

International Rock Gardener

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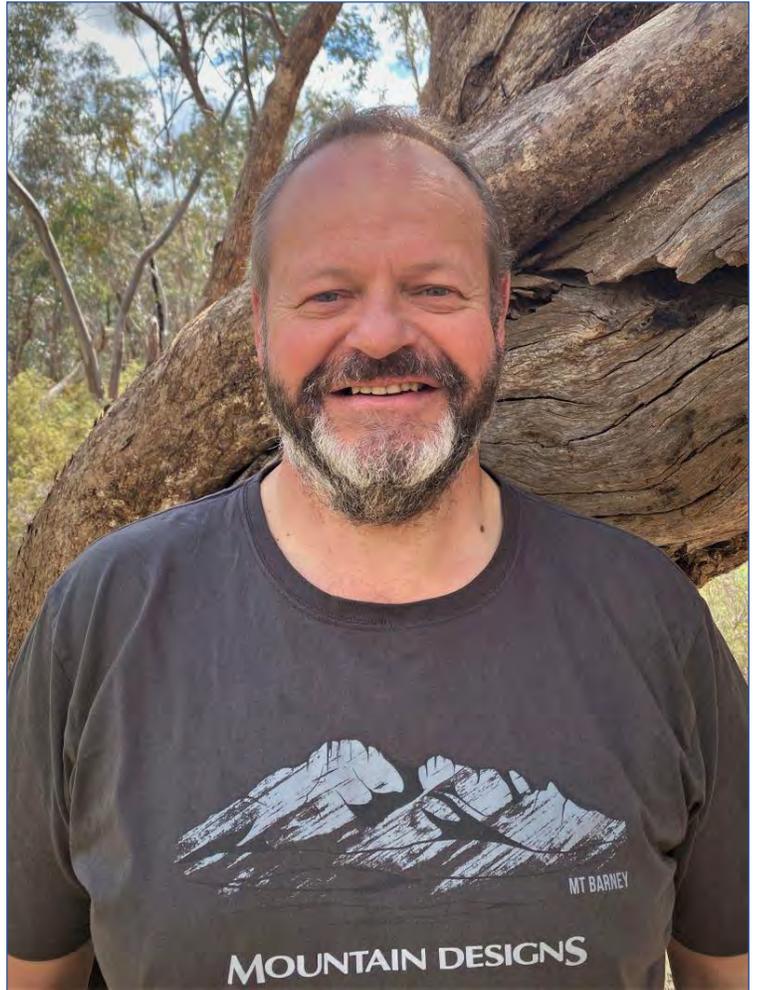
Number 142 The Scottish Rock Garden Club October 2021



Contributions this month are from Australia, the Czech Republic and California, via Turkey! Alan Ayton writes about Tasmanian plants, Dr Vlastimil Pilous introduces some *Gymnospermium* from the interesting family, Berberidaceae and Chris Gardner of Vira Natura makes his first trip to America after the relaxation of travel during the Covid pandemic to reconnoitre future trip destinations.

Introducing Alan Ayton (right): Alan lives in mainland Australia but has a fascination with the island of Tasmania. He tells me that he only discovered gardening about 26 years ago when he and his wife, Janet, purchased their first home and realised someone had to mow the lawn! Before this he had had no interest in plants whatsoever even though his mother was a good gardener.

After a few years of basic house renovations and a garden makeover he became more interested and went back to night school to complete a Diploma in Horticulture at the University of Melbourne-Burnley College. This further cemented his interest in plants and a career change to working in a retail nursery for 8 years further strengthened his love of plants. A “tree change” from Melbourne to the tiny town of Tangambalanga



in the North East of Victoria in 2008 revealed to him that his plant palette would need to change to handle the different climate and having less access to retail nurseries in rural Victoria meant searching online for mail order became more of a thing. This caused him to search for different plants of which one he bought on a whim was *Draba cretica*, and so began his dive into the wonderful world of Alpines and alpine like plants. This “tree change” also brought Alan closer to the Australian High country and from summer visits to Falls Creek and Mt Hotham, Mt Kosciusko and the Bogong High Plains, opened his eyes to the Australian Alpine flora for which his passion continues today.

Cover image: *Dracophyllum persistentifolium* syn. *Richea scoparia*, photo Alan Ayton.

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--- Introduction to Tasmania ---

The Alpine Flora of Tasmania - Alan Ayton

This is not an in depth look at the Alpine flora of Tasmania more just a cursory glance at some of its unique and incredible endemic and non-endemic flora.

A few facts: Tasmania is an island state of Australia 240km south of the mainland. It sits at a latitude of between 40° and 44° south. A similar latitude to the South Island of New Zealand and parts of Patagonia. Its land mass is 68,401 km² and is the 28th largest island and one of the most

mountainous islands in the world with over 30 peaks higher than 1200m.

The Geology:

Its geology is remarkable in its diversity and abundance of mineral deposits, it also has the largest exposure of dolerite in the world. Rock from every period of earth's history from the middle Proterozoic are also present. It is also one of the few southern hemisphere regions that was glaciated during the Pleistocene. Valley glaciers and a 1000km² ice cap were present during this time, 41- 44 thousand years ago and 18-10 thousand years ago. During this time glaciers flowed out into the Franklin River, the Canning Valley, the Forth River, the Mersey River and quite a few on the west coast. This glaciation is very evident on the Central Plateau of which Cradle Mountain-Lake St. Clair National Park is a part of, South West Wilderness Area and the West Coast of Tasmania. These areas are included in the



Tasmanian Wilderness World Heritage Area which can be seen in the image to the left bounded by the yellow line. It is one of the largest conservation areas in Australia, covering 15,800 km², nearly 25% of Tasmania. It is also one of the last expanses of temperate [wilderness](#) in the world. A truly remarkable area with an abundance of natural beauty, a landscape of glacial carved valleys, ancient rainforests, towering eucalyptus forests, button grass moorlands, alpine meadows, and plateaus.

The Weather: Tasmania has a cool temperate climate which can be broken down into four specific climate types as described by the Köppen Climate Classification System. These are Tundra, Oceanic, Sub Polar Oceanic and Warm Summer Mediterranean. Currently the highest recorded temperature is 42.2°C taken during January 2009.

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The coldest temperature so far recorded was in August 2020 of -14.2°C . The average highs in summer for Hobart and Launceston are roughly $20-25^{\circ}\text{C}$ with an average low of $10-12^{\circ}\text{C}$. For winter in these same locations, the average high is $5-8^{\circ}\text{C}$ and a low of $2-5^{\circ}\text{C}$. Whereas on the Central plateau it's a different story, average summer high is $16-19^{\circ}\text{C}$ with a low of $2-5^{\circ}\text{C}$. The winter averages are an average high $5-6^{\circ}\text{C}$ and an average low of -2 to -1°C . Most mountain ranges in Tasmania receive between 1200-3000mm of precipitation, some receive more like the Tyndall Ranges on the West coast which receives 3600mm and from Satellite estimations the Eastern Arthurs Mt. Bobs can receive in the vicinity of 4000-5000mm. Snow can fall at any time of the year but mostly during the cooler months May-August. Snow cover in the mountains can be irregular due to the maritime climate moderating temperatures. More continental mountain ranges around the world have colder winters than Tasmania as there is less influence from a maritime climate. The Tasmanian mountains also have a very high incidence of mist and frequent ferocious winds, especially in the south and west as they face the full brunt of the roaring forties.



Cradle Mountain in Cradle Mountain-Lake St. Claire National Park.

The Flora: The vegetation of an alpine area is usually considered to be plants that are found above the tree line which in many parts of the world is quite abrupt. This is rare in Tasmania; it is usually a more gradual change from sub alpine rainforest or eucalyptus forest to Alpine Heath. The tree line in Australia and in particular Tasmania is a lot lower than most alpine areas, particularly those of Europe and North America. The main factor in Australia for this is the relatively oceanic summers which creates a lower tree line compared to more continental mountains with greater extremes of temperature. The tree line in Tasmania is known to vary from 700- 800m in the south west rising to 1400m in the north east. On the mainland there is a variation from between 1600-1800m. The tree line is also influenced by the mean annual temperature of the warmest month, this is roughly 10°C . This temperature is where the physiological limits to tree growth are reached. Simply put if the temperature doesn't rise past this point, plants will not have the energy to amass woody tissue needed to form trunks or root systems capable of supporting trees. This measurement is remarkably similar in any alpine environment around the world. This measurement is reached at lower altitudes in Australia.

In the latest plant census of Tasmania conducted in 2021, there are 2729 vascular plants on the island, of which 1919 are native. Of these there are 533 species that are endemic to Tasmania. Considering Tasmania is a small island, the plant diversity is quite astounding, ranging from coastal vegetation, native grasslands, to ancient rainforests, heathlands, and alpine herb fields. Amongst these areas you can find some of the world's most ancient species, tree's known to be over 2000 years old as well as the tallest flowering tree's down to tiny terrestrial orchids and all things in between.

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The Cradle plateau in the Cradle Mountain-Lake St. Clair National Park sits at an altitude of between 1000-1300 metres and is treeless, in the distance is the mountain known as Barn Bluff.

The plants of Tasmania can be classified into the following groups

- Coastal
- Heathland
- Dry Sclerophyll Forest
- Wet Sclerophyll Forest
- Rainforest
- Alpine-which can be broken down even further as listed below.
-

Even though there is constant variation in the natural vegetation, using certain criteria we can still separate vegetation into more defined plant communities. Each plant community normally has a dominate species or a defining characteristic of that community. The following is a brief description of the plant communities that can be found in Tasmanian alpine areas.

