

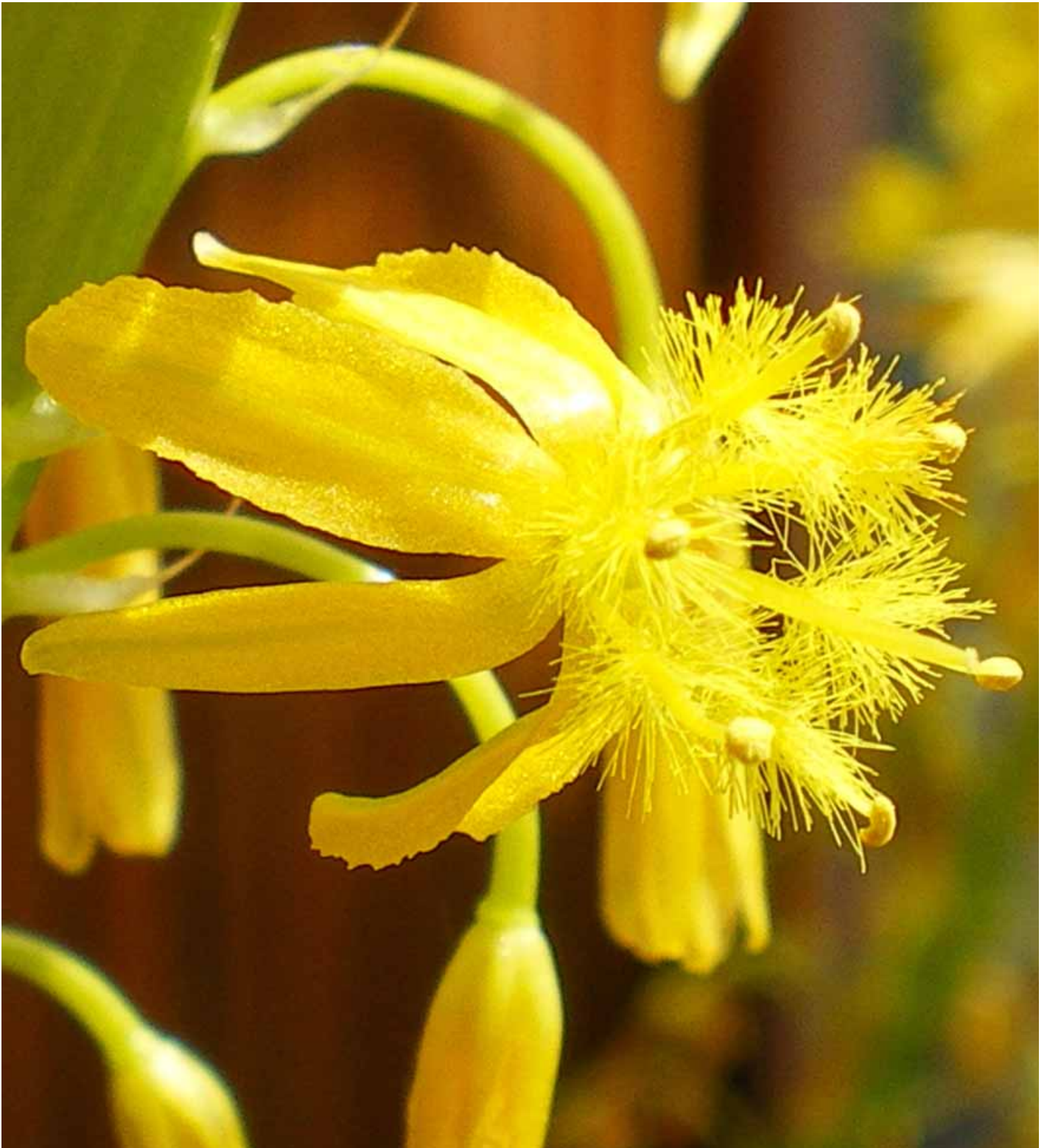
Formerly
Essex Succulent
Review

Cactus & Succulent

REVIEW

The online magazine for cactus and succulent enthusiasts

Issue 24 March 2020



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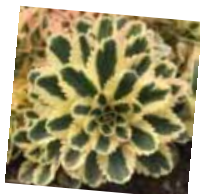
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Adapted from the Opuntia Web with permission

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REVIEW

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Editor's notes

Welcome to the first issue of the newly renamed 'Cactus and Succulent Review' (which is also the 24th issue of the 'Essex Succulent Review').

I wrote a potted history of the ESR in my Editor's notes for December

2019. But I guess not everyone reads these.

The Essex Succulent Review began life as a newsletter for what was then the Essex Branch of the Cactus and Succulent Society of Great Britain, later the BCSS.

I started to issue it as an online publication in 2014 and since then it has grown, both in size and distribution.

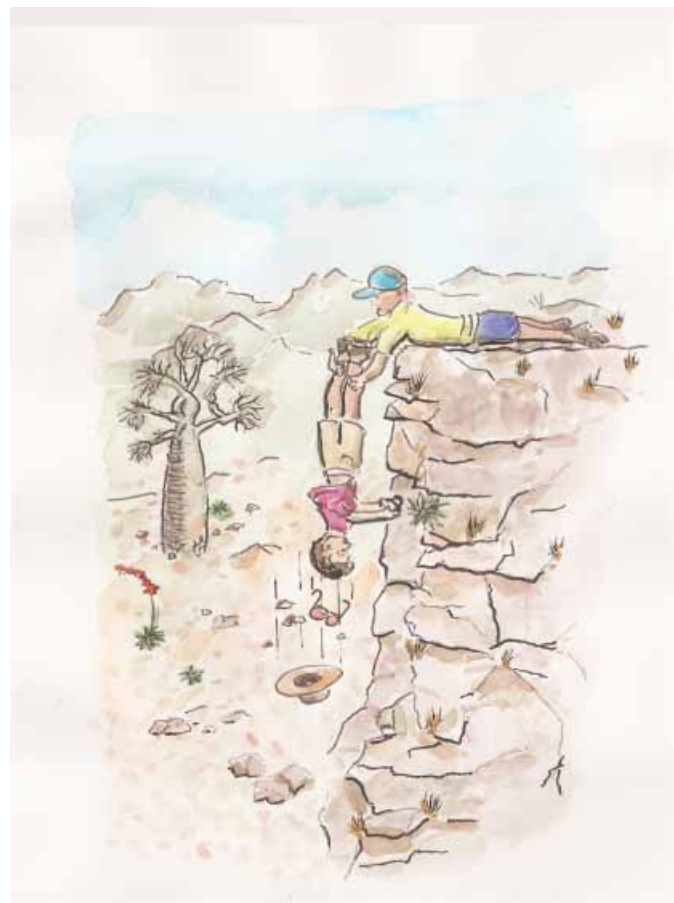
I am very pleased to say that we now have readers from all over the world and so we feel that the change of name will better reflect a worldwide appeal.

Nothing else will change. We will still include the same type and range of articles with something, I hope, for everyone.

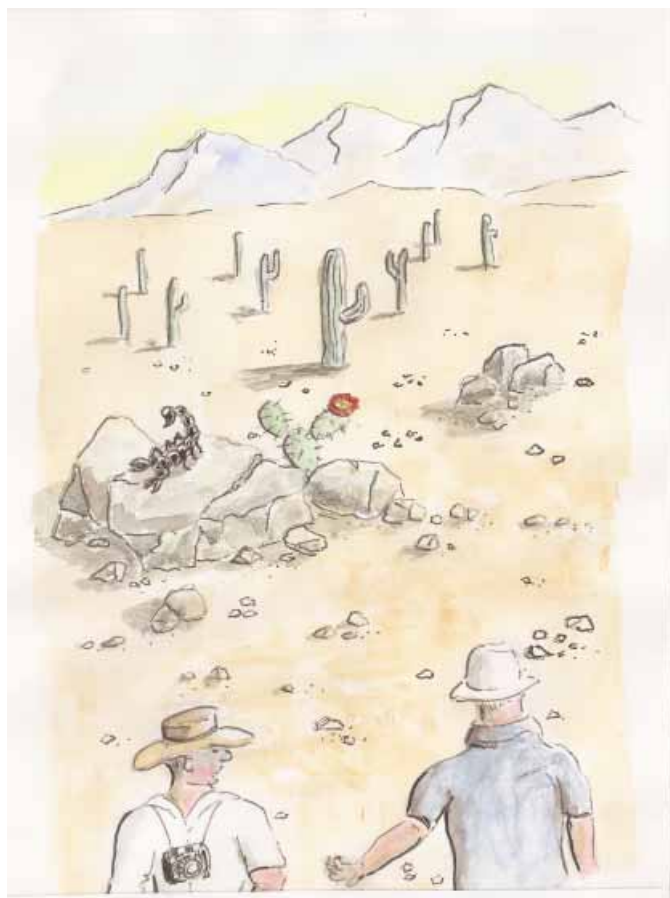
With thanks again to all my contributors and subscribers.

Sheila Cude

Tony Porter's CACTUS CAPERS



Do we really need close-ups of this one?



You take the close-ups and I'll do the scenic shots

Jasminocereus – still a rare cactus?

by Gordon Rowley

Article reprinted from **Xerophytica** No. 2: 10-11 [2001] with permission of the Trustees of the Rowley Library



Xerophytica was a magazine on cacti and succulents, produced by Phil Hughes during the early 2000s. The original article was illustrated with slides provided by the author.

In 1977 when trying to compile a key to the genera of Cactaceae in cultivation, I was left with a list of 23 generic names (mostly Backebergian) that I had never seen alive, and doubted if any growers here had either. But how to be certain they were not around?

I sent the list to the Cactus and Succulent Society of Great Britain who printed it in their Journal **39**:106 for November 1977, along with my invitation to readers to indicate any genus that they grew.

Collectors are rarely shy of talking about their rarities, so I was rather disappointed to receive only 15 replies, but since these came from some of the top growers in the UK I felt that the results merited publication (See Journal of the CSSGB **41**:4,1979). It turned out that there was at least one claimant for each of the 23 genera on my list. The rarest proved to be *Castellanosia* (now *Browningia*), *Dendrocereus* and *Neoabbottia* [*Leptocereus*], with only one sighting for each. Two people claimed to grow *Leptocereus*; three had *Ecchremocactus* [*Weberocereus*], *Leocereus* and *Wilmattea* [*Hylocereus*] and four claimed to grow *Anisocereus* [*Pachycereus*], *Brachycereus*, *Jasminocereus*, *Philippicereus* [*Eulychnia*] and *Rauhocereus*. *

I wonder how the results would turn out in a similar poll today?

One happy outcome of this venture was a small parcel that came to me from Colorado. Mrs Mary Ann Heacock of Denver, a well-known cactophile, read my note and sent me a grafted seedling of *Jasminocereus thouarsii*.

*Names in square brackets from the New Cactus Lexicon 2006. *Castellanosia* seems to have been reinstated with one species.

Jasminocereus thouarsii* var. *delicatus
Charles Darwin Station, Santa Cruz Island, Galapagos
Photo: Jason Hollinger Used under licence **CC-BY-SA-2.0**.

Jasminocereus – still a rare cactus? continued

It came from a local nursery that was mass-propagating the species on *Myrtillocactus* stocks. From its origin near the equator on the Galapagos Islands, I assumed that it would collapse the first winter in my glasshouse where the thermostat is set to 10°C, and so it did. But only the stock perished; the scion survived and was subsequently rooted up in my hotbox.

Twenty years later, it has grown into a fine plant 25cm tall, with splendid spination. Apart from slow growth, it does not seem to mind a temperature much lower than it would experience in the wild. It has also filled out nicely in thickness, unlike many cerei that become thin and weak-spined in my partially shaded glasshouse. I only hope that it doesn't read this eulogy – or it will surely collapse with shock!

One other Galapagos native I grow is *Opuntia echios*. It too tolerates comparatively cool treatment, and has dense yellow spines. For a prickly pear, its slow growth is actually an advantage in a small glasshouse. ■

Opuntia echios var. *echios*

Photo: Vince Smith Used under licence CC-BY-SA-2.0.



More about Jasminocereus thouarsii

The picture shows Gordon Rowley's plant, as it is today, growing well in Graham Charles' collection.

It still exhibits the juvenile form which, as can be seen, is very different from the mature form. So much so in fact, that Frederic Weber originally described two species, *Cereus thouarsii* and *Cereus galapagensis*. Britton and Rose, erected the genus *Brachycereus* and placed *C. thouarsii* there, (together with *C. nesioticus*) and erected *Jasminocereus* for *C. galapagensis*. Backeberg moved *C. thouarsii* into *Jasminocereus* to join it, and in 1971 Anderson and Walkington finally realised they were the same plant.

Jasminocereus thouarsii is endemic to the Galapagos Islands where it grows in locations ranging from coastal areas to around 980ft (300m) on the larger islands. Its flowers can be whitish or greenish, and are diurnal (not nocturnal as stated by Anderson) opening early in the morning and lasting until around 11.00am.

It can reach 23ft (7m) and three varieties have been described, although these are not universally recognised. Recent molecular studies place it near to *Armatocereus*, however it cannot be combined with this because *Jasminocereus* is the older name. ■

Photo: Graham Charles



A succulent plant of the year at RHS Chelsea

by Ray Stephenson

The true story behind the RHS plant of the year 2019



The RHS Chelsea Plant of the Year 2019 was 'Sedum takesimense 'Atlantis' ('Nonsitnal')' which they describe as "an attractive, easy to grow, versatile and multi-functional plant, it forms 30cm high cushions of variegate foliage topped with yellow flowers from June to September. Plants are robust and drought resistant and blooms are attractive to insect pollinators. The cultivar was discovered as a sport in a nursery on the banks of Lake Michigan by grower Dave Mackenzie, who specialises in plants for ground cover, green roofs and walls."

