. Evelyn searched through some of its capsules about the year 2000 and found the seed of 'Keillour Violet', which years later (in her delightful *Pictorial Guide to the Big Blue Poppies*) she found 'a mystery'!

Grey-Wilson suggests that GSG should probably include some clones derived from introductions other than GS600. The first candidate would surely be 'Willie Duncan'. In M4G this is put in FBG and in IBC, but as more is known of this plant than most others it is well worth investigating, especially as my experimental results are strongly suggestive of GSG classification. Seed listed as '*grandis*' from none other than Joyce Halley in our seed exchange in 1971 gave one clone-worthy plant, which must have been a hybrid. The choice blue poppy at that time would surely have

The tithe, the gift to Jim Jermyn: *Meconopsis* 'Stuart Pawley' at Branklyn



been *gakyidiana*, so the seedling would logically be in GSG. Others in this subgroup are known to give some seed, the quantities varying between clones, and 'Willie Duncan' must have been the most prolific, as seed was being regularly donated to the seed exchange in 2003. I deduce at this stage that the donated seed would not all have come from the original clone, but also from subsequent seedlings. I grew ex 'Willie Duncan' from exchange seed and found considerable variation in my plants – just as Evelyn always predicted; the relevance of this appears below.

That the blue poppies grow so well in Scotland is a delight to many and is the reason 'Lingholm' and its origin attract so much attention. In the three books cited it is asserted many times that 'Lingholm' derived from 'Slieve Donard', a sterile clone from the days before the introduction of *gakyidiana*. However, Grey-Wilson gives a strong hint of doubt. It was many years after Digby and Roger Nelson bought blue poppies at Jack Drake's nursery at Inshriach labelled 'Slieve Donard', that 'Lingholm' came to light in their Cumbrian garden. Perhaps history is wrongly determined by this label, and 'Lingholm' derived from *gakyidiana* rather than *grandis*.

I became curious when in 2006 a seed exchange donor sent me a fat packet of seed marked 'Jimmy Bayne'. I asked Evelyn what I should do, and she said to put it with all the 'Lingholm'. Ian Christie gave me a big pot of 'Jimmy Bayne' some years later, and when I found that it gave me a fair quantity of seed, I grew ten seedlings to flowering; nine were planted together at Keillour and the one given to Jim Jermyn has made its way to Branklyn Gardens where Jim has named it 'Stuart Pawley'. My nine were indistinguishable and magnificent, and gave oodles of seed, which I put in the seed exchange as 'Jim's Ex'. At this point I thought that it would be worth the effort to find whether 'Jim's Ex' and 'Lingholm' were compatible as for a new species. We see here in my experiments that this is indeed resoundingly the case, and so must conclude that 'Lingholm' derives from *gakyidiana* rather than 'Slieve Donard'. It is interesting to note that the late Ian McNaughton suggested 'Lingholm' should be classified as a new species, but he was writing before Toshio Yoshida made *grandis* spp. *orientalis* into the species *gakyidiana*, so he would surely have advocated two new species, one via GSG and one via IBG(g).

All my experiments here may be reproduced. My first results did not quite make M4G, so here is the state of play as at 2016 and as a rallying call for all others who love the blue poppies to continue the chase. In what follows, my 'Lingholm' is probably not the original 'Lingholm', so these experiments may be worth repeating with the original clone if some can be authenticated.

## Method and Progress

A meconopsis bud on the verge of opening is selected. Everything except the stigma is carefully cut away, leaving it ready for pollination. After immediate hand-pollination the stigma is covered with a washed tea-bag, which has thread sown round to enable closure of the bag around the stigma, and which carries an indelible experiment number. I found that, as the capsule develops and enlarges, it becomes too large for the tea-bag, which is then best torn open.

I made two experiments, one on 'Lingholm' and one on 'Jim's Ex', in which no pollination was made, and the resulting capsule either withered to nothing or simply did not grow. Thus no seeds developed, showing that self-pollination does not happen before the bud opens, and that the tea-bag successfully prevents open pollination. These experiments are not listed below, but do raise an interesting question – why do these unpollinated stigmas waste away, whereas stigmas from the sterile hybrids such as 'Keillour' develop into capsules as if normal?