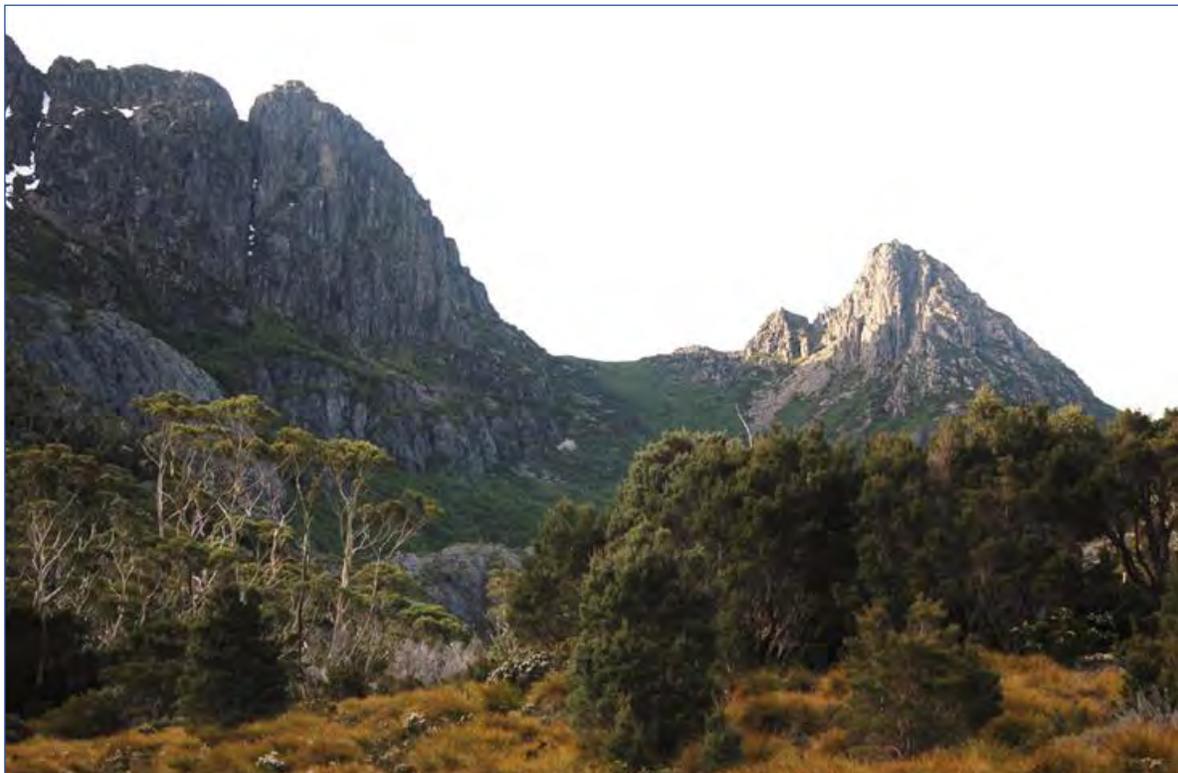
- Bolster Heath – dominated by cushion plants
- Coniferous Heath – the tallest plant dominating this category is a Gymnosperm
- Deciduous Heath – *Nothofagus gunnii* is the dominant in this classification
- Heath – shrubs taller than 40cm are the dominant factor
- Mat Heath – other shrubs less than 40cm are the dominant feature
- Fjaeldmark – Bare ground of more than 50% is the dominant feature
- Bog – more than 30% of the ground is covered by Sphagnum
- Alpine Sedgeland – dominated be one or more of the following species, *Astelia alpina*, *Empodisma minus*, *Carpha alpina*, *Restio australis*, *Gleichenia alpina*. In the Western mountains its *Isophysis tasmanica* and *Carpha curvata*.
- Fen – Carex is the dominant plant
- Alpine tussock grassland – Tussock grasses are the dominant feature
- Short Alpine Herb field – the dominant plants are shorter than 40cm tall
- Aquatic vegetation – underwater for a large part of the year.

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Above: A typical scene in Tasmania's wet rainforests, this one being in the sub alpine zone in the Cradle Mountain-Lake St. Clair National Park, species include *Nothofagus cunninghamii*, *Athrotaxis selaginoides* (large trunk-very right of picture), *Anopterus glandulosus* and others.

Below: The Little Horn to the right of Cradle Mountain in the Cradle Mountain-Lake St. Clair National Park.



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Now for a look at some of the plants. I have placed these in alphabetic order, as I said at the start of this article, this is only a brief overview and I have focused on species that appeal to me and those that I feel will appeal or be known to many of you.

***Abrotanella forsteroides* – Eastern Cushion Plant** **Family: Asteraceae**

A hard-green cushion plant with leaves 2mm in length with a soft hair like structure extending from the tip. Flowers are white, tiny, and solitary, protruding above the foliage. It is a dominant in Bolster heath communities, widespread in alpine moors and screes up to about 1500m. Frequently seen with other cushion plants forming mosaic bolster heaths. More common in the eastern mountains but still seen in the Western and Central mountains. Grows to about 20-30cm high by 30-100cm in width.

Right: A mosaic Bolster Heath on the Face Track below Cradle Mountain at an altitude of about 1240m.



Although a hard cushion, they are easily destroyed by an errant hiker's boot or walking poles. This type of boardwalk is quite common in sensitive

and heavily trafficked areas of Tasmania's national parks, a good strategy to mitigate our impact on these environments.

Right: Close up of leaf arrangement and the hair like structure protruding from the leaf tips. This photo is of one of my plants in cultivation. In cultivation they require constant moisture, full sun and periods of cold. They withstand prolonged snow cover as well. In habitat you will often see them with small streams running through them and water pooling around them.



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Abrotanella forsteroides in cultivation

Below: Mosaic bolster heath dominated by *Abrotanella forsteroides* with *Pterygopappus lawrencei* (Grey patches) and *Drosera arcturi* growing on top of the cushions. In the top right-hand corner, we can see *Dracophyllum persistentifolium* syn. *Richea scoparia*. This photo was taken on the side of Mt. Doris at an altitude of approx. 1270m in the Cradle Mountain-Lake St. Clair National Park.



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***Astelia alpina* – Pineapple Grass**
Family: Asteliaceae (formerly part of Liliaceae)

Astelia alpina is a compact clumping herb which can form large mats, leaves are 10-30cm in length and up to 2.8cm wide. Leaves are pointed with a sheathing hairy base, upper surface is green-light green with the bottom surface silky-hairy, grey, or brown in colour.

Astelia alpina is dioecious, female raceme is 5cm in length and has up to 30 flowers, green-white in colour, male raceme slightly longer than the female raceme and has 10-60 flowers. Flowers are inconspicuous and normally hidden in the leaves. Fruits can be seen after flowering as a red elongated berry at the base of the leaves.

It is widespread across the Tasmanian mountains and found in moist to boggy conditions in every vegetation community except for aquatic and short alpine herb fields.

Above: Close up of leaves of a plant in cultivation.

Below: A large mat roughly 4 x 4 metres or more in size on the Cradle plateau in the Cradle Mountain-Lake St. Clair National Park at an altitude of roughly 1280 metres. *Astelia alpina* can also be found on the mainland of Australia in The Victorian and New South Wales mountains.



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Above: Another mat of *Astelia alpina* in the Cradle Mountain Lake St. Clair National track, this taken on the Face track below Cradle Mountain itself at an altitude of about 1240 metres. In cultivation *Astelia alpina* requires constant moisture with good drainage and full sun.

Below: *Astelia alpina* at Mt. Field National Park.



A must visit location in Tasmania is the Cradle Mountain-Lake St. Clair National Park which is 161,000 hectares in size and part of the Tasmanian Wilderness World Heritage Area which covers 1.5million hectares. This is a landscape of glacially carved valleys, ancient rainforests, fragrant eucalyptus forest, golden button grass moorlands, beautiful alpine meadows, and plateaus. It also has numerous waterfalls and mountain summits including Tasmania's highest, Mt. Ossa at 1617 metres. Although not high compared to the rest of the world, the mountains in Tasmania are unique in their own way.

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Above: Mount Ossa- summit being behind the pillars in the top right of photo. In the foreground is a lovely patch of *Dracophyllum persistentifolium* syn. *Richea scoparia*. (Cradle Mtn. Lake St. Clair NP)

Below: The 'Little Horn' being the backdrop to one of the twisted lakes fringed with *Nothofagus gunnii* and *Athrotaxis cupressoides*.



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Above: On the side of Cradle Mountain overlooking Dove Lake. The alpine heath is beginning to thin out as the dolerite boulders take over. This was on our third visit to this area, not so lucky third time with the weather!

Below: The Dolerite spires of Cradle Mountain looming in the mist. Photo taken on our third visit in February 2021.



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The park also consists many walking trails to explore the diverse landscape including the famed Overland Track which is an 80km trek usually taking an average of 5-7 days to complete. We did this in December 2019 where most of these photos were taken.

***Athrotaxis cupressoides* – Pencil Pine** **Family: Cupressaceae**

One of Tasmania's unique endemic trees which can be found in high areas of the western and central mountains between 700-1200 metres. Found alongside streams, Tarns and damp areas sometimes forming dense stands. Grows to 20 metres tall and can have multiple trunks. Leaves are roughly 5mm in length and overlapping around the branchlets and olive green in colour.