Sadly it's not a Sedum and 'Atlantis' is a highly inappropriate name.

Fig.1 RHS Plant of the Year, 2019

James G.S. Harris of Mallet Court Nursery at Curry Mallet, Taunton obtained special permission to visit Ullong-do, a disputed island midway between Korea and Japan, in 1982. Seed of a plant similar to

Phedimus aizoon (at that time known as *Sedum*) was offered by the Chollipo Arboretum (located in Korea) as a true alpine growing above the tree line on the highest bit of the archipelago.



Fig. 2 Phedimus aizoon has been a popular garden plant since Victorian times, growing to almost a metre high



Phedimus takesimensis in midwinter.

In 1989 James noticed that this plant was very different from his knowledge of *P. aizoon* (Fig. 2): the Ullong-do plants were not upright but had tortuous stems and, unlike all of their near relatives, were evergreen (Fig. 3).

James asked the Sedum Society to help with identification of the species as he had realised that a certain *Sedum takesimense* had been named as an indigenous plant of Ullong-do in 'An enumeration of plants hitherto known from Corea' by T. Mori, July 1921. As James thought this original description was in Korean (Fig. 4) and also realised that Uhl and Moran had recognised it in their 'Chromosomes of Crassulaceae from Japan and South Korea' (Cytologia 37: 59-81, 1972) he needed proof that this particular plant was indeed the species depicted in Mori's enumeration.

The late Lawrie Springate, taxonomist of the Royal Botanic Gardens, Edinburgh investigated and produced for the Sedum Society a copy of the original woodcut prepared for Mori's enumeration which bore an excellent resemblance to James' plants (Fig. 5). I photocopied the document and sent it to a Japanese member of the Sedum Society Yorichiro Ochi. Mori was Japanese not Korean and it seemed likely that the script could be read by him but he was unable to decipher it. Professor Mavis Doyle lecturing for Durham University at this time said that the Bishop of Seoul was due to visit the university soon and she would ask him to translate the description in the 1921 document. The Bishop obliged with a big smile saying, "This is not Korean but classical Chinese". The short description fitted the Mallett Court plants perfectly. Now why

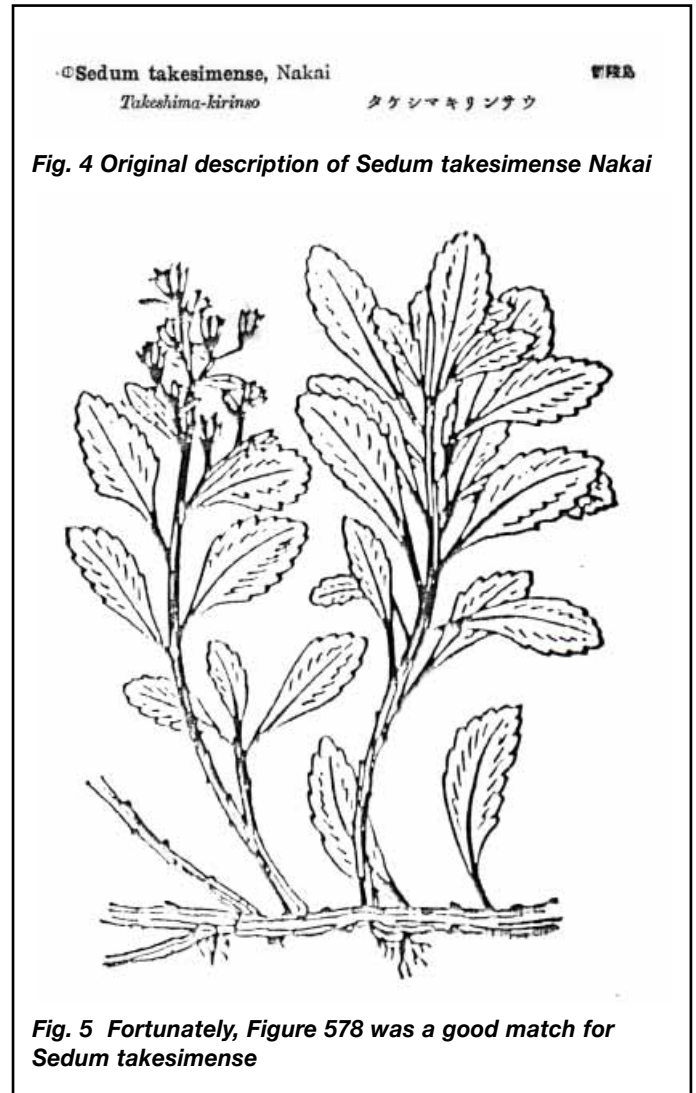


Fig. 6 *Phedimus kamschaticus* is a common ground-cover, low, creeping species from east Siberia

A succulent plant of the year at RHS Chelsea continued

would a Japanese botanist compiling the flora of Korea write in classical Chinese? If you think about this, it is little different to a German botanist describing an Argentinian cactus in Latin!

In '*Evolution and systematics of the Crassulaceae*' (1995) by Henk 't Hart and Urs Eggli, the first DNA sequencing of Crassulaceae clearly showed that this group of flat-leaved plants, having always been assumed to be *Sedum*, were in fact quite distantly related. From this time the name *Phedimus* became more widely used; though Russian botanists preferred *Aizopsis*, separating the more easterly yellow-flowered species (*Aizopsis*) from the Eurasian purple/white flowered species (*Phedimus*).

The Ullong-do endemic is *Phedimus takesimensis*. A long, drawn-out court case took place in Japan in the 1990s when a large pharmaceutical firm, because they found it had medicinal qualities, attempted to copyright the species through registering it with a trademark name. Crassulaceae have been treasured by ethnic groups for millennia for their healing properties, so this is not unusual, but such a registration would make it illegal for small nurseries to propagate and sell the species. One such nursery decided to contest the pharmaceutical firm by claiming that no plant could be registered in this way if it had been in general cultivation before 1990. I provided Sedum Society Newsletters which helped towards a successful case for the nursery.

The big question is, 'Did 'Atlantis' sport from the mass distribution of *Phedimus takesimensis* by the Sedum Society in the 1990s and beyond', or was *Phedimus takesimensis* being grown in the USA before James G. S. Harris made the species widely available in Europe?

The most convincing evidence that it was already grown in the US is an American hybrid *Phedimus* 'Golden Carpet' which has been in cultivation in the UK certainly since the early 1980s (I cannot trace it earlier and confusion with nurseries selling *Sedum acre* as 'Golden Carpet' has fogged the situation). It is midway between *P. kamtschaticus*, a low creeping species (Fig. 6) and *P. takesimensis* as the cultivar is partially evergreen (Figs. 7 and 8) and looks like a lower, creeping *P. takesimensis*.

So, the RHS plant of 2019 is definitely not a *Sedum* and 'Atlantis' seems a very long way from the Sea of Japan. ■

Photos: Ray Stephenson

References

Mori T (1921) *An enumeration of plants hitherto known from Korea*.

't Hart, H, Eggli, U (1995) *Evolution and systematics of the Crassulaceae*.

Uhl, C H, Moran, R V, (1972) Chromosomes of Crassulaceae from Japan and South Korea. *Cytologia* **37**(1) 59-81.

Visit: [➤ The Sedum Society](#)



Fig. 7 *Phedimus* 'Golden Carpet' in mid-summer.



Fig.8 'Golden Carpet' on a midwinter day



An introduction to **Lachenalia**

by Alice Vanden Bon

South African bulbs which will add colour and interest to the greenhouse over winter

The earliest record of a *Lachenalia* is a painting of the plant we now know as *Lachenalia hirta* that was included in the diary of Simon van der Stel, the Dutch governor of the Cape of Good Hope, who made an expedition to Namaqualand between 1685 and 1686.

The name *Lachenalia* was coined almost one hundred years later in 1780 by Joseph Franz von Jacquin (son of Nicolaus Joseph Jacquin, professor of Botany and Chemistry in Vienna) who named it in honour of Werner de Lachenal, a renowned Swiss botanist.

Lachenalias are largely plants of the winter-rainfall region of Southern Africa and consequently fit in with the growth patterns of winter-growing succulents in the UK. Most occur in Namaqualand and Western Cape but some also extend inland into summer rainfall areas.

Fig. 1 Lachenalia bifolia flowers

Lachenalias belong to the family Asparagaceae. They are bulbous plants, normally producing two leaves which are frequently spotted or pustulate. The inflorescence is a raceme or spike bearing from few to many flowers which are tubular, cylindrical or urn-shaped. There are frequently vestigial or sterile flowers at the top of the scape. Seeds are glossy and black.

The genus is taxonomically divided into two subgenera, *Lachenalia* and *Polyxena*. Subgenus *Lachenalia* is further divided into five sections and consists of 126 species. It has zygomorphic flowers which arise indirectly from the pedicel. Subgenus *Polyxena* has radially symmetrical flowers and radial leaves. It consists of seven species

Cultivation

Lachenalias are generally easy to cultivate but here in the UK most require protection in a greenhouse or heated frame during their winter growing period. Although I have had success with many South African geophytes in a frame which has minimal heating, particularly species of *Oxalis* and *Massonia*, I have yet to chance my lachenalias to the same treatment. That is apart from subgenus *Polyxena* which seem to do well in these conditions. Flowering is a little more compact than in the

greenhouse and care has to be taken that the damper conditions do not allow botrytis to infect the flowers as they die down. I carefully remove dead flowers from these plants as soon as possible to try to prevent this

All South African bulbs require a substrate which is well-drained and well-aerated and lachenalias are no exception. In addition they require as much light as we can provide through the depths of winter and a minimum temperature of 2°–3°C.

My method of growing them consists of watering them, together with all my South African bulbs at the beginning of September and, as green shoots appear, I move them from under the staging to a high shelf in the greenhouse where they will receive the maximum light available. Watering is done weekly to fortnightly depending on the weather and only when the soil is drying out.

I do not tend to use fertiliser on my South African bulbs as I do not want them to get too lush. A couple of dilute feeds around flowering time is probably beneficial to boost the bulb for the following year.

The plants remain in good light until the leaves begin to turn yellow and die back (April/May) and I then return them to their summer home under the bench. I should say that this is of course due to lack of

Fig. 2 *Lachenalia carnosa* at Kosies



space and I am sure many growers leave their plants in the same place all the year round. The important thing to remember is that during the summer they require no water at all and benefit from a summer 'bake' as they would do in their homeland.

I believe that lachenalias do benefit from regular repotting (at least every couple of years) and this should be done during the resting period. I use a loam-based soil with additional grit and peat to maintain a soil on the acid side of neutral but with good drainage.

Lachenalias occasionally 'miss a year', that is they fail to emerge after initial watering. If this occurs it is worth checking the bulb to see that it is healthy (or indeed not rotted away and disappeared) but frequently it is just a matter of waiting until the next year when it will hopefully resume growth.

Most *Lachenalia* species are pollinated by bees but species with large tubular flowers are pollinated by sunbirds.

Here I describe a few of the species that I grow with varying degrees of success!

Subgenus *Lachenalia*

For me the first to flower in my collection is *Lachenalia punctata* (syn. *L. rubida*) (Fig. 3). This flowers in October. My plant has a lovely deep pink tubular flower but evidently there can be some variation ranging from light pink to maroon, often with a mottled effect on the perianth. The flower has an irritating habit of flopping down as it ages but I discovered that this is due to the flower scapes not being strong enough to support their pollinator (sunbirds). The flowers bend over and the sunbirds can then reach the nectar from the ground. Unfortunately these pollinators are lacking in my greenhouse so a long bristle or very fine paint brush would be advisable if you wish to pollinate your plants.

Another early flowerer is *Lachenalia viridiflora*. In my greenhouse this flowers in November and produces the most delightful turquoise flowers (Fig. 4). It was first discovered in 1953 by Harry Hall, the well-known succulent explorer. *L. viridiflora* is now extinct from its type locality south of Vredenberg but a population has been found on the coast at St Helena Bay. This too is under threat from housing development and as a result this species has a conservation status of Critically Endangered.



Fig. 3 *Lachenalia punctata* (*rubida*)



Fig. 4 *Lachenalia viridiflora*

Lachenalia bifolia (Figs. 1 and 5), but still widely distributed under its former name *L. bulbifera*, is very similar in appearance to *L. punctata*. It is, however, more robust and much longer flowering than the latter. The red tubular flowers are again pollinated by sunbirds but their sturdy inflorescences remain upright and in cultivation flowering

can last for at least two months. *L. bifolia* propagates itself not only by developing more bulbs and producing seed but also by producing small bulbils along the edge of the leaf as it dies down. These can be planted in the autumn and quickly produce small plantlets. This is a widely distributed coastal species and is not under threat.