There is a sequence for the coming into activity of the stigma and the stamens, designed to prevent immediate self-pollination (CGW p24 – 'herkogamy'). Therefore the stigma is not expected to be receptive at the time of stripping the bud, but nevertheless I applied active pollen before covering with the tea-bag and the pollen must have remained active at least until the stigma itself became receptive, as many capsules yielded a good quantity of seed.

I collected viable pollen by tapping a flower and catching the pollen on a plate, which could then be plastered on the recipient stigma. It was interesting to note that with the pollen a good number of small beetles, up to 3 mm in length, tumbled onto the plate and preferred to walk around rather than fly off.

Evidently these insects would easily self-pollinate the flowers they inhabited. If this is the most common way of pollination, it lowers considerably the possibility of seed from cross-pollination in the garden between clumps of plants separated by modest distances. In fact I had been quite surprised not to see any significant activity of the usually expected pollinators, the bumble bees, when my largest bed of 'Lingholm' was in full flower.

The plants involved here are all within FBG, except in the last two experiments involving 'Keillour', which gave the expected null result. 'Barn's Ex' are plants from seed from 'Barney's Blue', and 'Olaug' is a name invented for the plants from the 65th to 68th Seed Exchange, 65:2675, 66:2554, 67:2807, 67:2808, 68:2655. Laziness set in after 25/5 and pollen was used only from 'Lingholm'. The advantage in doing this was that pollen was plentiful and could be collected from flowers with a range of ages, reducing timing errors and subsequently giving better yields.

## My cross-pollination experiments

#	Donor	Mother	Date	Seeds	Comment
1	Jim's Ex	Olaug	25/5	121	good size seeds
2	Jim's Ex	Olaug	25/5	lost	maybe taken by roe deer
3	Jim's Ex	Lingholm	25/5	17	good size seeds
4	Lingholm	Jim's Ex	25/5	47	good size seeds
5	Lingholm	Barn's Ex	25/5	70	good size seeds
6	Jim's Ex	Barn's Ex	25/5	–	tiny capsule
7	Lingholm	Keillour Violet	28/5	96	small seeds (same size a selfed KV)
8	Lingholm	ex Willie Duncan	28/5	96	minimum-sized seeds
9	Lingholm	Keillour Violet	31/5	abort	mistimed?
10	Lingholm	Jim's Ex	31/5	321	fine capsule
11	Lingholm	Jim's Ex	8/6	318	fine capsule
12	Lingholm	Harry Bush	8/6	229	fine capsule
13	Lingholm	Keillour Violet	8/6	abort	mistimed?
14	Lingholm	Barn's Ex	8/6	234	fine capsule
15	Lingholm	Lingholm	9/6	585	very fine capsule
16	Lingholm	Keillour	9/6	empty	as expected
17	Keillour	Lingholm	9/6	–	no putative capsule

### Cross-pollination experiments, summer 2016

All the FBC plants except 'Keillour Violet' are thought to be derived from *gakyidiana*, and the crossings between them were all satisfactory, except for #6 which might have been a pollination mistiming. Thus, except for 'Keillour' and 'Keillour Violet', all these plants are behaving as for a single new species, including ex 'Willie Duncan', doubled *gakyidiana* × *baileyi*, now in need of a name.

Plants that were grown by Pat Murphy at Holehird Garden from #10 and #14



A seedling from the complex cross #7, growing at Kevock. (Photo: David Rankin)

Any of these experiments may be repeated but it is clear that a study of the crossing of 'Lingholm' with 'Keillour Violet' needs more attention. Assuming that the latter is doubled *grandis* × *baileyi*, experiment #7 shows a crossing between two new species. An analysis of 'Keillour Violet' open-pollinated selfed capsules showed about 36% to be empty of seed, so the fact that experiments #9 and #13 yielded nothing should not be of great concern. All empty capsules of 'Keillour Violet' contain a countable number of aborted seed, distinct from dust, suggesting seed content could be about two hundred seeds, considerably less than for 'Lingholm'. Experiment #7 urges us to further investigation, plus attempts to cross the species *gakyidiana* with *grandis*, an exercise that may not be a dawdle!

One of the seeds from #7 has been germinated by David Rankin and has flowered. One question here is whether the cross is fertile. The answer is 'probably not', as there may be a precedent. 'Kingsbarns' derived from × *sheldonii* before the chromosome doubling mechanism was mooted, a firm candidate for the same new species as 'Keillour Violet', was crossed with 'Lingholm' (ES p41, M4G p222) to produce 'Clydeside Early Treasure'. This is recorded as sterile, perhaps not surprising for a cross between two different species.