Immature cones in spring with female and male quite often on separate branches, the mature cones are spherical and up to 1.5cm in size. Seed set is quite often years apart.



The bark is fibrous and furrowed and light grey in colour. The common name Pencil Pine comes from the fact that trees are normally erect, and pencil shaped, although many I have

seen are not pencil shaped! Younger trees may have that shape though. A great tree suitable for pot culture as its very slow growing, making just 2 metres in 15 years. It would also make an interesting specimen tree. It requires moist well drained soil in part shade to full sun.

Pencil Pines are known to live more than 1000 years. Unfortunately, they do not regenerate after a fire, this will make them vulnerable as the planet continues to warm. In the 1960-61 fire season, human-ignited wildfires during an extremely dry summer caused the loss of approximately 10% of the Pencil Pine population, with little regeneration in the aftermath. Consequent loss of the Pencil Pines has been largely irreversible due to high fuel loading in post fire vegetation communities which are dominated by resprouting shrubs creating a higher fuel load. This has caused a fundamental transition to a more fire-prone community which will only continue as climate change continues to warm and dry the Tasmanian climate, this will restrict the Pencil Pines to only the most fireproof

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areas. This happened again in 2015-2016, which was the driest year on record, where another spate of bushfires in this period were highly destructive to the alpine areas. More Bushfires in the 2019-2020 summer brought more devastation to parts of the Tasmanian Wilderness World Heritage Areas.



These two photos taken at Pine Lake in the Central Plateau region of Tasmania show some wonderful examples of *A. cupressoides*. The extreme right of the stand below shows us that 'pencil shape'.



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Below: *Athrotaxis cupressoides* around the 'Pool of Memories' with Cradle Mountain as the backdrop, a wonderful spot. Please forgive the glare but I had to include this photo.



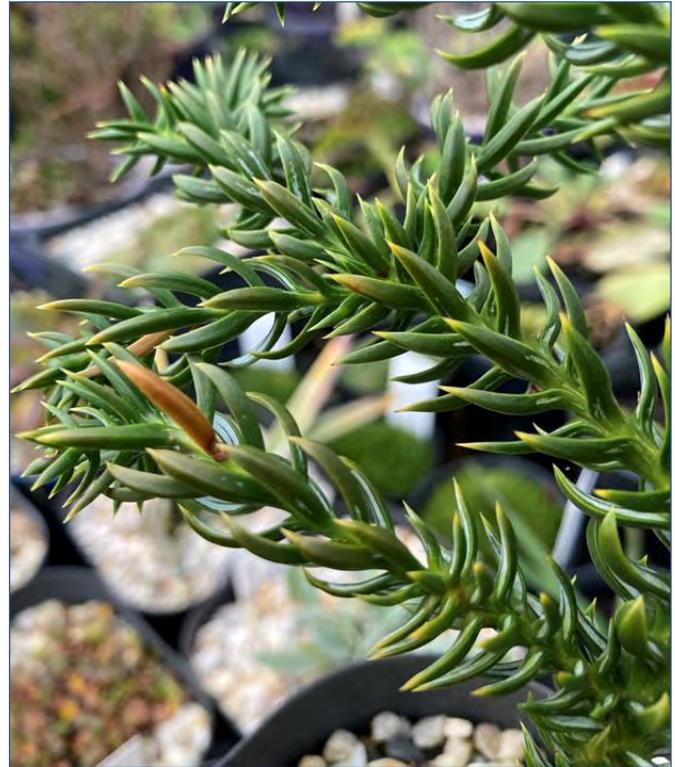
***Athrotaxis selaginoides* – King Billy Pine Family – Cupressaceae**

Another of the endemic Tasmanian conifers, a conical tree 15-40m tall, leaves are lanceolate and tapering to a point 6-12mm in length and slightly overlapping. Immature cones are inconspicuous during spring, mature cones spherical to 2cm in diameter, scales tapered at the base and tip, may not be present every year or up to a few years in a row. The bark is orange red in colour, slightly furrowed, exfoliates in long strips, it is also soft and spongy.

As with the Pencil Pine, the King Billy Pine is one of the least fire adapted conifers and subsequently where there are areas of fire it disappears. It can normally be found on moist slopes in high rainfall areas of the central and western mountains from 400-1200 metres, sometimes as pure stands, often in rainforests where it can be the dominant and also extending into the alpine zone where it can form a krummholz. It is now listed as endangered as it was logged for boat building as it has good bending properties. Luckily sustained logging of this species doesn't happen anymore as its too slow growing.

In cultivation it requires a moist well drained spot in full or part shade where it can make a good specimen tree. There is speculation that some trees may be close to 2000 years old although the oldest sampled so far is about 800 years old, either way a good age.

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Above and right: closeup of leaves and leaf arrangement of *A. selaginoides* in cultivation.

Below: Bark detail on a mature *A. selaginoides* in the Cradle Mountain Lake St Clair National Park





The same mature *A. Selaginoides* in the Cradle Mountain Lake St Clair National Park.

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***Baeckea gunniana* – Alpine Baeckea** **Family – Myrtaceae**

The Alpine Baeckea is a variable arching or low spreading woody shrub which can be prostrate or up to 1.5m in height and 0.5- 2m in width. It has small leaves which are 2-5mm in length, blunt and oblong and crowded on the stems. They are also aromatic. Flowers during summer are solitary in axils, white, and up to 8 mm across, five petalled with a red or green centre. Can be found in moist alpine areas above 800 metres in Tasmania. Can also be found in Victoria and New South Wales alpine areas above 1000 metres.



Above right: Close up of the foliage of *B. gunnii* from one of my plants in cultivation.
Above, left and below: *B. gunnii* in flower in the Cradle Mountain-Lake St. Clair National Park.



Although being quite common, it is still an outstanding aromatic shrub when in full flower, when not in flower it sort of blends in and stays out of the limelight, which is not a bad thing!

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***Bauera rubioides* - Wiry Baurea**
Family – Cunoniaceae



The wiry Baurea is widespread throughout Tasmania and abundant on the overland track, many forms from prostrate to 3m tall x 1-3 metres wide. Can be found in a wide range of well-watered open situations and can form thickets. Flowers profusely in spring and sporadically throughout the year. Flowers are white to dark pink with between 5-9 rounded petals. Leaves are arranged opposite with 3 leaflets appearing to be a whorl of 6 leaves.



The above three photos were all taken on the Overland Track in December 2019. The Wiry Bauera can also be found on the mainland in Victoria, South Australia, and New South Wales. It is easy in cultivation.

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***Bellendena montana* – Mountain Rocket**

Family – Proteaceae

A small rounded shrub up to 1 metre-tall by 1-2 metres wide with variable leaves but usually obovate to cuneate with 3 lobes at the apex, 1-4cm in length, leathery and looking very succulent like, green in colour, arranged alternately on stems reddish in colour. The flowers are white to pink in terminal clusters on long stems held above the plant. Flowering during summer. The fruits are very decorative as well, being flattened papery sacs hanging down, in shades of red, orange, and yellow.



Above: *B. montana* in fruit in the Cradle Mountain-Lake St. Clair National Park near Kitchen Hut. Altitude is roughly 1240 metres.

Right: Close up of inflorescence in flower, quite a stunning flower, you can just make out the three lobes at the leaf apex.



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It is the only member of the genus *Bellendena*, and the only member of the subfamily Bellendenoideae. It is also thought to represent the earliest divergence from within Proteaceae.

B. montana is endemic to Tasmania and is found in sub alpine –alpine woodland and grasslands above 600 metres. This is a difficult plant in cultivation requiring a cool moist site. Propagation from tip cuttings can be difficult as can seed raising, stratification is required but not always successful. This is interesting as it is widespread in its natural habitat, there must be some other factor at play here inhibiting germination.

Left: Closeup of *B. montana* seeds. The common name 'Mountain Rocket' is thought to be taken from the fact that the inflorescences are Rocket shaped.

Below: A beautiful photo taken by Louise Fairfax (used by permission) of *B. montana* in its natural environment with Markham Heights 1542 metres as the backdrop in the Ben Lomond National Park.



© Louise Fairfax

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***Boronia citriodora* – Lemon scented Boronia**

Family – Rutaceae

A small woody shrub growing 0.5-1m high by 0.5-1.5m wide, leaves are pinnate, crowded, and dark green in colour, 3-8mm in length. Flowers have four petals, pink on the reverse and white on top giving a nice two-toned effect as the pink buds open to white petals, they can be singularly or in clusters. *B. citriodora* flowers during spring-summer. A strong lemon perfume is exuded when any part of the plant is crushed, a beautiful perfume. This Boronia can be found on the Central Plateau above 900 metres with disjunct populations at Mt Field and other locations south of the Central Plateau, two other sub species are described which can be seen elsewhere in Tasmania. This Boronia requires a well-drained moist soil in Full sun. Propagation can be from cuttings or seed.

Right: *B. citriodora* in flower in the Cradle Mountain-Lake St. Clair National Park.



***Boronia rhomboidea* – Broadleaf Boronia or Rhomboid Boronia**

Family – Rutaceae

Small alpine shrub 20-75cm high by 50-100cm wide, it can also be prostrate. It has rhomboid shaped leaves 5-12mm in size and stalkless, dark green in colour with a reddish margin. Flowers have deep pink buds which open to pinkish/white petals which are solitary or in groups of two or three in the upper leaf axils.