Fig. 5 *Lachenalia bifolia*

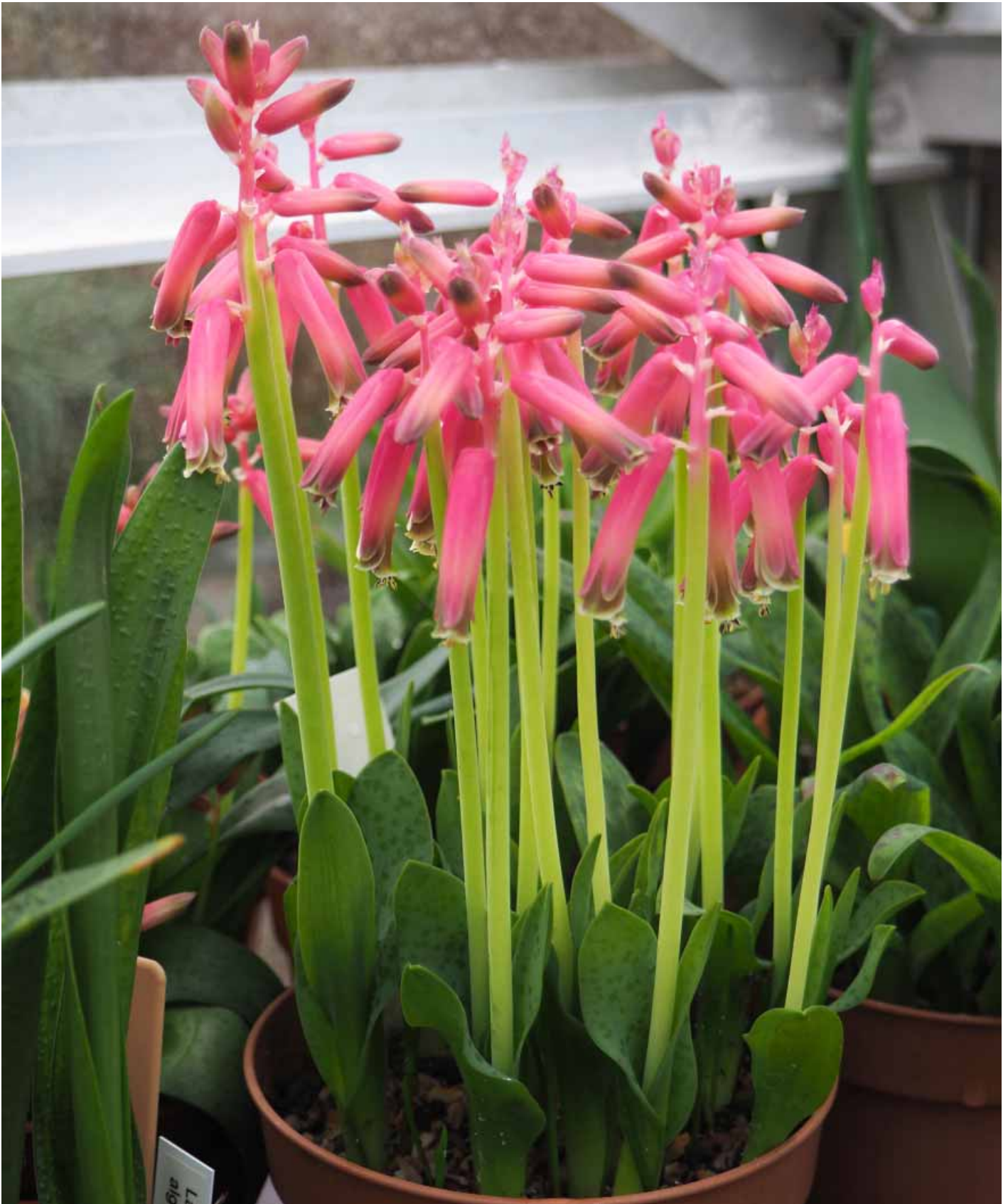




Fig. 6 *Lachenalia carnososa* at Kosies

Lachenalia carnososa is widely distributed in Namaqualand and can grow in large colonies as I discovered on a visit to South Africa in August 2015 (Figs. 2 and 6). The inflorescence has urn-shaped flowers and, although the perianth is dull white, the maroon tips to the perianth give it a striking appearance. *L. carnososa* is not under threat in habitat.

Lachenalia trichophylla is an interesting species with, as the name indicates, trichomes on the leaf surface. These can vary in density and length and the leaf can vary in colour from light to dark green to almost purple depending on where it grows. There is a population at Clanwilliam and Fig. 7 shows the trichomes on the leaf surface. The flower colour changes from the white vestigial flowers at the top of the scape to creamy-yellow to pinkish magenta. *L. trichophylla* is not under threat.

Lachenalia mathewsii is another favourite. This plant, like *L. viridiflora*, is also a native of Vredenberg but once again Critically Endangered due to overgrazing and competition with weeds from the surrounding agricultural land. It has yellow flowers with bright green markings on the outer perianth and long, narrow spear-shaped leaves (Fig. 8).



Fig. 7 *Lachenalia trichophylla* at Clanwilliam



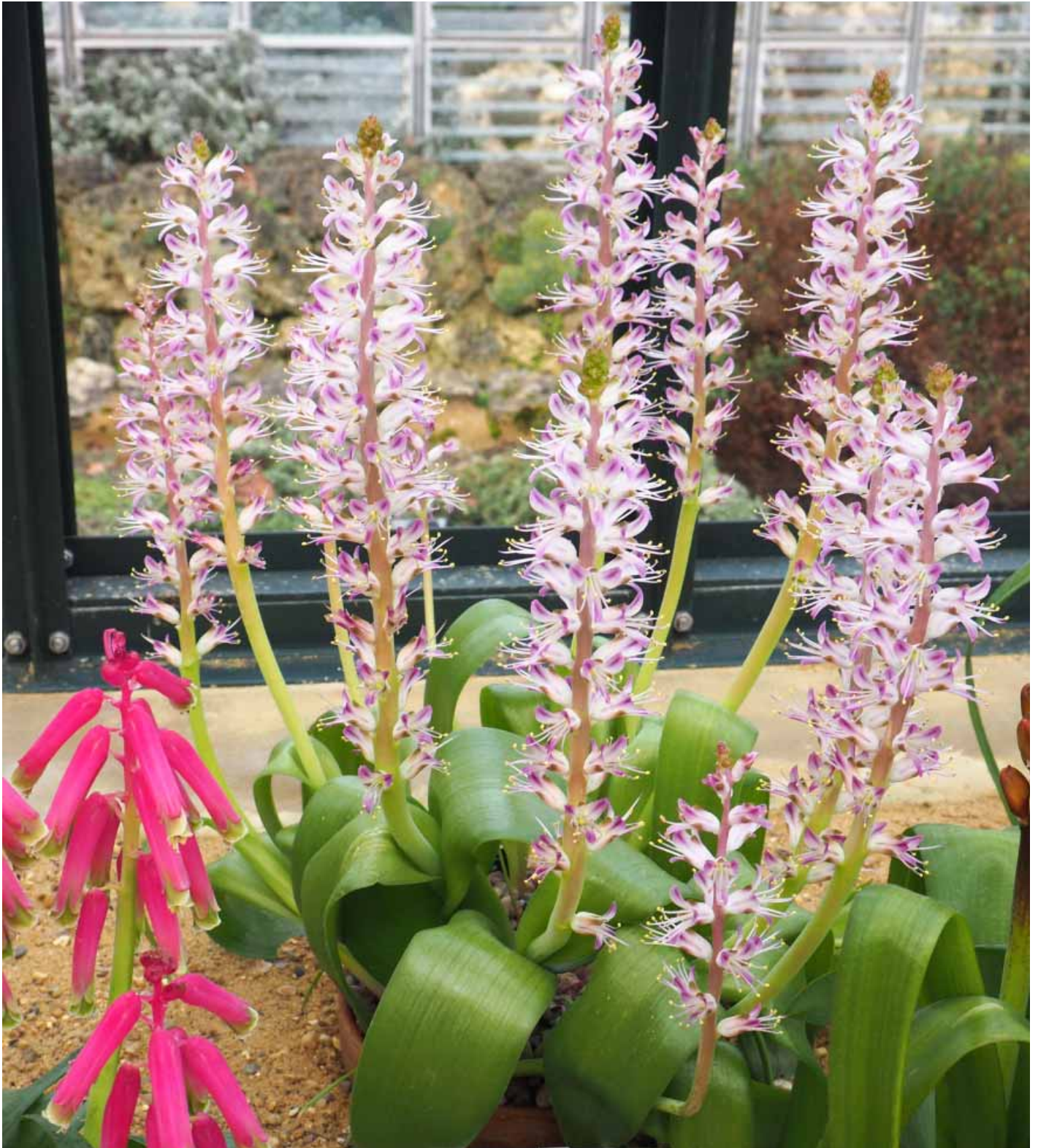
Fig. 8 *Lachenalia mathewsii*

Lachenalia splendida (Fig 9), as its name suggests, is a very pretty species and, although its lanceolate leaves are quite plain, it is a very floriferous species. The flowers are tubular and are predominantly white with lilac tips to the perianth. They tend to be quite tall, at least in cultivation. The species is most common in the Knersvlakte area where it occurs near Vanrhynsdorp and Bitterfontein but it also occurs towards the coast. It is not under threat in habitat.

No collection of lachenalias would be complete without *L. aloides*. This is a very colourful species and has aloe-like flowers which are cylindrical and predominantly reddish-orange or yellowish-orange. The species has been used widely in hybridisation.

L. aloides occurs to the north and east of Cape Town. Its habitat is threatened by over-grazing and it now has a conservation status of Endangered.

Fig. 9 *Lachenalia splendida* at Wisley



The three varieties of *L. aloides* have now been upgraded to species level:

var. *aurea*, now *L. flava* with striking orange flowers. It is considered rare in habitat;

var. *quadricolor*, now *L. quadricolor* with perhaps the most striking of flowers in red, orange, yellow and maroon (Fig 10). Due to its coastal location this species is under threat from housing development;

var. *vanzyliae* now *L. vanzyliae*. In my view this always seemed to fit less well within the *aloides* complex as it is quite distinctly different both in leaf and flower. The leaves are always spotted with purple markings and the flowers are a turquoise-blue, somewhat resembling the early-flowering *L. viridiflora*. This species is not threatened.

Subgroup Polyxena

Polyxena was considered a separate genus, but has now been amalgamated into *Lachenalia* as a subgroup. These plants are, in my experience, more able to stand the cold than other *Lachenalia*. They are smaller growing, none of them reaching more than about 8cm in height even in the UK where lack of winter light can cause etiolation.

Lachenalia pygmaea is distinguished by its very long perianth tubes, the tips of which curl back and reveal long filaments and a



Fig. 10 *Lachenalia quadricolor*



Fig. 11 *Lachenalia pygmaea*



Fig.12 *Lachenalia pygmaea*

An introduction to *Lachenalia* continued

long style. My plant has mauve flowers, (Figs 11 and 12), but they can be white. This species is pollinated by honey bees attracted by their sweet-smelling flowers. It occurs in Namaqualand but also has a separate distribution in the Southern Cape and is not considered to be threatened.

Lachenalia ensifolia has sword-shaped leaves, white or more rarely mauve flowers (Figs. 13 and 14) and again the flower is sweet-scented. *L. ensifolia* has a wide distribution from Namaqualand in the west to Grahamstown in the east and hence is not under threat. There is however, a subspecies of *L. ensifolia* namely subsp. *maughanii* which, although similar to subsp. *ensifolia*, has a much more limited range occurring principally around the Bokkeveld Plateau and always as discrete populations.

Other species easily available in this subgroup include *L. corymbosa*, *L. paucifolia* and *L. longituba*.

These are just a few of the species that I grow. If you are interested in giving your greenhouse a little colour through the dark days of winter why not try a few. A good start would be to join the SA Bulb Group who meet twice a year and offer a free seed and bulb exchange to their members. Contact [Rodney Sims](#) for details. ■

Photos: Alice Vanden Bon

Literature:

Duncan G D (1988) *The Lachenalia Handbook*. Published by National Botanic Gardens.

Duncan G D (2012) *The genus Lachenalia*. Kew publishing.

Manning J, Goldplatt P and Snijman D (2002) *The color encyclopedia of Cape Bulbs*. Timber Press



Fig. 13 *Lachenalia ensifolia*



Lachenalia ensifolia Kamiesberg Pass



Fig.1 Our gold medal winning display

Sempervivum and Jovibarba

Attractive hardy succulents for any garden

by David Sheppard

So, your greenhouses are all full with your tender cacti and succulents, and there are no more free windowsills indoors... but you still have the urge to add to your collection. What can you do? Well, assuming you still have some space in your garden, why not start a collection of hardy succulents that can happily survive outdoors in the UK climate without any protection all year and still look great? Sempervivums and the very closely related Jovibarbas (some consider them a subspecies of *Sempervivum*) fulfil the requirement admirably. So it was that my fellow succulent enthusiast and grower, Miquelina Titchener, and I started our collections of fully hardy succulents.

It started for us in much the same way as our tender collections, with the idea of creating a few outdoor bowl gardens for decorative purposes but, as with our indoor bowl gardens, we soon found what a great variety of species and cultivars there is out there and the bowl garden concept developed into a 'proper'

collection of individually potted and named plants which filled almost every available space in our gardens.

As time went on and our collections reached their peak, we felt brave enough to put on a specialist display at the Edenbridge and Oxted Agricultural Show over the August Bank Holiday weekend. We had for several years, along with fellow members of the local BCSS branches, been supporting the cactus and succulent competitive classes at the show so were able to talk to the organisers of the horticultural marquee for advice before taking the plunge. Over the four years during which we exhibited our display, we were proud to progress from a Silver Gilt medal to Gold (see Fig. 1 above) and to win the cup for 'Best Small Nursery'. Sadly, for various reasons, our collections are no longer of the standard which won these accolades, but we are slowly trying to revive them.