Finally, there is a very serious question for the professional botanists, which also has horticultural implications. I mentioned that the plants I grew from 'Jimmy Bayne' seeds were indistinguishable, and I contend with a blush of modesty that they should all have the same name as Jim Jermyn's at Branklyn. This would imply that the apomictic seeds from 'Jimmy Bayne' are all genetically identical, and so any seedling from the true clone should be named 'Stuart Pawley'. The next generation of seedlings should not be so named, as variation will then occur as it does with ex 'Willie Duncan' seedlings. The production of fertile seeds is far more prevalent in GSG clones than in IBC(g) clones, with 'Willie Duncan' winning the gold medal, 'Jimmy Bayne' the silver, 'Barney's Blue' the bronze, and 'Keillour' hardly scoring at all. 'Dalemain' gives seed but I have found nothing with 'Huntfield', 'Susan's Reward', 'Ascrievie' and 'Slieve Donard'.

This search for allopolyploidy was very much in focus in the early years of the Meconopsis Group and it is now time for MG members to get their hands into some yak dung. Evelyn's last wish for 'future work' was to recreate the man-made hybrids and, in extending further we will become more acquainted with two new families, (*gakyidiana* × *baileyi*)<sup>2</sup> and (*grandis* × *baileyi*)<sup>2</sup>

### Reading

The Genus Meconopsis, Blue Poppies and their Relatives. Christopher Grey-Wilson, Kew Publishing, 2014. A4 + 10%, 400 pages.

A Pictorial Guide to the Big Blue Poppies. Evelyn Stevens, Dander Publishing, 2015. A4, 96 pages.

Meconopsis for Gardeners, The Lure of the Blue Poppy. Ed. Christopher Grey-Wilson, AGS, 2017. A4 + 10%, 384 pages.

The difficulties of Meconopsis cultivation by the river Ouse in York: our garden stretches all the way to the submerged railings just beyond the viburnum bush, but isn't reliably damp for the poppies. The swan is preening where my poppy seedlings had been.





## Beauties & Challenges of Rosulate Violas

Ger van den Beuken <sup>(1)</sup> & Alex O'Sullivan <sup>(2)</sup>

**D**uring botanical trips in South Argentina and Chile we (Ger and Mariet) regularly encountered the dazzling beauty of rosulate viola species. In Caviahue at the base of Volcan Copahue on lava slopes for example we were surprised by the beautiful colour forms of *Viola cotyledon* in white to purple or blue. Ascending the volcano, we were amazed with the fantastic rosettes of *Viola copahuensis*, some of them six to seven cm in diameter and sometimes up to eight to nine cm high. These pictures are just a few examples from all the species we have seen during our trips. Returning from such expeditions, only memories and photos remain, and the question arises whether there is any possibility of enjoying these beauties at home.

The most convenient way of cultivation and propagation is seeds: we depend on seed suppliers. This is the first difficulty - as far as I know there are few people collecting seeds in South America. In the past, John Watson was a perfect source, but today I know only Michail Belov from Chile Flora, and Vojtech Holubec, both well-known persons in the botanical world and collectors of rare seeds. In 2019 Vojtech was collecting a wide range of seeds in Argentina and Chile and I got a considerable number of *Viola* species and varieties from him.

Above: *Viola cotyledon*

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## Propagation

The start has been made ... but you will realize that there are quite a few difficulties ahead and that the results may be limited. Things like time of sowing, treatment of the seeds, cold period, stratification and treatment of the young seedlings afterwards are all actions determining the final result.

The seeds need to be sown as soon as they are arrived. This will be usually in December. I get very good results with the treatment of GA3 powder, a gibberellic acid. It works very well for *Viola* seeds and accelerates their germination. However, take care – this is a tricky job. Put the seeds together on a tissue paper then take a toothpick and try to get a very, very, small amount of powder on the end of the stick. Spread the powder as precisely as possible over the seeds. This is an extremely precise work, because if you use too much powder, the results are weak and elongated seedlings. The tissue and seeds should be moistened with cold sterilized water. The tissue is then folded and placed in a small plastic bag kept for 24 hours at 20°C. The day afterwards, dry everything nicely on a sheet of paper. As soon as seeds are dry, sow them on the surface of a well-drained seed soil, mixed with an additional part of lava grit, and cover with a 3 mm layer of fine gravel. Place the seed pots in a container with water and let them soak. The seed pots should get a position in a well-protected



Left: elongated seedlings of *Viola philippii*

Above: *Viola copahuensis*



Rosulate violas: seedlings and plants

place. In my situation they are in the alpine house. The first seedlings pop up after six to seven weeks.