B. rhomboidea flowers during spring-summer. It can be found in moist exposed sub alpine areas up to 1200 metres in Tasmania, there is also a disjunct population in New South Wales. A lovely small shrub ideal for a larger rock garden site that doesn't dry out, it needs moist well drained soil in full sun.

Left: *B. rhomboidea* in the Cradle Mountain-Lake St. Clair National Park.

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Below: Expanded view of the same plant of *B. rhomboidea* as seen above.



Below: Barn Bluff looming through the morning mist and over Lake Windermere in the Cradle Mountain-Lake St. Clair National Park. Of note are the patches of Button Grass amongst a sea of *Gleichenia alpina*, also the lake fringed with *Athrotaxis cupressoides* and the surrounding mixed eucalyptus forest. A sublime setting on one of our days during our Overland trek walk.



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***Donatia novae-zelandiae* – Western Cushion Plant, Snow Cushion Plant**
Family – Stylidiaceae, some flora still has this listed under Donatiaceae

A bright green hard cushion plant found in New Zealand and Tasmania on mountain plateaus in wet exposed areas usually with other cushion plants, more common in the western and central mountains, leaves are fleshy and pointed 5-6mm in length and linear in shape.



Flowers are white with 5 petals, solitary and sessile during summer. Fruit is a capsule. A challenge in cultivation as it needs constant moisture, peat like soils, full sun, and cold periods. The hot sun of lower altitudes would be difficult for it. Nevertheless, a beauty worth persevering with.



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Dracophyllum alpinum syn. *Richea alpina*

Family – Ericaceae

A paper accepted in late 2020 and only published in early 2021 by Stephanus Venter and titled 'A taxonomic revision of the Australasian genera *Dracophyllum* and *Richea* (Richeeae: Styphelioideae: Ericaceae)', has caused *Richea* to be subsumed into *Dracophyllum*. I think by looking at either genus you can see the similarities.

Below is a portion of the abstract from the above-mentioned paper.

"*Richea* R.Br. is reduced to synonymy under *Dracophyllum* where it is divided into two new subgenera, namely, *Dracophyllum* subgenus *Cystanthe* (R.Br.) S.Venter and *D.* subgenus *Richea* (R.Br.) S.Venter. Replacement names published here are *Dracophyllum laciniatum* S.Venter, *D. persistentifolium* S.Venter and *D. tasmanicum* S.Venter, and new combinations published here are *Dracophyllum alpinum* (Menadue) S.Venter, *D. continentis* (B.L.Burt) S.Venter, *D. desgrazii* (Homb. ex Decne.) S.Venter, *D. gunnii* (Hook.f.) S.Venter, *D. pandanifolia* (Hook.f.) S.Venter, *D. procerum* (F.Muell.) S.Venter, *D. sprengelioides* (R.Br.) S.Venter and *D. victorianum* (Menadue) S.Venter."

Dracophyllum alpinum is a low growing shrub to between 20-100cm tall with a few branches which can often be covered by soil, bark is grey-brown. Leaves are crowded at the ends of branches and recurved, narrow lanceolate to lanceolate, 80-130 mm x 6-12mm wide. The inflorescence is a terminal erect panicle up to 20cm long and 5-14cm wide pyramid in shape and densely branched. Corolla is pink, orange or crimson, flowering from November to January. *D. alpinum* is endemic to Tasmania and found on the western and Southwest Mountains in exposed alpine moor, alpine heath, and bolster heath. Its habit is to form copses 20-30cm tall with branches often covered over making it look like it has separate rosettes, also can grow taller in shrubbery to 70-100cm where it is more protected where some branching can be seen as well. A true alpine beauty of Tasmania.



D. alpinum in the Western Arthurs range - Southwest National Park, photo taken by David W. Noble (used with permission).

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Above and below: *D. alpinum* in the Western Arthurs Range - Southwest National Park Tasmania, photos by David W. Noble (used with permission).



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Dracophyllum minimum – Heath Cushion plant

Family – Ericaceae

A bright green-reddish green hard cushion plant growing to 25-50cm high x 30-100cm or wider. Leaves are 6-8mm in length with a broad sheathing base, slightly concave, thick, rigid with a hard point. Leaf tip is also reddish in colour. Flowers are white 5-6mm in diameter, solitary and set amongst the foliage. Flowering during spring-summer. Fruit is a capsule, red and fleshy hardening off at maturity. This is a beautiful endemic cushion plant found at higher altitudes above 1200 metres on mountains in the Central Plateau and Western areas of Tasmania.



Above: Large cushion of *D. minimum* near Mt. Anne in the Southwest National Park

Below: *Dracophyllum minimum* flowering at Mt. Field.



This is another plant requiring specific conditions if grown outside its natural range, it requires constant moisture, mostly well drained but can handle anaerobic conditions at times. Of the four main cushion species *D. minimum* can handle anaerobic conditions the least. It also needs highly acidic soils and low nutrient soils as well as full sun. It is an extremely slow growing plant as well, so copious amounts of patience are required!

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Above: Closeup of *D. minimum* flowers and foliage, clearly showing the reddish tips to the leaves.

Below: Large mounds of *D. minimum* fringed with *Astelia alpina* near Mt. Anne in the Southwest National Park



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I have used the terms Bolster Heath and Mosaic Bolster heath a few times in this article, these are a group of predominately cushion plants that grow together forming a mosaic, best described here by Neil Gibson B. Sc. (Hons.) - in 'A study on the biology of four Tasmanian cushion species'. "The mosaic bolster communities are both floristically diverse and highly complex, with three or more bolster species (cushion plants) forming intricate mosaics. Non cushion species tend to use the bolsters as substrate and hence do not directly compete for space". It is the patterns formed by the cushions themselves that provide the mosaic appearance. See below, photo of a huge mosaic of cushion plants on the side of Mt. Doris in the Cradle Mountain-Lake St. Clair National Park.

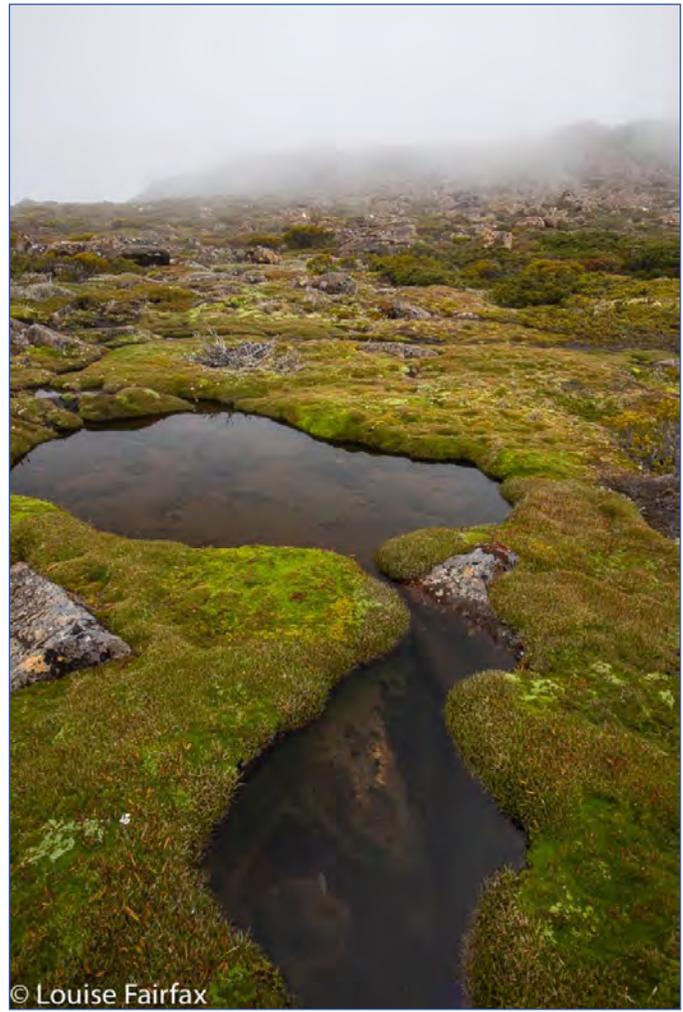
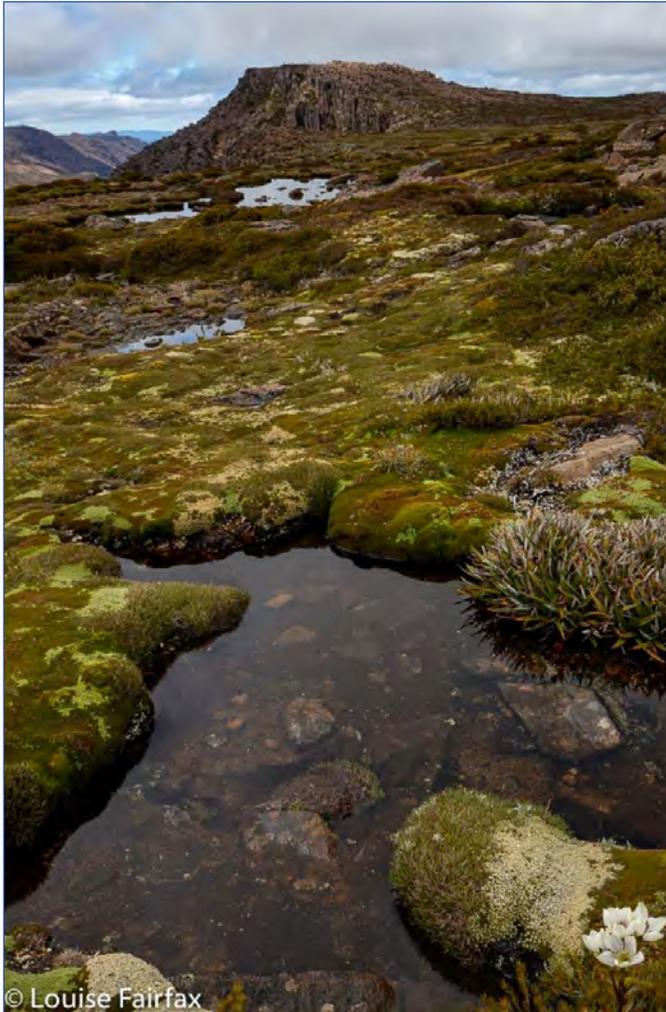