Sempervivum and Jovibarba continued

We have occasionally visited the Chelsea Flower Show and it was there, one year, that we found a display by Fernwood Nursery from Peters Marland, near Torrington in Devon where Howard and Sally Wills maintain the National Collection of Sempervivums. They have a very informative web site and they produced an excellent A5 booklet on Sempervivums and Jovibarbas, sadly now sold out, and a comprehensive CD-ROM containing images and descriptions of a large number of species and varieties.

We have found that garden centres often have a small selection of sempervivums, but not as many as in previous years and usually without any meaningful names. It is always worth investigating the 'Alpine' sections of garden centres and nurseries however as a few do stock some named varieties. The RHS Wisley garden centre generally has a good selection of named species and cultivars.

So, what of the plants themselves?

The name *Sempervivum* is derived from the Latin words *semper* meaning 'always' and *vivum* meaning 'alive' which gives a good indication of the hardiness of this family of plants. Common names are 'Houseleek' or 'Hen and Chickens'.

Jovibarba on the other hand, translates as 'Jove's' or 'Jupiter's Beard', a name that gives no clue to their hardiness. The species are found in many of the European mountain ranges including the Pyrenees, Dolomites, Caucasus, Alps, Balkans and others. They

generally grow at high altitudes and their habitat means they are exposed to full sun, heavy rainfall, sub-zero temperatures and snow coverage depending on the season.

In turn this means that in cultivation they need very good drainage, the best exposure you can give them and moderate feeding. Their steep, rocky mountain habitats mean that when exposed to seasonal deluges the water drains quickly and the plants do not rest in water for extended periods. Prolonged, soggy conditions at any time of year in cultivation will tend to induce rot of the outer leaves of the rosettes which

can, ultimately destroy the plant. Winter cold, hard frosts and a bed of snow on the other hand, will be taken in their stride leaving the plants looking refreshed in the spring.

We normally grow these plants in shallow terracotta pots in a compost mix of nearly equal parts John

Innes no.3 (or similar) and horticultural grit and a top dressing of Alpine pink grit. The top dressing, as well as helping to show off the plants, when tucked under the individual rosettes helps to lift the leaves off the wet soil and reduces the risk of rot (Fig. 2). Minimal feeding is necessary, but a single dose of dilute tomato feed in the spring to replenish the nutrients washed out by winter rains can be beneficial.

There are approximately 50 generally accepted species and upwards of 3,500 cultivars, many of which are rather similar and impossible to identify positively without provenance. Some species and a few cultivars

...their habitat means they are exposed to full sun, heavy rainfall, sub-zero temperatures and snow coverage...



Fig. 2 *Sempervivum erythraeum* with top dressing



Fig. 3 *Sempervivum* 'Bernstein'

Sempervivum and Jovibarba continued

are sufficiently distinctive and consistent to be able to identify confidently, but because of their tendency to change appearance depending on the prevailing weather during the spring and summer each year, i.e. wet/dry, long hot, sunny, dry spells or cold, wet, cloudy spells, identifying unnamed individual specimens can be challenging!

Under prolonged dull conditions some otherwise distinctive cultivars can revert to nondescript olive-green appearance, only to brighten up again the following year when (or if) we enjoy a bright, warm summer. The cultivar 'Bernstein' is normally a distinctive 'bronze-green' colour (Fig. 3), but one spring I found that half of my plants, which were still clearly labelled, had reverted to an unexciting purple-green colour while the remaining plants of the same stock retained their distinctive colour.

A variety which has shown a striking colour change due to different summer conditions is 'Bronze Pastel'. For several years it struggled to live up to its name, (Fig. 4) but one year it developed a truly bronze colour (Fig. 5). Another cultivar which regularly produces a significant change in appearance throughout the year is 'Gallivarda'. In a fine summer 'Gallivarda' will develop an overall, almost scarlet colour (Fig. 6) which from the end of summer fades to a patchy red and green until by mid-winter it has become almost completely green before starting to recover its glory again in spring.

Sempervivums propagate themselves vegetatively in spring by stolons. These each develop a single new rosette at the tip which quickly roots down to form a new plant. The stolons are typically quite rugged and can persist for a few years. Once the new rosette or 'pup' has developed roots it can be detached from its parent and potted up separately, remembering to also transfer its name, or left with its parent to form a clump. This is the only sure way to ensure continuity of a species or genus. The stolons may be quite short or, in some cases unusually long. It quite easy, with a densely packed collection of pots, for plants to colonise neighbouring pots.

Individual species or varieties produce differing numbers of pups each year depending on the propensity of the particular plant and its growing conditions, or the weather over winter and early spring. Some are quite prolific while others are quite sparing with their pups. 'Moerkerk's Merit' (Fig. 7) is one such prolific example which is fortunate as it also flowers profusely in spring and early summer, with a display of deep pink flowers (Fig. 8) which are especially attractive to bees, hoverflies and other insects.

Sempervivums are monocarpic and each rosette that flowers will then die so it is fortunate that established plants will normally have produced a number of offspring which do not flower at the same time as the parent, thus avoiding the risk of the plant 'flowering



Fig. 4 *Sempervivum* 'Bronze Pastel' in 2007



Fig. 5 *Sempervivum* 'Bronze Pastel' in 2009



Fig. 6 *Sempervivum* 'Gallivarda'

Sempervivum and Jovibarba continued

itself to death'. 'Moerkerk's Merit' consequently needs a thorough tidy up each spring to dispose of the many dead heads and keep it looking its best. Other less floriferous varieties may only need tidying every two or three years.

Jovibarbas come from similar environments to sempervivums and have the same cultivation requirements. Most jovibarbas propagate themselves in the same way but with much more delicate, almost hair-like stolons. Their pups (sometimes called 'rollers', as, being virtually spherical, they can easily roll away from the parent plant) will also root down very easily, even if they have no roots yet developed when parted from their parent.

Jovibarba pups will emerge from nearer to the centre of their parent's rosette compared to sempervivums where the stolons develop near the base of the rosette and emerge from under the leaves.



Fig. 7 *Moerkerk's Merit*



Fig. 8 *Moerkerk's Merit* flowers



Fig. 9 *Jovibarba heuffelii* 'Bermuda'

The exception to this is *Jovibarba heuffelii* which forms a more solid tap root rather than the fibrous root typical of other *Jovibarba* species and sempervivums, and multiplies by a form of dichotomous division of the head (Fig. 9), so remaining as a very tight clump of rosettes rather than rambling far and wide.

Jovibarba rosettes also die after flowering but *J. heuffelii* will quickly close the gap left by a dead, flowered rosette as the surrounding rosettes grow.

Propagation of *J. heuffelii* may be more tricky if the plant is young and the root beneath a multi-headed plant is solid, but I have found that an older plant with many heads, especially one which has flowered a lot in the past, will tend to fall apart quite easily when removed from its pot and cleaned up making propagation easier.

Sempervivums and jovibarbas will typically flower after three or four years, although one plant in my collection has never flowered in some 15 years! A mature rosette indicates its readiness to flower by enlarging, with the centre of the rosette expanding upwards, ultimately producing the flower stem.

Sempervivum flowers are all open, star-shaped with typically 8 to 16 petals. Colours are either shades of pink, from very pale to a deep, rich pink, or shades of cream or yellow (Fig. 10). *Jovibarba* flowers are all bell shaped with six cream or pale yellow petals (Fig 11).

Their attractiveness to pollinating insects means that seed produced is virtually guaranteed to be a hybrid between species or varieties so cannot be relied upon to produce a true copy of the parent. The willingness to hybridise between varieties does of course mean that plants grown from seed may develop into attractive plants in their own right, and different from their parents.

Propagation from seed is very easy, just fill a seed tray (with drainage holes) with seed compost, lay a few dried flower heads on the surface of the compost, leave the tray outside over the winter, (no shelter or protection needed) and forget about it until spring when you will find dozens, if not hundreds of tiny seedlings appearing. As soon as they are big enough

to handle, separate the seedlings out and replant into a new tray or plug pots with fresh compost. The seedlings will grow on quite happily but will not start to show their leaf pattern or colour characteristics for a year or so. By potting the seedlings on regularly, they will continue to grow larger, but it is also possible to 'bonsai' them by leaving them pot bound. Depending on their parentage, the seedlings may develop into smaller or larger rosettes and may develop

characteristic patterns different from any of the parent plants.

I carried out this process with some seed heads from various *Jovibarba heuffelii* in a single, standard seed tray and ended up with nearly 500 seedlings! (Fig. 12). By regular potting on, a few grew to fill 5½" pots in just

three years while others were clearly of a more 'dwarf' form. A very few showed the hirsute form with velvety leaf surface, but the vast majority were of the 'glabra' form with smooth leaves.

Sempervivums have few 'enemies', the worst being poor drainage. That little weed that appears in the pot may have lengthy roots which clog the drainage allowing water to persist around the plant, causing the leaves to start to rot.

Rotting leaves, even in fairly dry conditions and especially in the more succulent varieties, may indicate the presence of a relatively new pest, the Sempervivum

Rotting leaves, even in fairly dry conditions...may indicate the presence of a relatively new pest, the Sempervivum Leaf Miner.



Fig. 10 *Sempervivum zeleborei*, flower

Leaf Miner. This is a form of hoverfly which, like many pests, was accidentally introduced from abroad several years ago. Its larva burrows into the succulent leaves and eats them from the inside. Careful inspection will find the leaves containing the culprits which can be removed and destroyed. Spraying with a suitable pesticide may provide some control.

If you find plants are falling out of their pots with no roots attached, the cause is likely to be that bane of pot plants, the Vine Weevil. Few viable remedies are available these days so tipping the compost out of the pot and inspecting for little fat, crescent shaped grubs of a creamy colour and destroying them is often the



Fig. 11 *Jovibarba heuffelii*, flowers

only answer. Sempervivums are usually tough enough so that, as long as the grub has not munched its way up through the centre of the rosette leaving just a pile of loose leaves, the inspected, rootless plant can be placed on fresh compost and will re-root itself and grow on. It may, indeed, already be showing signs of growing new roots despite the attack by the grub.

I hope this article will encourage you to try a few of these interesting and hardy plants. I should also mention that if you have a well-drained, sunny bed in your garden, you can also plant sempervivums and jovibarbas directly into the ground or into gaps in garden walls which reproduce their mountain habitat.



Fig. 12 *Jovibarba heuffelii*, seedlings

Propagating from seed is free and you may create one or two distinctively different plants which are unique to your collection and you can choose to name! At least you will produce many plants, some of which you can give away to friends or, maybe, sell to raise some funds to buy more pots and compost! They are generally low maintenance and rewarding to grow so, please, enjoy. ■

Photos: David Sheppard

See [➤ Fernwood Nurseries](#) for comprehensive information on *Sempervivum* and *Jovibarba*

A sensitive matter!

Words by Chris Coombes Illustrations by Charles Hogdon

How do plants respond to touch? They are more sensitive than we might think

I am a firm believer that no succulent fanatic in the history of the world has ever had a growing space big enough to accommodate everything they wanted. The consequence of this is that when entering our greenhouses we all end up breathing in and squeezing past all those pots that are hanging on to the very edge of the staging for dear life, kicking the ones that we resorted to placing on the floor and, in many cases, combing what's left of our hair on those hanging from the rafters.

In every collection there are always those plants that desperately need re-potting, squashed against the many more that we must keep just to propagate from, trays and heat mats full of pinpricks of life from the enticing seed lists, and then, of course, the donations from generous Society members offering us their far too tempting surplus plants to grow, in a fruitless effort to attempt to reduce the crush in their own growing space.

But we need to be mindful that all of this can have a very detrimental effect on the life of our plants, because they are all extremely sensitive to touch.

'Plants respond to touch in a variety of ways. Growing roots avoid obstacles, stems that are repeatedly touched or rocked by the wind can develop a shorter, sturdier growth form.'
(Darwin 1880)

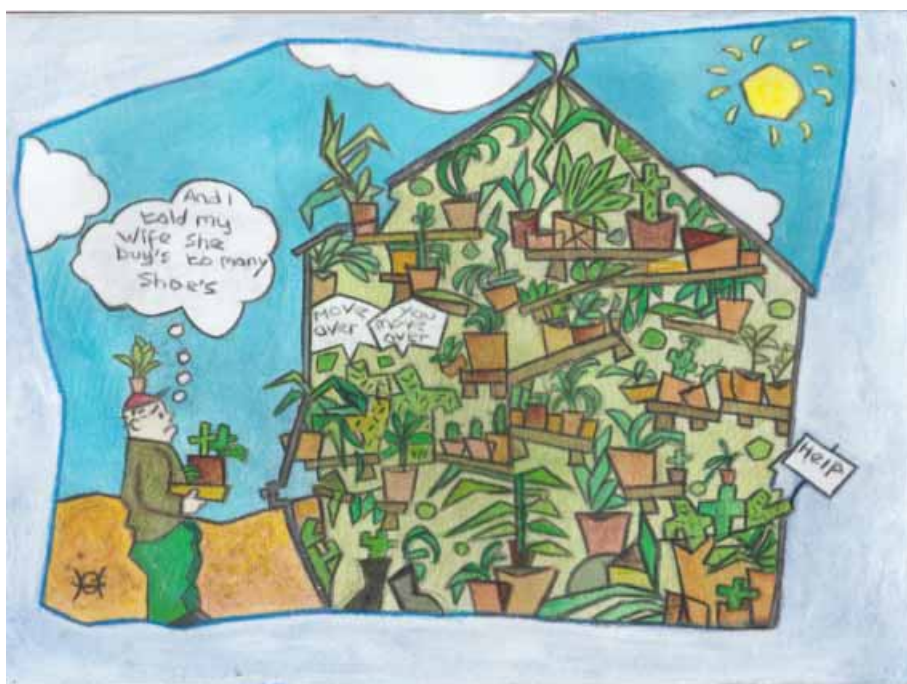
Humans can detect a weight of 2 micrograms on the most sensitive part of our bodies (the fingertips!) Plants can detect things weighing just ¼ microgram, 8 times less than us, and some have proved to be up to 10 times more sensitive. Just a nudge from us, or a tiny insect landing on them, can fire up and cause a reaction in over 2% of a plants genes. The equivalent of us getting an adrenaline rush.