With night frost it is necessary to protect the young fragile seedlings with a fleece cloth. Once they have reached a manageable size – this will be after several weeks – pricking out follows, and then pot them into deep pots. The mineral mixture I use is 1/4 part quality potting soil, 1 part pumice and 1 part lava grit. Long etiolated seedlings caused by excessive GA3 powder may be potted a little deeper. On top, put a layer of fine gravel to prevent quick drying out.

### Cultivation

Growing these plants, it is really important to have good understanding of the local biotope and especially the soil conditions. The plants usually grow in lava scree where the top of the soil seems to be dry. However, this is deceptive because a little deeper it becomes nicely moist. This is very important to know for the water balance and also means that regular watering should be done from beneath; it is particularly important to use natural water that is neither hard nor calcareous. Check the pots regularly for moisture and, if necessary, place in a container with water. As soon as the young plants are showing new growth, light fertilizing may be done with a liquid fertilizer sprayed over the leaves. Take care with bright sunlight, to

Viola seedlings





*Viola congesta*



*Viola farkasiana*

prevent leaf damage. Depending on progress of the growth, the fertilizing may be repeated later on.

It stands to reason that these gems deserve a place in an alpine greenhouse or at least in a place where you can keep a good eye on water balance and diseases. The greatest difficulty is the climate, for South America is completely different from here in Europe. This part of the cultivation poses the biggest challenge, for sure. Patagonia is known for its erratic weather, with very high light intensity, particularly in the southernmost part, interspersed with rain showers, extremely hard wind and moderate temperatures. More to the north in Neuquén and Mendoza the climate tends towards higher temperatures and drier conditions. Despite this changeability, some other rosulate viola species feel happy. This is not comparable with our climate when particularly in the last three years we have had very warm and dry summer periods, and much rainfall during winter almost always without snow cover to protect our rare plants in the rockery. All these difficulties make the cultivation of these fantastic plants even more challenging. As I write, hopefully, perhaps the Covid-19 pandemic will decline in the course of the year so that seed collectors will once again have the opportunity to travel to South America to provide us and many of you with fresh seeds to make another new start with these gorgeous plants. Good luck!

We conclude with Alex O'Sullivan's personal account of his own efforts to put advice into practice. Alex was the first AGS intern at the RBGE in 2018 and visited Gothenburg Botanic Garden to learn propagation and key skills. He visited Patagonia in the 2018 violas and volcanoes tour and won a gold award at the Glasgow show in 2019 for his display of South-American plants, many of which he grows, particularly cushions from the Primulaceae. Alex has shown trophy plants at AGS and SRGC shows, winning an AGS bronze medal in 2020.



## Seed Propagation

After discussing my options with experienced growers and those who have attempted the trickiest of alpines with use of Gibberellic acid (GA-3) powder to treat the seeds before sowing, I rolled the seeds over a thin layer of the powder using kitchen roll, before wetting the kitchen roll and leaving to dry for 48 hours. I then sowed the seeds, 4 to a pot. I decided on this because of the staggered germination that has often occurred previously. I wanted to prick out any plants that germinated as quickly as I could. I used a very free draining medium for sowing: 50% J1 seed, 50% chick grit and lava. I covered the seeds with 2 to 4 mm of the same medium and then a thin layer of chick grit on top too. I was told this may help remove the tough coats of the seeds as they germinate and push through to the surface. I was also aware the use of GA-3 may cause etiolation. However, I believe that without it germination is very poor and difficult to achieve.



I pricked seedlings out four weeks after germination, so that their singular roots were easily transferable to long toms and so that there was minimal stress as the plant began to grow true leaves and mature. These plants grow with tap roots, so I was aware of potting issues and aimed to reduce them by over-potting the seedlings into long toms before they matured. This was risky but also reduced disturbance until necessary; I felt this was a more important factor. Over-potting is indeed a massive problem with alpines but at just four weeks the root on a seedling was substantial.