Looking a bit further into the Tasmanian cushion plants and in particular the Bolster Heath community that they can be commonly found in, a paper written by (Kirkpatrick 1983-Treeless plant communities of the Tasmanian High Country) provides the following observations. Bolster heath is largely on poorly drained ground. There are advantages in having this Bolster form in the Tasmanian high mountain environment being the aerodynamic properties of the cushions minimize transpiration losses and abrasion damage due to the strong ice laden winds that can often occur in Tasmania in areas where winter snow lie is short or absent and summer temperature are frequently high. The Bolsters also have temperature moderating properties which may help prevent shoot apices from dying during periods of high or low temperatures. Another advantage is that Bolsters more than likely modify their environment by blocking waterflow causing a more diffuse flow of water through them. Dead leaves and stems underneath the bolsters also soak up water which then is available to internal roots. At Newdegate Pass(1300m) at Mt Field there is an area of cushion plants that have formed dams, these are called Bolster Heath String Fen. These are best described by Kirkpatrick JB and Gibson N (1984) Dynamics of a Tasmanian bolster heath string fen.

"The string fen at Newdegate Pass, Mt. Field, Tasmania consists of dams composed of bolster heath and peat derived from bolster heath, these flank ponds(dams) have concave sides and usually rocky floors. The bolster heath has a smooth surface which consists of a complex mosaic dominated by *Donatia novae-zelandiae*, *Carpha rodwayi* and *Dracophyllum minimum*."

[This article can be found online](#) which provides an in depth look at this phenomenon.

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Above: Two photographs by Louise Fairfax showing some of the String Fen dams on Mt Field at Newdegate Pass, these photos also clearly show the mosaic bolster heaths.

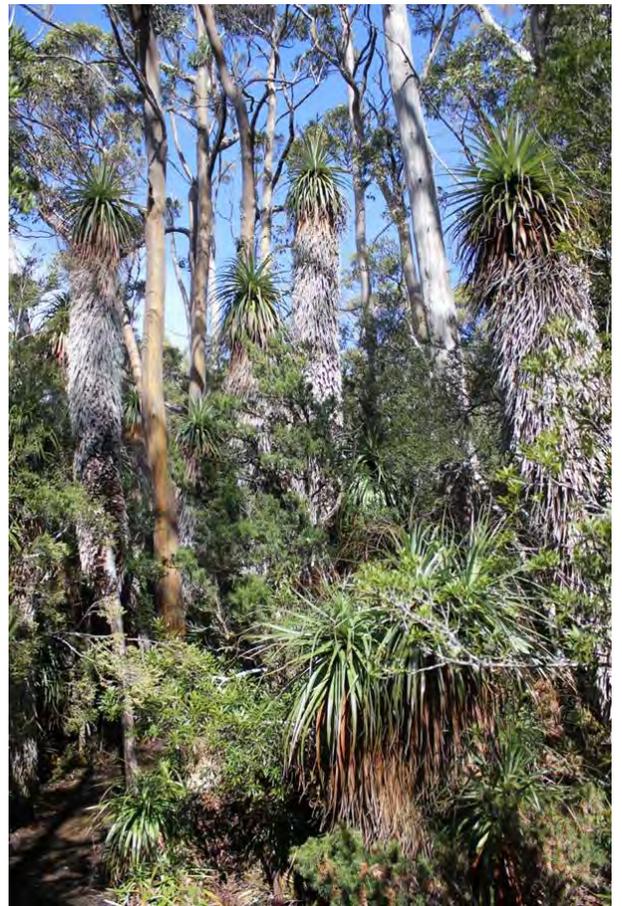
Now, coming to one of my favourites. The 'Pandani' an interesting weird out-of-this-world looking alpine plant. Some of the best and easiest places to see them are Mt. Field National Park and Cradle Mountain-Lake St. Clair National Park.

***Dracophyllum pandanifolia* syn. *Richea pandanifolia* – Pandani** **Family – Ericaceae**

One of Tasmania's unique endemic species, it occurs in sub alpine/alpine habitats up to 1200 metres on open moist slopes, creeks, and rainforests usually in stands and rarely alone. It is the tallest heath in the world with a single stem non branching and erect to between 2-12 metres. Leaves are 1-2 metres long, tapering to a point and are sheathing around the trunk, older leaves persist as well. Flowers are axillary, 15-25cm in length, near the apex, white/pink in colour and maturing to red-reddish brown when fruiting. There are a couple of sub species of which one is a branching form to 4 metres tall; the subspecies *ramulosa*.

My wife loves the Pandani because as you walk between them, they make a nice wishing sound as if they were whispering to you.

---International Rock Gardener---



Above: *D. pandanifolia* in the Cradle Mountain-Lake St. Clair National Park amongst open eucalyptus forest. Right: Very tall Pandani at Mt. Field National Park. Below: Janet walking amongst the Pandani in the Cradle Mountain-Lake St. Clair National Park.



Above: Spent inflorescences on *D. pandanifolia*

---International Rock Gardener---

In cultivation they require well drained moist, acidic soil with part shade. In cool climates they shouldn't be a problem at all, well suited to pot culture as they are slow growing. Propagation is from fresh seed which can be difficult to germinate.



Above and below: Quite a site to see such an unusual-looking plant in a Sub alpine/Alpine environment. Reminiscent of a tropical palm. These were just past New Pelion Hut on the Overland Track, Cradle Mountain-Lake St. Clair National Park.



---International Rock Gardener---



Left: Here is a Pandani that has fallen over and has started to grow upright again. Mt. Field National Park

Below: Trunk of Pandani's showing beneath the old persistent leaves.



***Dracophyllum persistentifolium* syn. *Richea scoparia* - Scoparia.**
Family – Ericaceae

Another Tasmanian endemic is Scoparia which is a much-branched compact woody shrub, growing in height from 0.5 to 3 metres tall and 1-2 metres wide, in more exposed locations it is usually only about 1 metre tall. The leaves are rigid, lance shaped, 2-6cm in length and tapering to a sharp point, overlapping around the stems, some straight, some curved.

Flowers are a terminal spike, 4-12cm in length and can be white yellow through to pink-red and even orange in colour. Flowering during summer which makes for a spectacular sight. It is widespread in sub alpine to alpine habitats, dominating alpine heath. Also in deciduous heath, coniferous heath, bolster heath, fjaeldmark and bogs.



---International Rock Gardener---

Previous photo: Scoparia starting to come into flower in the Cradle Mountain-Lake St. Clair National Park, looking towards the Du Cane Range through the Big Gun Pass from Mt. Doris.



Scoparia has a unique pollination process that involves the [Southern Snow Skink](#) - *Niveoscincus microlepidotus*.

The lizards gain access to the plants nectar by tearing the fused petals (known as the calyptra, see bulbous parts on inflorescence in the photo to the left). These are filled with nectar which the lizards feed on. Also, in that photo, on the left-hand side you can just see the exposed reproductive organs, this then allows for wind or insect pollination. Wasps, dipterans, bumblebees, and other insect pollinators have been noted feeding on the flowers after their calyptra has been removed. The lizards themselves don't pollinate, they allow other vectors to facilitate pollination. Another interesting complex pollination process that we can see in nature.

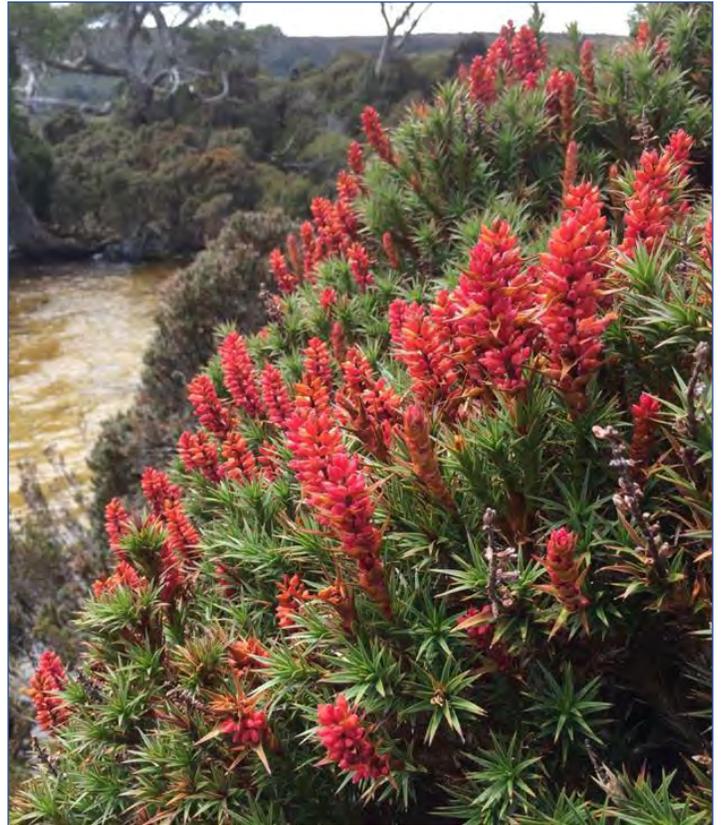
Right: Exposed flowers at a later stage with ovaries developing into capsules, Stigma and stamens can still be seen.