'We do not have a complete understanding of how plants respond to touch but we do know that within seconds, sometimes much quicker, there is a change in action potential and electrical resistance which leads to the increase of Ca²⁺ concentrations within the cell. This causes the unregulation of various genes in the following 10 to 30 minutes.'
(Lee et al. 2005).

When knocked against, or if a pest lands on it, a plant immediately reacts.

'Plants may also use receptors on the surface of foliage to detect herbivorous insects. As they walk they rupture glandular trichomes that release various hormones that activate genes associated with plant resistance.' (Peiffer et al. 2009)

In the 1960s Botanist Frank Salisbury and his team were studying the varying rates of growth of a tough weed known as Cocklebur (*Xanthium strumarium*) and physically measuring the length of several of the leaves every day by gently placing a ruler against them. Soon all of the measured leaves started to retard their growth, turned yellow, and



A sensitive matter! continued

then died, but those that they did not touch were fine. He later noted that just regularly touching plants can kill them!

Mark Jaffe also experimented on 'touch induced growth inhibition.' Janet Braam agreed and they both stated that in tests on other plants, stroking or touching gently every day leads to a rapid change in their genetic make up.

This is an evolutionary adaptation that increases the chances of a plant surviving multiple, sometimes violent damage, even if no actual damage is caused.

Imagine if you were growing on the edge of a much-used path and a particular branch or leaf kept getting knocked against. Any damage could allow pathogens, fungal or bacterial to enter. The infection could then spread and lead to the eventual death of the whole plant, so it makes sense that the growth is held back in that area to avoid more knocks and reduce the risk.

Some plants also have the ability to carry out 'programmed cell death' in which they deliberately block resources getting to an area in order to kill it off. This ensures any potential damage or infection is contained.

Touch genes are also used for shade avoidance. Changes in growth habit occur when touched by other plants. This is to avoid photosynthesis being affected.

Of course many of our plants are generally well equipped to dissuade us from knocking into them. Some of them exhibit highly coloured spines and these convey two messages. Firstly, we are here. Making them very obvious from a distance



gives an early warning for animals to steer clear of them.

Also certain colours convey messages to various creatures, particularly herbivores. It informs them that there are toxic chemicals present within the sap which either makes the plant indigestible, or even poisonous to them.

So what should we do as growers?

The most obvious point is, never touch your plants unless absolutely necessary. Not only is growth retarded, it can also inhibit flowering as they do not want to use up

resources that they may need to repair future damage.

Although improbable, if you do find yourself with adequate space then give them just a little more room to avoid having them brush against each other.

Avoid placing powerful fans too close to them as this can cause constant unnatural buffeting which will also result in a reduction in growth.



The good news is that our plants are not capable of feeling pain as they have no nervous system, but they still feel the mechanical stimulus associated with any outside interference and are far more sensitive than we are.

Remember, they will always react to this sort of stimuli and often take drastic action and modify their growth methods accordingly. ■

References:

Darwin, C (1898) *The Power of Movement in Plants*

Lee, et al (2005) Microarray identification of touch-inducible genes

Peiffer M, et al (2009) Plants on early alert: glandular trichomes as sensors for insect herbivores, *New Phytologist* **184**: 644-656.

Growing Bulbine

by Brian McDonough

An introduction to this little-known genus of succulent plants including how to grow *B. haworthiodes*, an attractive miniature, from seed



The flower spikes of the larger growing *Bulbine aloides* are showy with multiple flowers opening at the same.

Bulbine is a genus of mostly southern African succulent plants in the family Asphodelaceae, so it is related to *Aloe*, *Gasteria* and *Haworthia*, although it is sufficiently, genetically, distanced that it is unable to interbreed with those named to produce intergeneric hybrids.

The genus has been cultivated for many years, but mostly in more favourable climates, as drought resistant garden plants and ground cover. Perhaps the material available in the past to greenhouse growers of northern climes, has lacked the pizzazz of other genera. Some of the larger growing *Bulbine* have a charm of their own but, when growing space is limited, it is not difficult for them to be eclipsed by more charismatic relations with attractive leaf patterns and colours or interesting 'teeth' on their leaf margins.

Morphologically, the genus *Bulbine* is very diverse, from the large fleshy rosettes of *B. latifolia* through the cylindrical, succulent leaved 'clumpers', such as *B. frutescens*, to the extremely diverse range of miniatures. However, they all share one thing in common, their floral structure; their stamens all bear feathery attachments to the filaments (see front cover).

I have never heard mention of the possible reason for such structures, but they are obviously an evolutionary adaptation to pollination. As an armchair botanist who loves a puzzle, I have my own theory as to why they are there. It seems obvious to me that *Bulbine* are insect pollinated. Bird pollination can be easily ruled out as the flowers do not produce the copious amounts of nectar that is seen in bird pollinated aloes or gasterias and individual flowers are generally small. The flowers are fully open, not partially fused or tubular and I believe the stamen extensions act as an obstacle to prevent easy access to the otherwise exposed nectaries. Insects landing on the flower will fumble their footholds on the structures and need to clamber around and in the process become covered in pollen. Then, after accessing their nectar reward, they will depart, transferring the pollen to the next plant they visit.



The popular shrubby Bulbine frutescens, with its tufted, feathery stamen structures, can be found with white or orange flowers as well as the usual yellow

While there may not be a universal interest in larger *Bulbine*, there is currently a growing passion for the miniatures, fuelled by images on social media. These tiny plants have all the charisma and appeal lacking in their bigger and more easily cultivated relatives.

The diversity among these miniatures is truly astounding and without flowers it would be very difficult for the uninitiated to make any connection between many of the species. As with other, miniature succulent genera coexisting with *Bulbine* in favourable habitats, populations can be extremely localised and isolated, resulting in the evolution of very distinct species. Unfortunately, this same mechanism of localisation equates to rarity and vulnerability.

While the internet has been a very useful and fairly recent source of information on miniature *Bulbine* for succulent hobbyists, it has also created a demand that way exceeds the supply of cultivated material and may add to pressures in habitat. It is easy to find sources on the internet exploiting the lack of supply by offering seed at truly exorbitant prices, and this material is

being snapped up by the wealthiest of hobbyists, as has been seen with *Conophytum*, *Adromischus* etc in recent years. One might argue that eventually, after the initial demand is met, there would be sufficient material in circulation and propagated to supply all demand.

However, unlike the genera mentioned above these miniature *Bulbine* cannot be propagated from cuttings or leaves, with seed raising being the only option for propagation. *Bulbine* are self-sterile, so at least two individual clones are

needed in order to produce seed. Add to this the general short life expectancy of these plants and demanding cultivational requirements, then it is highly likely that most of these species will remain difficult to obtain and always command a high price.

Unfortunately, I have not had the opportunity to grow any of the other miniature species, but for anyone thinking of trying their hand at growing miniature *Bulbine* for the first time, rather than spending a fortune on a few seeds of the rarer species, I would highly recommend that they start with

...I would highly recommend that they start with B. haworthioides...It is a relatively undemanding species that appears to be the most readily available...

B. haworthioides, the stimulus for writing this article. It is a relatively undemanding species that appears to be the most readily available and which can be acquired at a fair price. I have been growing the species for around 18 years and currently have a small group of

plants that I am able to sustain with new replacement plants from the seed that they produce.

As with most of the species, *B. haworthioides* is an autumn/winter grower. In late winter/spring the plants begin to flower. During the summer the plant becomes



Above: The tiny fruits of *B. haworthioides* contain just a few seeds

Right: Drying fruits can split very quickly, with the slightest disturbance scattering seed onto neighbouring pots



Left: Dry, ripe fruits are removed with deadheading snippers to prevent the scattering of seed

Above: Collected fruits. Seeds are removed from the dried chaff and stored, ready for sowing in August



Fresh seed germinates readily in late summer/early autumn. These seedlings, photographed in December, have become etiolated due to the very dull start to winter



These two year old seedlings have developed nice little caudices and exhibit some of the leaf markings exhibited in mature plants

dormant, losing its leaves and the fruits of successfully pollinated flowers ripen and the seed is dispersed.

The seeds of *Bulbine haworthioides* are small and black with a rough surface. They are best sown in late summer/early autumn as night time temperatures begin to drop. Germination is improved by the rise and fall in temperature from day to night, so there is no need to place seed in a propagator. A greenhouse or cold frame can produce the ideal environment. Fresh seed

germinates very well but, as far as I am aware, has a fairly short viability, deteriorating at a similar rate to *Haworthia* and *Aloe* seed.

In the first growing season the seedlings produce one leaf and the tiny root swells to form a small corm, which sustains the plant through the first summer dormancy. During the second season the corm grows into what can be described as a small caudex. More leaves are produced which bear the windows that can



Three young plants just reaching maturity, growing in a 70mm pot



A close up image of a young plant showing the windows that create the patterning on the upper leaf surface.

be seen in mature plants. For me, the plants reach maturity at three to five years and, as they wake from their summer rest, they produce a tight rosette of short, attractively marked, windowed leaves, which in habitat can be mistaken for a small *Haworthia*.

The trick in cultivation, especially during the dark northern winters, is to keep the growth tight. Inevitably I find that plants become a little stretched, with my low light levels. In extremely dull, cloudy winters leaves can become rather etiolated, so growing under lights (if an option) during the darkest months is recommended.

Compared to other succulent species I have found *B. haworthioides* to be relatively short lived, remaining as a single rosette of leaves and expiring at around five to eight years of age. I have one plant which appears to be bucking the trend at around 12 years old from seed, which has divided into four rosettes on a much broader caudex. It will be interesting to see if these traits are inherited by subsequent generations in my care.

As mentioned earlier, the flowers of *B. haworthioides* are produced as the growing season comes to an end. The stamen structures described earlier differ slightly from the normal hair-like bristles in that each bristle is terminated with a clear, globular shaped tip, reminding me of tiny cotton wool bud or pugil stick. Individual flowers only last a couple of days, but a mature plant can produce up to three or four flowering stems. To enable these to develop fully and produce seed it is necessary to give the plant a few drops of water every few days, even though leaves may have wilted, to sustain the flowers and replace water that is being lost through flowering. That way, flowering continues into the

summer and a good crop of seed can be achieved. As a result of the long flowering period fruits begin to dehisce and shed seed on lower portions of the flower spike while the upper sections continue to flower. Seed is easily scattered, so I employ a method of snipping off dried-up fruits with a pair of deadheading snippers and removing the seeds from the chaff.

Individual flowers only last a couple of days, but a mature plant can produce up to three or four flowering stems.



My oldest Bulbine haworthioides showing its caudex and multiple growing points – note the self sown seedling top right

Growing Bulbine continued

During the height of the summer, flowering finishes and water is completely withheld. Light shading is given to avoid scorching and a large office fan is used to ensure adequate air movement over the dormant plants. Mid to late August is a good time to repot dormant plants if necessary. I use a very free draining mix made up of John Innes seed compost and an equal volume made up of granite grit, coarse sharp sand and some non-clumping cat litter. My plants are usually active when September starts as night time temperatures are dropping considerably. After a few good soakings at the start of the growing period watering is reduced to regular light watering to prevent plants wrinkling as the days grow shorter. This regime means they make ideal greenhouse companions for *Conophytum*, choice miniature *Crassula* and other short day active plants.

A cautionary note about searching the internet, just like searching for *Aloe* and getting hundreds of responses for *Aloe vera* products, searching for *Bulbine* results in an increasing number of hits for *Bulbine natalensis* tablets. *Bulbine natalensis* is a species containing chemicals that supposedly boost testosterone production and there are reports that the plant was traditionally used as an aphrodisiac. However, tests have shown that there can be negative health side effects. ■

Photos: © Brian McDonough

See [➤ Myrighteye](#) for more of Brian's photographic work

Below inset: Early stages of *Bulbine haworthioides* flowering.

Individual flowers only last a couple days but, with so many flower buds, flowering can continue well into summer

Below close-up: The hair-like stamen structures of *Bulbine haworthioides* terminate with a tiny globular tip





Fig. 1 A large example of *Oreocereus pseudofossulatus* (PH1373.03), east of La Paz at 3840m

Oreocereus revisited

by Paul Hoxey

Oreocereus species of Bolivia and Southern Peru in habitat

Back in 2017 I wrote an article for the December issue of the Essex Succulent Review entitled the 'Oreocereus of Peru and Chile'. Last summer Sheila (your editor) asked me if I could write something further and I suggested some additional words on *Oreocereus*. Since my first article I have been fortunate to visit Bolivia for the first time. I only explored the western side of the country in the department of La Paz but saw one of the three *Oreocereus* to be found in Bolivia (*Oreocereus pseudofossulatus*). Subsequently in November 2018 I undertook a trip in southern Peru and saw in habitat the one species of Peruvian *Oreocereus* I had not seen previously (*Oreocereus doelzianus*).