*Viola montagnei*: true leaves, growing, and mature



So far, none have died in these long pots, which measure 13 cm width, 17 cm depth. I filled the pots with a medium consisting of 20% large lava lumps (15 - 20 mm), 30% fine lava (2 - 10 mm), 20% J13, 10% coarse pumice (8 - 12 mm), 10% fine pumice (2 - 8 mm) and 10% perlite and vermiculite with a small scoop of bonemeal. It was extremely free draining! The top dressing used was the fine lava and this is sharp enough to allow no surface moisture to collect. I found it necessary to water in summer every day during hot spells and have even found during winter that they need water more often than I first thought. I will not attempt to repot until the plants show signs of needing it.

### Propagation by Cuttings

After the strenuous efforts of raising a single plant of *Viola montagnei* from seed in winter 2019, a resident slug took fancy to the spongy and very fleshy stem of this mature plant in September. I had read nicknames such as 'succulent pansy' used in description before, but I did not realise the extent. The stem appeared semi-hollow but was a very light and spongy material. I was forced into attempting rosetate viola propagation through cuttings. I had seen no successes online or in any literature I had read so was unconvinced it would work. However, I gave it my best shot.

I combined techniques and skills learned from RBGE, Gothenburg and other specialists to achieve success in the unknown. On a cool day, I prepared myself with a sterile long tom, filled with fresh and damp fine pumice (1 - 4 mm) and a sterile bell cloche that fitted the pot. I used a sterile cutting board and sharp knife to cut a clean stroke through the stem. I gave the rosette as much of the stem that was available to reduce chances of rot when coming into contact with

Cutting the roots

the pumice. I removed all lower leaves and kept the top of the cutting intact. I dipped the cutting in a hormone rooting powder, covering the hollow areas generously and also dusting the lower part of the stem. I made sure most of the stem was placed under the surface of the pumice to give any rooting areas the chance to grow. A bell cloche with ventilation holes was placed over the cutting and pot, which went into my greenhouse on the floor, so as not to be in direct sunlight.

Initially the cutting looked limp and at death's door but within a week it perked up and it looked very healthy. I did check every eight weeks for roots, without success. However, after the snow in February and the sudden warmth for the start of spring I found initial root growth. I was very pleased to not only have kept the cutting alive for six months over winter, but also to root this magnificent plant. I have decided it will remain in the pot of pumice for the foreseeable future and will be fed to give it any nutrients it desires in the spring and summer. For anyone who is skilled enough not only to grow these but also to be as unlucky as me and have a slug damage the stem, I advise isolating the cutting from any possible contamination or spread of infection. Give it a mask! I am glad I did, as botrytis and other nasties often creep into my cutting trays.



*Viola montagnei*



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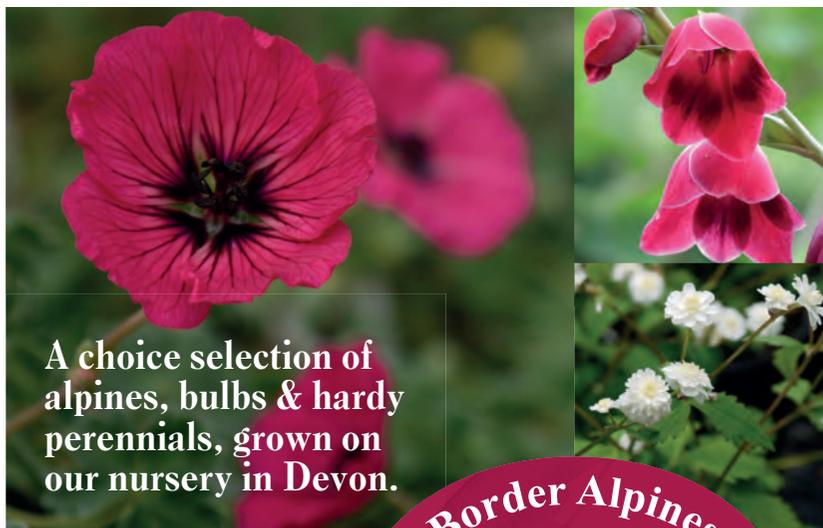
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