D. persistentifolium requires the following conditions in cultivation-good drainage, summer moisture and full sun. Propagation can be either from fresh seed or tip cuttings which can be slow to establish.

Scoparia is an extremely prickly shrub which requires bush walkers to wear appropriate clothing like tough long pants, gaiters, and other tough clothing, pushing through these can be very painful if precautions are not taken! Nevertheless, Scoparia is a beautiful Tasmanian endemic that makes for an outstanding sight on mass.



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Above, left and right: *D. persistentifolium* at Lake Will in the Cradle Mountain-Lake St. Clair National Park.

Below: A nice clump at the base of Mt. Ossa.



---International Rock Gardener---



Above: *D. persistentifolium* under Halls Buttress in the Walls of Jerusalem National Park (Photo by David W. Noble, used with permission).

Below: *D. persistentifolium* in a similar spot to the above photo, another great photo by David W. Noble (used with permission).



---International Rock Gardener---

***Drosera arcturi* – Alpine Sundew** **Family-Droseraceae**

The Alpine Sundew is a small perennial insectivorous herb with leaves in a basal rosette, mostly linear up to 8cm in length, red in colour with glandular hairs on the upper parts of leaves. Each hair has a globule of sticky liquid at their ends. Flowers are white and solitary on erect stems longer than the leaves. The Alpine sundew flowers during spring and summer. It is quite common in moist to wet heaths and sedgeland above 1200 metres throughout Tasmania. Also found on the mainland in Victoria and New South Wales and New Zealand. In cultivation these Sundews require constant moisture and low fertility soils. Can be propagated from seed, division, or leaf cuttings



Above, left, right and below: *D. arcturi* growing on Mosaic bolster heath where it can be prolific, the two main cushion species seen here are *Abrotanella forsteriodes* and *Pterygopappus lawrencei* (greyish mats).



---International Rock Gardener---

***Epacris serpyllifolia* – Alpine Heath** **Family – Ericaceae**

This plant is a variable many branched woody shrub that can either be spreading or erect. It grows to a size of between 50-100cm by 50-100cm. The leaves are crowded, leathery, variable-rounded to oval and pointed and growing at right angles to the stem. Flowers are tubular, white in colour with spreading lobes in dense terminal clusters during spring/summer making for a great sight. This Tasmanian endemic is widespread in all heath environments, alpine sedgeland, fjaeldmark and bogs across the mountains of the state above 900 metres. Alpine heath should do well in moist well drained soils with part shade. It can be propagated from seed or cuttings.



Photo below: Plant in cultivation



Left and below: *E. serpyllifolia* in the

Cradle Mountain-Lake St. Clair National Park.



---International Rock Gardener---

***Eucalyptus coccifera* – Snow Peppermint/Snow Gum**

Family – Myrtaceae

A small to medium tree, endemic to the subalpine/alpine areas of Tasmania varying in height from 5 metres up to 30 metres. Found between 800-1300 metres on the central plateau and southern mountains.



The bark is grey and smooth which sheds in irregular strips which sometimes reveals colourful trunks. The juvenile leaves are broadly elliptical, slightly glaucous/green, and up to 5cm in length, adult leaves are elliptical-lanceolate with hooked tip, greyish green in colour and up to 10cm in length. The buds are normally in groups of 3 and sometimes 7 or 9 in the leaf axils on a peduncle that's 4-12mm in length, they are club shaped, normally ribbed and have a flat cap. Flowering in summer normally white-rarely pink. The fruit is a woody conical, hemispherical, or cup-shaped capsule 6–12 mm long and 10-12mm wide.

E. coccifera is one of the most tolerant of *Eucalyptus* to cold weather, it is known to survive temperatures down to -12°C, it also must contend with drought, this allows it to occupy very exposed substrates at high altitude. A beautiful *Eucalyptus* with great colouration and gnarled trunks.

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Interestingly when it comes to the genus *Eucalyptus*, Tasmania has the tallest, *Eucalyptus regnans* also known as Swamp Gum or Mountain Ash, these trees are also one of the tallest flowering plants in the world. An *E. regnans* named 'Centurion' has been measured a few times and it seems to vary between 99.5 and 100.5 metres tall. In juxtaposition to this, Tasmania also has the smallest *Eucalyptus* species, *Eucalyptus vernicosa*, the Varnished Gum, see below.

***Eucalyptus vernicosa* – Varnished Gum** Family – Myrtaceae

The Varnished Gum is an interesting small shrub growing 0.5-2m tall and usually branching from the base. The bark is grey and smooth which peels in thin strips. The juvenile leaves are opposite in arrangement without a petiole, round to ovate with a small point, thick and glossy green in colour. Adult leaves are similar but have a petiole 1-8mm in length and are arranged oppositely or alternately. The flower buds are arranged in groups of three in the leaf axils on a peduncle 2mm in length with the buds being sessile. White flowers during summer. This smallest of eucalypts is endemic to Tasmania and is only found in alpine regions in the west to southwest of the state at an

altitude of between 700m and 1350m. Normally on exposed ridges and mountain tops, peaty acid soils on top of quartzite or sandstone bedrock. It is usually found above the tree line and can be a dominant component of alpine heath communities or subordinate in either coniferous or deciduous heath. A real little beauty not often grown. In cultivation it needs constant moisture. Excellent for cold and windy situations and pot culture.



Left: Flowers of *Eucalyptus vernicosa*.
Photo by David W. Noble (used with permission).



Left: Leaves of
Eucalyptus vernicosa
Photo by David W. Noble
(used with permission).

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Above: Lake Oberon in the Western Arthurs - Southwest National Park, photo by David W. Noble (used with permission).

The Arthur range is in the south west of Tasmania and is divided into the Western Arthurs and the Eastern Arthurs. The Arthur range is without doubt the best example of recent glaciation in Australia with cirques, moraines, hanging valleys and glacial lakes in abundance. The range is mainly made of Quartzite. The climate is extremely unstable with any weather from hot sun to snow possible on any day, even during summer, frequent snowfalls are possible. It is only 15km in length but contains 22 major peaks and 30 lakes. A truly beautiful landscape where plants have had to adapt and shape themselves into this unforgiving place.



Left: Another brilliant photo taken in the Western Arthurs by David W. Noble (used with permission).

---International Rock Gardener---

Euphrasia gibbsiae subsp. *comberi* – Eyebright

Family – Orobanchaceae

Eyebrights are a small perennial herb growing to 30-40cm tall, Flowers are normally white with prominent striations depending on the sub species. Flowering from spring through to Autumn. They can be found mostly on the central plateau, west and southern mountains of Tasmania, also the species can be found in Victoria. An interesting little plant that's semi parasitic with requirements not yet fully known. There are at least ten sub species in Tasmania.



Above, left and right: *E. gibbsiae* subsp. *comberi* in the Cradle Mountain-Lake St. Clair National Park.

E. gibbsiae subsp. *discolor* at Cradle Mountain itself.



---International Rock Gardener---

***Ewartia meredithiae* – Rusty Cushion Herb**

Family – Asteraceae

The Rusty Cushion herb grows to about 2-6cm high by 20-30cm wide forming a compact cushion or mat. It can be yellowish to rusty brown in colour due to the leaves being grey-yellow in colour and the edges being rolled up giving a variegated appearance. The leaves are elliptical, 2-4mm long and hairy on the under surface, also folded along the midrib. Flowers are daisy like, white and papery with a rusty red centre. It flowers during summer. It can be found in the central and western mountains in alpine boggy areas, typically in bolster heath mixed with other cushion species.



In the photo, left, there is *Oreobolus pumilio* growing with it in the top left-hand side. *O. pumilio* is a tufted plant that forms dense clusters, cushions, or mats. The Rusty cushion herb is a beautiful Tasmanian endemic not common in cultivation, requiring continual

moisture, good drainage, full sun, and a cold period to promote flowering.
All photos taken in the Cradle Mountain-Lake St. Clair National Park.



---International Rock Gardener---

***Gaultheria hispida* – Copperleaf Snowberry** Family – Ericaceae

The Copperleaf Snowberry is an erect multi branched shrub growing to 2 metres in rainforests, but much reduced in exposed sites. Leaves are glossy and 4-9cm in length, lanceolate with a finely serrated margin. Flowers are in terminal clusters, small urn shaped, white and pendulous. The fruit is succulent enlarged sepals covering a dry capsule. *G. hispida* is found in cool moist rainforests and alpine areas between 250 -1100 metres. It requires a constantly moist well drained site, difficult in lowland gardens of Australia but is suitable to pot culture.



Above: flowers of *Gaultheria hispida*.

Right: Fruit of *Gaultheria hispida* in the Meander Conservation area.