Oreocereus pseudofossulatus D.R.Hunt

This name was only published in 1991 but the plants have been known for many years as they are found close to the city of La Paz. It was previously known as *Oreocereus fossulatus* but that name had to be abandoned in favour of *Oreocereus pseudofossulatus*.

I saw my first specimens a few kilometers east of La Paz at an altitude of around 3800m, on fairly dry slopes with some bushes, grasses and several other species of cacti (*Austrocylindropuntia vestita*, *Corryocactus melanotrichus*, *Tunilla soehrensii*, *Cumulopuntia boliviana* and *Lobivia backebergii*).



Fig 2 *Oreocereus pseudofossulatus* (PH1386.01) with hairs on the upper part of the stem but bare below

The plants make impressively large clumps 3 or 4m across, with a mass of branching stems (Fig. 1). The stems reach about 2m tall and are usually upright but start to droop with age. Offsetting occurs from the base of the plants or part way up the stems, especially on old stems that are becoming procumbent. Interestingly the plants had dense hairs only on the upper parts of the stems while the lower stems were completely without hairs (Fig. 2). I imagine the hairs fall off over time on the older part of the stems due to weathering effects.

There is a single sturdy yellowish central spine and a number of much smaller radial spines. On hairy stems only the central spine is visible and the radial spines are hidden from view within the hairs. In its general appearance *O. pseudofossulatus* looks similar to *Oreocereus leucotrichus* which I have seen in Peru.

However the flowers are of particular interest and immediately separate the two species. They have the similar zygomorphic shape to all other *Oreocereus* species but the flower tube and petals have a washed



Fig 3 The yellowish-pink flower of *Oreocereus pseudofossulatus* (PH1373.03), typical in populations east of La Paz

out yellowish pink colour, quite unusual and unique in the genus (Fig. 3) This yellowish pink contrasts very strongly with the pollen colour which is a deep purple and is visible in the throat of the flower and above the petals. A greenish stigma extends a little further beyond the anthers.

We saw very similar plants again a little further to the south east of La Paz making extremely attractive specimens on the hillsides in a picturesque landscape with snow topped mountains in the background (Fig. 4). Here the flowers were a little more variable in colour and some had pure yellow petals which contrasted even more strongly with the purple pollen (Fig. 5).



Fig 4 *Oreocereus pseudofossulatus* (PH1396.02) with Nevado Illimani in the background

The plants at this locality also had fruits and further differences compared to *O. leucotrichus* were evident. The fruits of *O. pseudofossulatus* remain firmly attached to the plant even when ripe and can only be removed with a firm twist which results in a tear in the base of the fruit at the point it was attached to the plant. Ripe fruits were either orange-red or yellowish-green and when still attached to the mother plant often have a sizeable hole in the side (Fig. 6). Although we

did not obtain any evidence to corroborate the theory, I believe they are created by birds pecking at the fruit to eat the pulp inside. We did however see ants taking advantage of the holes and entering the fruit. They probably help to disperse the seeds too. This is quite unlike the seed dispersal mechanism for *O. leucotrichus* where the fruit is easily detached leaving a clean hole or 'pore' at the base. Seed is then dispersed over time through the basal hole of the fruit.



Fig 5 A pure yellow flowered example of *Oreocereus pseudofossulatus* (PH1396.02)



Fig 6 Two ripe fruits and one unripe fruit of *Oreocereus pseudofossulatus* (PH1396.02). One example with a hole most probably created by birds



Fig. 7 *Oreocereus pseudofossulatus* (PH1386.01) with a deep pink flower which is typical of plants found near Luribay, approximately 75km south east of La Paz

About 75km from La Paz to the south-east we encountered *O. pseudofossulatus* once more on the descent to Luribay and beyond in the valleys of the Río Luribay and Río Caracato. The plants looked very similar to the previous populations seen closer to La Paz except for the flowers which in all the plants encountered were a deep pink colour (Fig. 7), much more like you would expect in an *Oreocereus*. I do not know how consistent the two different flower colours are but we did not see any populations with intermediate flower colours or with both types growing together. The pollinator expected for this shape of flower is hummingbirds so I wonder if the different flower colours are attractive to different species.

In these river valleys we found *Oreocereus* from an altitude of 3600m right down into the lower parts of the valley at 2100m. This was a surprise for me as *Oreocereus* are usually considered mountain plants growing at quite high altitude. The populations in the lower part of valleys grow in quite different conditions to those higher up. They endure significantly hotter conditions and much more arid surroundings.

***Oreocereus doelzianus* (Backeb.) Borg [=*Morawetzia doelziana* Backeb.]**

This is the species I had not previously seen in habitat in Peru although I had for many years grown the subspecies '*sericatus*' in cultivation and flowered plants on many occasions. This species is perhaps equally well known under the generic name *Morawetzia* and it is different from all other *Oreocereus* in that the stems form a terminal cephalium at the tips of the branches. It must be closely related to *Oreocereus* as all other characters are similar but I have to admit to using the generic name *Morawetzia* on my plant labels in the greenhouse! Once a branch reaches maturity it becomes a little thicker at the top and forms the cephalium. It will never grow further and will subsequently only produce a succession of flowers from there on. This is just like the growth form of *Melocactus* although the cephalium in *Oreocereus doelzianus* is much smaller and does not extend with age. *O. doelzianus* also freely offsets from the base unlike *Melocactus* so can grow a succession of new stems and form sizeable clumps in time. Stems can reach up to 50cm tall and clumps as large as 1m in diameter are possible.

The distribution of *O. doelzianus* is restricted to the drainage basin of the Río Mantaro, a major tributary of the Amazon river, which rises in the Andes and makes it way out of the mountains between the towns of Huancayo and Ayacucho.

Three subspecies have been described and are accepted by the '*New Cactus Lexicon*'. The differences are primarily due to the degree of hair on the stems so perhaps this is not a good character to separate out subspecies. However populations do appear to be quite constant with regard to the degree of hairiness so let's not worry too much the pros and cons of calling them subspecies and focus on the plants themselves.

As the flowers and fruits are all but identical in the three subspecies these shared characters can be described once and not repeated. The flowers of *O. doelzianus* are zygomorphic but with quite an open throat. They can be red through to a more magenta red with pale yellow anthers. The fruit is of the type that can be easily removed, leaving a clean basal pore and with loose seed inside. Often seed will trickle out straight away as soon as a fruit is removed.

***Oreocereus doelzianus* subsp. *doelzianus* (Backeb.) Borg.**

The original subspecies was described by Curt Backeberg from plants found near Mariscal Cáceres in the upper reaches of the Río Mantaro. Unfortunately I have not visited this locality but we did find plants which I think fit into the concept of this subspecies further afield. The distribution, I believe, is restricted to the higher reaches of the Río Mantaro, probably above 2500m. Backeberg says the plants have a few hairs on the areoles so I am using this name to refer to the



Fig. 8 A large clump of *Oreocereus doelzianus* subsp. *doelzianus* (PH1604.04), Río Mantaro at 2720m

plants found with some hairs, more than in subspecies *calvus* but much fewer than subspecies *sericatus*. Not surprisingly the distribution for this subspecies appears to fit approximately between the other two. Plants formed clumps of sprawling stems (Fig. 8) with a reasonable amount of hair but not enough to obscure

the plant body and spines significantly (Fig. 9). The cephalia are generally easy to see with plenty of bristle-like spines and white hairs. Unfortunately we failed to find open flowers or fruits on any of the plants but we did see a few flower buds emerging (Fig. 10).



Fig. 9 *Oreocereus doelzianus* subsp. *doelzianus* (PH1603.02) with partially hairy stems



Fig. 10 *Oreocereus doelzianus* subsp. *doelzianus* PH1604A.01 with flower buds emerging from the terminal cephalium



Fig. 11 *Oreocereus doelzianus* subsp. *calvus* (PH1614.01) growing near the city of Ayacucho at 2760m

***Oreocereus doelzianus* subsp. *calvus* (Rauh & Backeb.) Mottram**

This subspecies, as can be guessed from the name, does not have hairs (*calva* is bald in Latin). It was originally described as a variety of *Morawetzia doelziana* but up-rated to a subspecies in the 'New Cactus Lexicon'. I found the plants growing between the towns of Huanta and Ayacucho on a separate spur

of the Río Mantaro that originates to the south. The altitude range is approximately from 2500m to 2800m. The habitats are slopes with rocky soils with a scatterings of bushes and grasses. There are also a number of other cactus species present such as *Corryocactus ayacuchoensis*, *Cleistocactus morawetzianus* and *Lobivia zecheri*. The plants look similar to the type subspecies except for the absence



Fig. 12 *Oreocereus doelzianus* subsp. *calvus* (PH1614.01) a stem with a few very small hairs present



Fig. 13 *Oreocereus doelzianus* subsp. *calvus* (PH1608.01) a stem with the strong spination typical of this subspecies



Fig. 14 *Oreocereus doelzianus* subsp. *calvus* (PH1614.01) with three ripe fruits emerging from the terminal cephalium



Fig. 15 A typical plant of *Oreocereus doelzianus* subsp. *sericatus* (PH1586.02) with stems densely clothed in white hairs. (Rio Mantaro, 1800m)

Fig. 16 (Inset) A close-up of the flower



of hairs on the stems (Fig. 11). This is not strictly true as a very close examination of some plants shows a few very small hairs (Fig. 12) but we failed to find any plants with significant hairs in any of the populations seen. The spination is also noticeably stronger on this subspecies compared to the type (Fig. 13). The area around Ayacucho was rather dry in November 2018 and plants were not in the best of condition. The cephalium is not always obvious but its presence is usually indicated by a number of bristle-like spines at the apex along with some white hairs. We failed to find open flowers but fruits were fairly plentiful at the time of our visit with some heads containing two or three all together (Fig. 14).

***Oreocereus doelzianus* subsp. *sericatus* (F.Ritter) Mottram**

This is the subspecies I covered in my precious article but from a cultivation perspective. Here I can add some further notes based on seeing the plant in habitat. It grows in the lower part of the valley of the Río Mantaro and was discovered and described originally as *Morawetzia sericata* by Friedrich Ritter. He found the plants at a place called Villa Azul. Today the locality is probably much changed from his time as it is now the site of a large hydro-electric plant. It is possible to pass through the security barrier but we were warned not to stop within the grounds of the hydro plant. We spotted some *Lobivia winteriana* from the car so could not resist jumping out to photograph them but we did not see any *Oreocereus* plants. That

was a failure on our part as I believe others have done so recently.

We did however see many plants at other localities further down stream. In one such place, when descending into the valley of the Río Mantaro, we had to stop for a while due to a landslide blocking the road. We asked some other waiting drivers about cacti in the area and without prompting one said there were plants with white hairs further along the road. Immediately we assumed they would be *Oreocereus doelzianus* subsp. *sericatus* and later that day we confirmed that by finding many lovely specimens (Figs. 15 and 16). The plants are consistently clothed in dense white hair and can form clusters of up to 100 stems and reach 1m in diameter (Fig. 17). The stems are generally no more than 30-40cm tall and are a little thinner than those of either of the other two subspecies (Fig. 20). The radial spines are obscured by the hairs but a single central spine is usually visible.

As we descended to the Río Mantaro we first encountered plants at an altitude of about 2000m and continued to observe plants down to 1000m. This is below the altitude range of the other two subspecies. As you descend temperatures become very hot and



Fig. 17 *Oreocereus doelzianus* subsp. *sericatus* (PH1587.01) a large clump about 1m in diameter

cacti dominate the landscape, especially *Azureocereus* (*Browningia*) *hertlingiana* which is very common. Other cacti found with *O. doelzianus* subsp. *sericatus* include *Cleistocactus morawetzianus*, *Lobivia winteriana* and various *Opuntia* species. We camped overnight down by the river and the car thermometer did not record a temperature below 25°C all night.

We were very fortunate to find a few plants in flower and fruit (Fig. 19). The cephalium is full of white hairs

but is not that obvious as they are hardly different to the hairs on the rest of the plant.