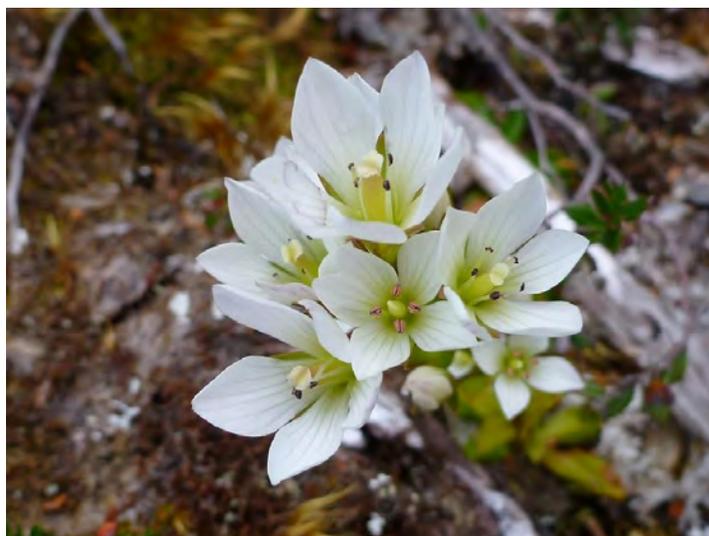


***Gentianella diemensis* subsp. *diemensis* – Tasmanian Snow Gentian** Family – Gentianaceae

Right: *Gentianella diemensis* subsp. *diemensis*. Photo taken by David W. Noble (used with permission).

The Tasmanian Snow Gentians are a rosetted herb with spatula to lanceolate leaves 20-30mm long by 5-10mm wide. Flowering stems can be unbranched or sparsely branched with white flowers which can have violet-grey veining on the inside of the petals.

This Tasmanian endemic is widespread on all the mountain regions of the state.



---International Rock Gardener---

Not widely grown, it has been found to be difficult in cultivation, requires constant moisture and full sun. Propagation is from fresh stratified seed. A real beauty.



Left and above: *G. diemensis* subsp. *diemensis* on the side of Cradle Mountain at about 1350 metres in the Cradle Mountain-Lake St. Clair National Park. Unfortunately, the flowers were not quite open on this visit.

***Geum talbotianum* – Tasmanian Snow rose** **Family – Rosaceae**

A rosette herb covered in fine hairs. The leaves have a long stalk sometimes with small, toothed leaf segments along its length. Leaves are kidney shaped with rounded lobes, impressed veins, and toothed segments; leaves are 5-10cm in width. Flowers are large single white with five petals on a long stalk to 60cm. It flowers in summer and can be found confined to rocky high-altitude parts of the Southernmost mountains of Tasmania.

Left: *G. talbotianum* in the South West National Park found sheltering from the harsh weather in cracks and crevices provided by the rugged mountains of this harsh environment.



---International Rock Gardener---



Above: *Geum talbotianum* in the Western Arthur Range. Another great photo by David W. Noble (used with permission).

***Gleichenia alpina* - Alpine Coral Fern** Family – Gleicheniaceae



Above: *G. alpina* at Lake Windermere in the Cradle Mountain-Lake St. Clair National Park: it's the orange-tinged patches.

---International Rock Gardener---



The alpine coral fern can be found in boggy alpine/subalpine vegetation. It grows to a height of 15-25cm forming dense patches. The fronds are much divided. A dominant species of alpine sedgelands, bogs, coniferous heath, bolster heath and heathlands. It is most common in the eastern and central mountains of Tasmania; it can also be found in New Zealand.

Left: Foliage of *G. alpina*.

Gunnera cordifolia Family – Gunneraceae

The genus *Gunnera* has one species in Australia and its endemic to Tasmania, it's a fleshy stoloniferous herb, forming large patches/mats up to 50cm wide consisting of rosettes with variable leaves usually round and 2-7cm in width. Margins are bluntly toothed. Flowers are cream white on congested spikes, separate male, and female inflorescences. Males as tall as leaves, females shorter. The fruit is a bright red drupe. It is locally common in subalpine swampy areas in the west and southwest of Tasmania. In cultivation it requires constant moisture in acidic friable soil in full sun, good for a bog garden. It is easily propagated by division of the stolons.



Left: fruit of *G. cordifolia*.

Right: Inflorescence of *G. cordifolia*. One of my plants in cultivation.



G. cordifolia, one of my plants in cultivation.

---International Rock Gardener---

Helichrysum pumilum var. *spathulatum* – Western everlasting Family – Asteraceae

A beautiful little rosette herb with spatulate leaves, 1-3cm in length, grey upper surface, and lighter grey on the underside. Flower buds are pinkish in colour opening to white papery inflorescences on a white woolly stem to about 10cm tall. Around the disc flower are elliptic to linear shaped bracts, or phyllaries which resemble ray florets, they are normally white but can have streaks of pink through them. Endemic to Tasmania and found in the western mountains in alpine and heath habitats. The Western everlasting flowers in summer between December and February.



Above left: Inflorescence of *H. pumilum* var. *pumilum* which is the same as var. *spathulatum*.

Left and above: *H. pumilum* var. *spathulatum*, leaf and flower bud detail on my plant.



Right: *Herpolirion novae-zelandiae*.

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***Herpolirion novae-zelandiae* – Sky Lily**

Family – Hemerocallidaceae

The Sky Lily is a dwarf perennial tufted herb which forms grass like patches, it spreads by rhizomes. The leaves are linear blueish-green in colour and 1-6cm in length and 1-4mm wide. The flowers are usually blue-lilac blue but can be white occasionally, they are solitary, terminal and held close to the ground. It flowers during summer. It is found in moist open heath and short grassland in the eastern and central mountains between 750 -1300 metres. This plant can also be seen on the mainland in the Victorian and New South Wales mountains and New Zealand.



Above: *H. novae-zelandiae*, one of my plants in cultivation.

The Sky Lily requires constant moisture and a cold period to promote flowering. It can be difficult in cultivation. Propagation can be from seed or division. Division's I have done successfully and having collected seed off my plants last year, I will have a go at sowing these as well.

Below: Mt. Oakleigh, Cradle Mountain-Lake St. Clair National Park.



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Above: Looking towards Lake Windermere over an alpine plateau. Cradle Mountain-Lake St. Clair National Park.

Below: Another lovely example of *Eucalyptus coccifera* amongst *Gleichenia alpina* and *Gymnoschoenus sphaerocephalus* (Button grass- yellowy-green tussocks).



---International Rock Gardener---

***Hibbertia procumbens* – Spreading Guinea Flower** Family – Dilleniaceae

The Spreading Guinea flower is a prostrate shrub with glabrous to pubescent branches up to 30cm long, it is usually mat forming. The leaves are linear-elliptic, 3-19mm in length and 0.4-1.2mm wide. Flowers are sessile, terminal, bright yellow and can be 8-30mm in width. Flowering during October-December. In Tasmania it is widespread on sunny banks with moist well drained sandy soils from coastal heathlands up into the subalpine areas to 1000 metres in altitude. This guinea flower is also on the mainland in Victoria and New South Wales. An excellent plant for the rock garden needing moisture but good drainage. Best in full sun. Propagation is normally from firm material.



Above and below: *H. procumbens* in the Cradle Mountain-Lake St. Clair National Park
Hibbertia is an interesting genus that contains mostly shrubs, some scramblers and mat forming plants, there is 120-150 species depending on which source is consulted most of which occur in Australia with a few in New Guinea, New Caledonia, Fiji, and Madagascar.



---International Rock Gardener---

Lagarostrobos franklinii – Huon Pine

Family – Podocarpaceae

The Huon Pine although technically a rainforest tree (and technically a Podocarp not a Pine), it does extend into the alpine zones of Mt. Read and Frenchmans Cap. It is found in the western and southern regions of Tasmania usually along rivers, lakes, and moist banks in rainforests. It grows up to 30 metres tall and about 2-5 metres or more wide. It forms pendulous branches in shade and if in sun they are stiffer and more upright. Leaves are spirally arranged, imbricate, appressed, and rhomboid in shape, 1-1.5 x 1 mm. Immature cones are terminal and inconspicuous with male and female usually on separate plants. Mature female cones are only slightly larger than the tips of the branches. This an extremely slow growing tree. The oldest known trees so far are on Mt. Read and are estimated to be about 2500 years old with the expectation that some may be more than 3000 years. Although now protected in parts, this tree was highly prized for boat building as the timber is resistant to attack by rot and marine organisms, also furniture, cabinet making and wood turning. It was extensively logged in the early days. It is also extremely sensitive to fire and this is cause for concern as the planet continues to warm causing more fires in parts of Tasmania that have not experienced them before.



Above and right: Huon pine in cultivation showing branches, leaves, and cones.

---International Rock Gardener---

***Microcachrys tetragona* – Creeping Pine, Creeping Strawberry Pine**

Family – Podocarpaceae

The creeping strawberry pine is a prostrate slow growing plant, much branched from the prostrate leaders which are up to a metre in length, the leaves are 1-1.5mm in size, dense, opposite in arrangement and decussate along the branches, giving a square appearance. The male and female cones are on separate plants during spring, both are terminal, female cones are fleshy and red, 1 cm in diameter when mature making for an outstanding display. This lovely endemic podocarp can be found between 1000 -1400 metres in sub alpine habitats of the central, western, and southern mountains of Tasmania. It is dominant in coniferous heath. This is another extremely fire sensitive podocarp which is absent from areas that have experienced fires. The creeping pine makes a fantastic pot specimen or even bonsai, although it prefers full sun in its natural environment, it is probably best in some light part shade in hotter areas. Less fruit will be produced in the shade as well. Propagation is from cuttings and seed.