I think that these plants make an interesting continuation to the *Oreocereus* story I started previously. It leaves two species of *Oreocereus* still to cover. Unless somebody else gets around to writing about them it looks like I will have to visit Bolivia once again to see them in habitat and report back with a third instalment! ■

Photos: Paul Hoxey



Fig. 18 *Oreocereus doelzianus* subsp. *sericatus* (PH1589.01) a close up of a stem densely covered in white hairs with the central spines poking through



Fig. 19 *Oreocereus doelzianus* subsp. *sericatus* (PH1586.02) a mature fruit emerging from the cephalium

THE DODOES



Pseudolithos horwoodii

by Phil Hughes

Surely this is the ultimate Dodo



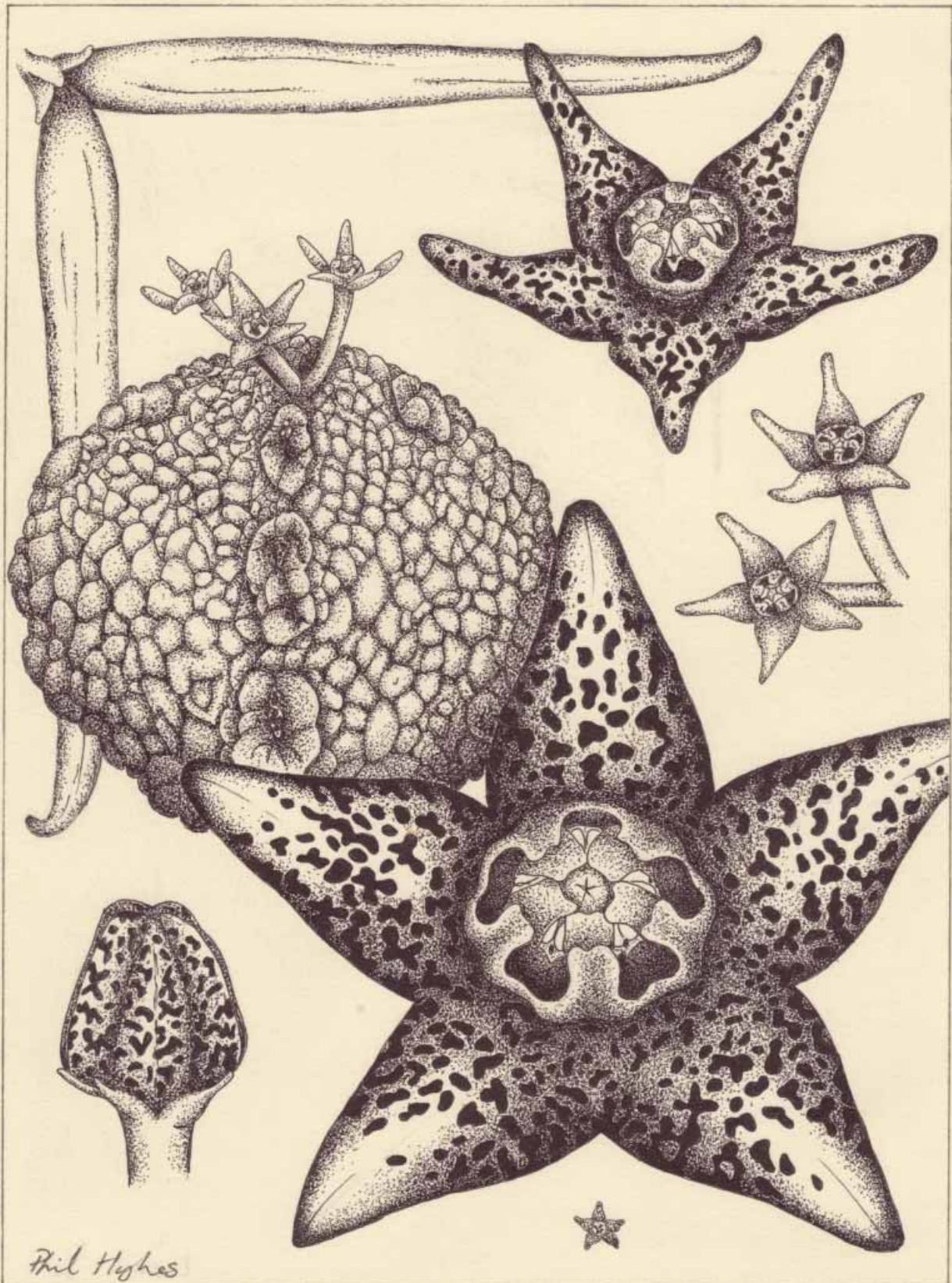
***Pseudolithos horwoodii* Bally & Lavranos**
[family Asclepiadaceae], (1974); type N3; 50 km east of 'Sinuif'
on the road to 'Eil', Lavranos and Horwood 10152

In 1973, Frank Horwood (then of Leeds, Yorkshire, UK – soon to be of Abbey Gardens, California, US) accompanied John Lavranos and Mirreille (his third wife) on a plant hunting trip to Somalia. They discovered a myriad of fascinating plants, often new to western eyes, many of which are now frequently seen in cultivation.

Frank only found two plants of this *Pseudolithos*, both were collected, and at least one ended up back in Yorkshire, where he coaxed it into flower in 1974. At this point a description was possible, and it was named in his honour.

It made the front cover of the National Cactus and Succulent Journal (UK) in full colour in 1975, (colour in the journal being as rare as these plants in those days), as part of a two issue monograph on the genus by Peter Bally, John Lavranos and Frank himself (probably based on their previous monograph in the US Cactus and Succulent Society Journal). Essentially the two fairly fuzzy photographs in those journals were all I have ever seen, until a recent internet search turned up a couple of other photographs, which I presume relate to John Lavranos rediscovering the plant in Somalia in 1986 – again all a bit fuzzy. Two photographs appear in John Pilbeam's books '*Stapeliads*' and '*Stapeliads (refreshed)*' credited to the US Cactus and Succulent Society Journal of 1974.

This drawing has taken quite a while, with scant source material, and a little artistic license, it is as accurate as I can manage. The tiny flower at the bottom is actual size – 7.5mm diameter. ■



Pseudolithos horwoodii

The small flower at the bottom of the drawing is life size, approximately 7.5mm in diameter



Who knew Conophytums grow on walls?

by Chris Rodgerson

Part 3 of Chris Rodgerson's series on looking for conophytums in inaccessible places in South Africa

Following on from my previous and similarly titled articles I thought it worth mentioning two more conophytums which really surprised me in habitat. I had seen both species before, but always at ground level. *Conophytum luckhoffii* in grit pans and on lichen covered sandstone and *Conophytum saxetanum* on coastal low level rocks, so I never imagined that either might grow on vertical cliffs.

Conophytum luckhoffii

As the taxon is currently accepted *Conophytum luckhoffii* is extremely variable in leaf size and markings. The unique cliff-dwelling form discussed here, almost at the southern end of its distribution, has the largest bodies. As it travels north it gets smaller, perhaps with the influence of *Conophytum minusculum*, but then it goes north and east to cover a distance of around 250km from the Piketberg to Nieuwoudtville, where it is larger and greyer and quite different to the southern forms.

Most *Conophytum luckhoffii* are easy to cultivate and quick to cluster. Its often red lines and large, purple, flamboyant flowers make it popular with growers.

My greenhouse collection is continually changing so I do not keep any records, but

I must have grown *Conophytum luckhoffii* SH500 from Mesa Garden seed about 30 years ago. It is a large and attractive form, now common in cultivation world wide.

It may have been from the man himself, but I cannot recall for sure where I first heard the story, but it was said that Hammer 'discovered' the population while gazing out of the window as he was travelling from Cape Town to Springbok by public bus. I suppose if he could have driven these plants may never have been noticed. I must admit it sounded like a tall story to me but it was added to my list of future trip targets as something worth looking for.

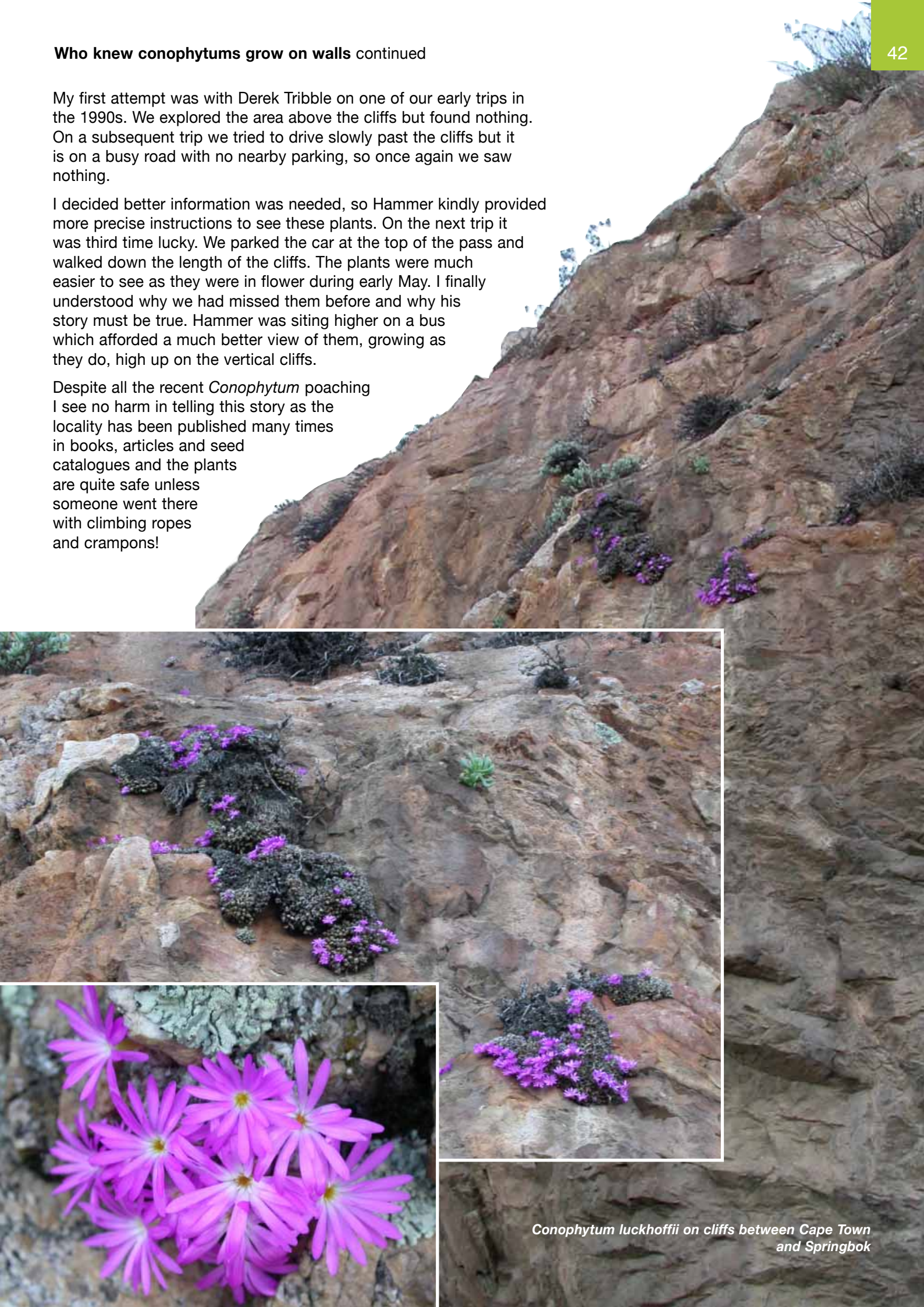
**Above and below:
*Conophytum
luckhoffii***



My first attempt was with Derek Tribble on one of our early trips in the 1990s. We explored the area above the cliffs but found nothing. On a subsequent trip we tried to drive slowly past the cliffs but it is on a busy road with no nearby parking, so once again we saw nothing.

I decided better information was needed, so Hammer kindly provided more precise instructions to see these plants. On the next trip it was third time lucky. We parked the car at the top of the pass and walked down the length of the cliffs. The plants were much easier to see as they were in flower during early May. I finally understood why we had missed them before and why his story must be true. Hammer was sitting higher on a bus which afforded a much better view of them, growing as they do, high up on the vertical cliffs.

Despite all the recent *Conophytum* poaching I see no harm in telling this story as the locality has been published many times in books, articles and seed catalogues and the plants are quite safe unless someone went there with climbing ropes and crampons!

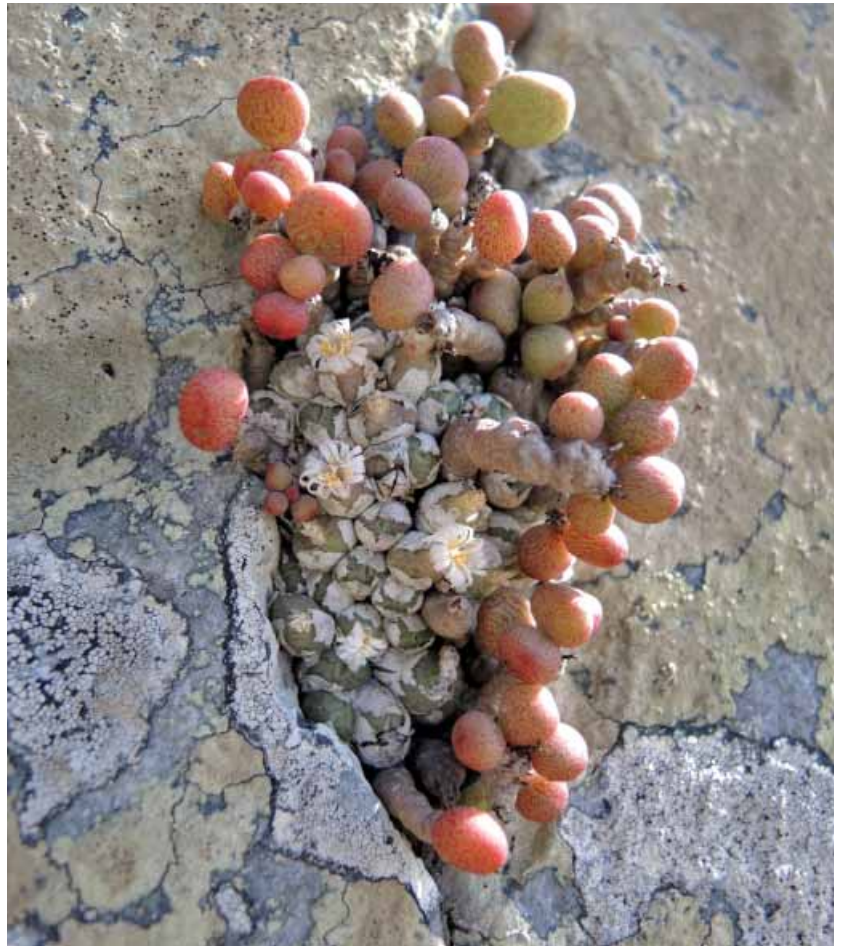


Conophytum luckhoffii on cliffs between Cape Town and Springbok

Conophytum saxetanum

Conophytum saxetanum is not nearly as attractive or as variable as *Conophytum luckhoffii* although it still grows over a distance of 300km or so from Alexander Bay to Luderitz. Why this disparity of variability is a puzzle. I would suggest perhaps local coastal conditions are similar across its range or maybe as a species it is older and more stabilised. It has tiny and mostly creamy-white nocturnal flowers and can make large clusters of hundreds of tiny bodies. Although interesting for the specialist collector, it is not one of the more desirable species to grow unless you can find some of the Hammer Sperrgebiet forms which have finely pubescent bodies and pink flowers.

Andy Young and I recently saw *Conophytum saxetanum* on vertical cliffs. This quite amazing place is on the Buchuberg to the south of Alexander Bay. Again I feel comfortable describing the find as this almost mythical pair of peaks (also known as the Buchu twins) is usually inaccessible to the general public. It lies within the prohibited diamond zone and getting there took much time and effort to gain permission and the required permits to visit. To the best of my knowledge very few



**Above: *Conophytum saxetanum* growing with *Tylecodon schaeferianus*
Below: Buchuberg in the distance**





survive due to soakings by regular sea fogs. Our time was limited so it was useful to have the guard drive us straight to the top of the larger peak using a track to a

***Conophytum saxetanum* growing on vertical cliffs on the Buchberg**

people have botanised there. On the day, we had to pass through a few levels of security and were also accompanied by an armed guard. We were even required to wear high visibility jackets due to the mining regulations. Not our usual attire when looking for plants!

Isolated as the mountains are they sit right on the Atlantic Ocean and the plants

communications mast. It would have been impossible for us to reach the top by climbing the cliffs from the base. The smaller 'sister' peak lies just north of the main berg and we had a couple of hours to explore that during the afternoon but found nothing different.

Photos: Chris Rodgerson

Opuntias in the USA

Adapted from The Opuntia Web with permission

There are over 90 species of *Opuntia* in the United States. This is an introduction to just some of these unique cacti with unusual shapes and beautiful flowers

The 'big three' states for opuntias are Texas, New Mexico and Arizona, however the eastern states have a number of species too and most states have at least one native *Opuntia*. Many opuntias grow naturally in climates without strong freezes, but some come from northern areas or high altitudes and can fly through winters of exceptional cold.

Opuntias are some of the most well-known and distinct cacti, consisting of chains of pads, more properly known as cladodes (defined as a branch or portion of a stem which functions as, or resembles, a leaf). They may be prostrate or clumping, or grow in a tree-like form with a woody stem. In the United States they are often known as 'prickly pears' or 'paddle cacti'. The cladodes bear areoles, usually with spines, and nearly always glochids, which are actually tiny, fine spines with backward facing barbs.

The flowers are typically yellow, but may be pink, red, orange, magenta or occasionally white. They do not have flower tubes, rather the pericarpels arise from the edges of the cladodes so that it is often difficult to tell if a new growth will develop into a bud or a new pad.

The stamens of many *Opuntia* flowers move in response to touch, a trait that is thought to increase the amount of pollen collected by insect pollinators. The fruit is typically a reddish berry, often armed with spines.

Of the many opuntias in the United States, some have been forgotten by time, and many names have fallen by the wayside. Some species look superficially alike, and only close inspection can tell them apart. The following are just a few of the many interesting opuntias which grow throughout the USA.

The Opuntia Web

This article is derived from The Opuntia Web. This website is published by Dr. Joe Shaw and written by Dr. Shaw and his colleagues on the [Editorial Board](#).

The Opuntia Web describes *Opuntia* species, with multiple photographs to illustrate the details of each plant, including habitat photos to show how the plants look and grow in different seasons. The site uses historical records and current findings along with field studies to identify *Opuntia* species, their differences, and their similarities and to describe them in easy-to-understand terms.

All the species names used in this article derive from The Opuntia Web, and have been researched by Dr Joe Shaw and his colleagues. The Opuntia Web

does not provide new taxonomic decisions. Rather, it uses published descriptions of species and identifies the plants in the field.

Visit the site at [The Opuntia Web](#)

Oblog

Oblog is the sister site for The Opuntia web. This contains short posts on opuntias and many other items of interest on cacti, succulents and habitats.

See [Oblog](#)

All photographs used in this article are credited to Joe Shaw and Dave Ferguson unless indicated otherwise.

With many thanks to Joe Shaw and his colleagues at The Opuntia Web for the use of this material.

Opuntia basilaris subsp basilaris

O. basilaris is a distinctive prickly pear cactus with the archetypical 'beaver-tail' look. The pads arise from a single point and form an approximate rosette. Mature plants form dense clumps up to 100cm across.

The pads may be blue-green or grey-green and may have hints of purple, or they may be entirely purple under stress. Though spineless there are numerous small glochids to be avoided. Flowers are magenta, about 7-8cm across and very showy.

Native Americans used *O. basilaris* as a medicinal plant (Anderson, 2001). Perhaps there was some beneficial effect to ingesting the cactus because it contains dimethoxyphenethylamine, a compound related to dopamine and mescaline.



Opuntia basilaris, Red Rock Canyon National Conservation Area, Nevada

Opuntia phaeacantha

This is a common and wide-ranging *Opuntia* from the South-west that forms a low, irregular, sprawling clump, sometimes with only one or two branches; although in areas with more plentiful rain or milder winters, *O. phaeacantha* has many branches and forms a mat which can be 1-2m across.

Oddly, the original description of *O. phaeacantha* is muddled and describes two different species.

The first, a smaller prickly pear cactus, is the one that became *O. phaeacantha*. The second, larger one, was named var. *major* by Engelmann but is the same basic thing as *O. dulcis*.



Opuntia phaeacantha

Opuntia dulcis

O. dulcis has been described as a variety of *O. phaeacantha* but it is a larger plant, with ascending branches to some 1m high..

It resembles *O. engelmannii* in some ways but does not grow as erect or large as that plant can. It is a woody plant, whereas *O. phaeacantha* is not.

O. dulcis grows as far north as Albuquerque, New Mexico and at least as high as 1500m. Plants from cold-winter areas are very cold-hardy.

An early account of *O. dulcis* describes its fruit as sweet hence the name.



Opuntia dulcis, Desert Botanical Garden, Tempe, Arizona

Opuntia engelmannii

O. engelmannii is found over much of the western half of Texas, New Mexico, Arizona and south-western Utah. The plants are large, as much as 1-2m tall in warm climates with adequate water, sprawling over many feet.

It is the most common large *Opuntia* and is routinely confused with other large opuntias. The thinking goes that if it is a large *Opuntia*, it must be *O. engelmannii*.

The pads are often 15-20cm across and may be up to 30cm long. They are typically egg-shaped, oval or circular. They are usually green, and may be yellow-green when stressed. The spines are variable, but are generally less than 5cm long with a chalky appearance, darkening towards the base to brown or black. Flowers are usually yellow with a green stigma.



Opuntia engelmannii

Opuntia ammophila

O. ammophila is a smallish, tree-like opuntia from lower Florida. The type specimen was from Fort Pierce growing on inland sand dunes. It was once considered a variety of *O. humifusa*; however, it is a distinct species. Coming from Florida it is not cold hardy.

Britton and Rose reported that *O. ammophila* typically has a single trunk and can appear tree-like; even small plants may be upright from a single stem. It was more commonly found 100 years ago but habitat destruction has limited its range, and today plants are seldom as much as 1m (3 feet) tall and often shorter.

The flowers are pale yellow and the stigma is cream coloured. Tepals recurve strongly, making the flower buds distinct and memorable.



Opuntia ammophila, showing the distinctive buds.
Photo: Daniel Green

Opuntia fragilis

By contrast *O. fragilis* is the smallest *Opuntia*, and also one of the most cold-hardy.

It is found in the west and northern mid-west of the USA. It is also found in a number of Canadian provinces and grows farther north than any other cactus occurring at latitude 56°N in British Columbia.

Older plants often develop a thick rootstock at the base of the plant and might consist of hundreds of rounded pads on numerous flat chains.

Britton and Rose reported that *O. fragilis* is seldom in flower and even less often in fruit. The pads separate easily, often with just a touch, which is the reason for the name.



Opuntia fragilis

Opuntia cacanapa

Lack of spines is a feature of some *Opuntia* species and is not unknown. However, lack of glochids is a very unusual condition in any prickly pear.

O. cacanapa is a large prickly pear cactus that occurs in parts of Texas and southeast to the Gulf Coast as well as in adjacent Mexico. It can reach 2–2.5m tall and its trunk may be 16cms in diameter while the cladodes can be up to 20cm long. Some plants lack spines in most areoles. It produces strongly recurved leaves on the pads and flowers.

O. cacanapa 'Ellisiana' is a garden variant that has no spines at all and essentially no glochids. It is also extremely cold-hardy which makes it a popular garden plant in the USA.



Opuntia cacanapa

Opuntia ficus-indica

Perhaps the best known *Opuntia* of all *O. ficus-indica* is a large, woody plant. It is actually a collection of *Opuntia* cultivars rather than a discrete species. The various cultivars probably have differing admixtures of genes from *O. streptacantha*, *O. tomentosa*, *O. hypiacantha*, *O. megacantha*, and *O. leucotricha*.

It is not native to the United States but is included here because it has naturalised in regions of the country which are essentially frost-free. It was developed in Mexico where the young cladodes (nopales) are consumed as a vegetable and the sweet fruits (tunas) are enjoyed. This *Opuntia* may have been used as human food for up to 9,000 years. Spineless opuntias were chosen over the millennia while the crop was developed.

Thanks to man *O. ficus-indica* is one of the most widespread opuntias in the world, found on all continents except Antarctica.



Opuntia ficus-indica flower, Tucson, Arizona

O. ficus-indica tolerates some drought but also withstands high humidity and rain.

It reproduces easily by clonal means and this facilitates its spread to the point where it is a serious weed in some areas, disrupting pastures and crops.

One special use of *O. ficus-indica* is as a host for the cochineal insect (*Dactylopius* spp.). The female insects produce a red exudate (carminic acid) that may be a defensive chemical. This is used to make a red dye for the production of cloth, cosmetics, and food colouring, etc.

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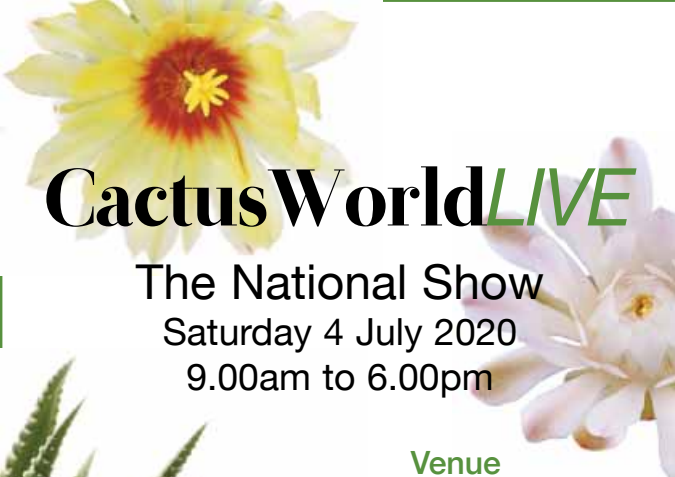
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10.00am-4.00pm	Wakering Road, SS3 0PZ
Fri-Sun 15-17 May	Display and Sales at the Flower Show
	Hyland House and Estate, Chelmsford, CM2 8WQ, Southend Branch
Sat-Mon 23-25 May	Joint Branch Show and Display Havering and Lea Valley Branches
10.00am to 5.00pm	Capel Manor College, Bullsmoor Lane, Enfield, EN1 4RQ
Sat 13 June	Branch Show Southend-on-Sea
12noon-4.00pm	St George's United Reformed Church Hall, 91 Crowstone Rd Westcliff-on-Sea SS0 8LH
Sat-Sun 18-19 July	Zone 15 Show
10.00am-6.00pm	RHS Hyde Hall, Creep hedge Lane, Chelmsford, CM3 8ET
Wed-Sun 5-9 August	BCSS Zone 15 Display and sales at the RHS Hyde Hall Annual Flower Show
10.00am-6.00pm RHS	RHS Hyde Hall, Creep hedge Lane, Chelmsford, CM3 8ET

The British Cactus and Succulent Society (BCSS) is the UK's National Society for growers of cacti and succulents. Zone 15 covers Essex and north-east London.





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On street or local supermarket car park (3 hours free).



For more details contact

>Laurie Poulson
or phone: 07748 885498

*Plants are being sold from the collection of Elvin Derrick and his wife who have now passed away.