Left: *M. tetragona* in the Cradle Mountain-Lake St. Clair National Park

Below: *M. tetragona* female cone



Right: *M. tetragona* in the Cradle Mountain-Lake St. Clair National Park



---International Rock Gardener---

***Nothofagus cunninghamii* – Myrtle Beech** Family – Fagaceae

Interestingly there was a name change in 2013 to ***Lophozonia cunninghamii***, this hasn't been accepted by RBG Kew - Plants of the world online nor the Tasmanian Herbarium. There was a paper written in 2015 detailing why we should retain *Nothofagus*.

'Why we should retain *Nothofagus sensu lato*'

“Abstract. We present the case that the fossil record of Nothofagaceae, which is much more extensive in terms of species numbers than the living species, cannot be dealt with in a productive way by the recent proposal by Heenan and Smitsen to split Nothofagus into four genera (Phytotaxa, vol. 146, <http://dx.doi.org/10.11646/phytotaxa.146.1.1>). Such a proposal will render the fossil record almost unworkable and will lead to a major split in the approach taken by palynologists in comparison to other researchers. We believe the case for the new generic names, while valid, is weak, and is far outweighed by the utility of retaining *Nothofagus sensu lato*”

So, for this article I will be using *Nothofagus*!

Myrtle Beech can be a dense smaller shrub to 2 metres tall in alpine heath where it is dominant, but it is more common in rainforest and eucalyptus forests where it will become a tall tree, 35-55 metres tall by 2-15 metres wide. The leaves are roughly triangular-round in shape with a finely toothed margin, 4-20mm in length and alternate in arrangement, new growth is bronze-red in colour. Flowers are inconspicuous in groups of 3 in the upper leaf axils. Fruit is a small, winged nut. Myrtle Beech is

widespread in moist gullies and rainforests, particularly in the central and western mountain regions of Tasmania, also seen in the southern forests of Victoria. A great tree for moist sheltered areas, it also responds to pruning making it suitable for a hedge.

Left: Old trunk of *N. cunninghamii* in the Cradle Mountain-Lake St. Clair National Park.

Below: *N. cunninghamii* leaves.



---International Rock Gardener---

Left: *N. cunninghamii* in the Blue Tier Forest Reserve.

***Nothofagus gunnii* – Deciduous beech, Tanglefoot.**
Family – Fagaceae

This beauty is the only Australian example of a cool climate winter deciduous plant we have. Endemic to Tasmania in the central and western mountains between 1000-1400 metres. Depending on its location, its size varies between 0.2-4 metres tall by 1-3 metres wide. It is a contorted rigid shrub or small tree. Leaves are 10-20mm in length, bright green, round to oval with deeply indented veins and a regular toothed margin. Flowers are axillary and inconspicuous. In autumn the leaves turn a yellow-golden brown then red colour before falling, making for a beautiful display. Found on rainforest margins, lake shores, subalpine shrubberies, and heath. It's a very slow growing plant requiring a cold period, plenty of moisture and good drainage.

In the photo below we can see how it gets one of its common names – Tanglefoot, as its extremely good at tripping you up, near on impenetrable. (Mt. Field National Park)



---International Rock Gardener---



Above and below: *N. gunnii* in its autumn colour; picture taken in the Cradle Mountain-Lake St. Clair National Park by David W. Noble (used with permission).



---International Rock Gardener---



Above and below: More examples of *N. gunnii* in its autumn colour. Both photos were taken in the Labyrinth, a part of Pine Valley, Cradle Mountain-Lake St. Clair National Park. The mountain is Mt. Geryon. Both photos taken by David W. Noble (used with permission).



---International Rock Gardener---

Phyllachne colensoi – Yellow cushion plant

Family – Stylidiaceae

The Yellow cushion plant so named because it has a distinctive yellow appearance compared to other cushion plants in Tasmania, it is a perennial cushion forming herb with short stems a few centimetres long which are densely packed together forming an undulating hard mound. The leaves are sessile, 2-3mm in length, closely imbricate, lower part expanded, upper portion contracted into a triangular apex and mostly bronze-yellow in colour. Flowers are solitary, flush, or nearly so to the surface of the cushion, lobes 5-7 and white in colour, during December to March. It is found throughout montane habitats in the west and south-west mountains of Tasmania from 1000 metres altitude to the highest peaks. Usually, a component of alpine herb fields in wet exposed places or rocky ground. It is often found where snow lies for extended periods. It can form large mounds that can be metres across and forming extensive mosaics with other cushion plants. Also found in New Zealand.



Left: *Phyllachne colensoi* (darker yellowy-brown colour) forming a mosaic with other cushion plants on the Du Cane Range high point, vertical columns in the middle are Mt Geryon. Photo by David W. Noble (used with permission).

Right: *P. colensoi* in flower, one of my plants in cultivation.



---International Rock Gardener---

***Pimelea sericea* – Mountain Rice flower**

Family – Thymelaeaceae

The Mountain rice flower is a small shrub getting to 20-70cm tall by 50-100cm wide. The leaves are crowded, ellipse shaped 7-12mm in length, green above, silky hairy below, opposite in arrangement and forming a cross when looked at from above. Flowers are compact, terminal, four lobed with prominent stamens, white-pink in colour during spring-summer. This Tasmanian endemic is a component of alpine heath and coniferous heath usually between 1000 -1200 metres in the eastern and central mountains. It is quite unreliable in cultivation but worth the effort. It needs well drained moist soil in full sun. A nice compact shrub.



Above and right: *Pimelea sericea* on the side of Cradle Mountain in the Cradle Mountain-Lake St. Clair National Park.



Below: *Planocarpa petiolaris* on the side of Cradle Mountain in the Cradle Mountain-Lake St. Clair National Park.



***Planocarpa petiolaris* – Alpine Cheese Berry** **Family – Ericaceae**

This is a small compact shrub growing to 15 to 30-50cm or higher and 30-50cm wide. It can be found above 1200 metres on dolerite mountains in the east and central areas of Tasmania amongst rocks or open shrubberies of alpine heath and coniferous heath. The leaves are crowded, rounded to 7mm long, flat and tapering to a short hard tip, underside of leaf is white. Flowers are cream, solitary or in a short spike with 2-3 flowers, hairy inside and narrowing at the throat. Flowering during October to January.

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The fruit is a drupe, red or red black in colour, flattened and 4-7mm in diameter. Not widely known in cultivation but I feel this Tasmanian endemic would make an outstanding small shrub. Seeing it in habitat I would suggest it needs moisture on well drained rocky soils in full sun.

Left: *P. petiolaris* – flowers and fruit, growing with *Pimelea sericea* on the side of Cradle Mountain.

***Pterygopappus lawrencei* – Sage Cushion plant** **Family – Asteraceae**

Another favourite of mine, this Tasmanian endemic cushion plant forms compact cushions sage green in colour. It is widespread on exposed, moist mountains throughout the state. It is usually a dominant or subdominant in bolster heath communities. The leaves are about 4mm in length, broadly spatulate with pointed tips, hairy, bluish-grey-green in colour, closely overlapping forming tight rounded hexagons. Flowers are tiny single, white in

colour, terminal and held slightly above the foliage during summer. The fruit is an Achene. This is not widely grown in cultivation but requires plenty of moisture, some good drainage, full sun, cold periods and no humidity or hot Australian lowland sun as I've discovered!

Below: *P. lawrencei* on the saddle between Mt. Doris and Mt. Ossa, Cradle Mountain-Lake St. Clair National Park.



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Above left: *Pterygopappus lawrencei*, close up of flowers, one of my plants in cultivation.

Above right: *P. lawrencei* in habitat with *Drosera arcturi* and *Abrotanella forsteroides* in the Cradle Mountain-Lake St. Clair National Park.

Below: *P. lawrencei* flowering in habitat with *Abrotanella forsteroides* near Cradle Mountain.



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Above: Small patches of the Sage cushion plant, although the flowers are not showy there is something about this plant that appeals. In some instances, it seems to resemble the well-known genus from New Zealand, *Raoulia*.

Right: Here again in its preferred habitat – Mosaic Bolster heath with *Drosera arcturi*, *Abrotanella forsteroides* and *Oreobolus* sp. Photo taken on the side of Mt. Doris in the Cradle Mountain-Lake St. Clair National Park.





.Above: *Pterygopappus lawrencei* in cultivation with *A. forsteroides*, showing leaf formation and flowers.

***Ranunculus gunnianus* – Gunn’s
buttercup, Tufted buttercup.
Family – Ranunculaceae**

A rosette forming herb with leaves near erect, 2-3 times pinnately divided into a few to many segments on petioles 1-18cm in length. Flowering stems are 5-29cm in length with terminal flower, 5-13 golden yellow petals, 10-25mm in length, reverse side of petals are pale purple. It flowers during October-January. Found in New South Wales, Victoria, and Tasmania where it is confined to above 1000 metres in altitude in bogs, herb fields, damp grassland, open rocky areas, and occasionally subalpine woodlands. Plants need a cold period to trigger flowering.

Right: *R. gunnianus* on the Cradle Plateau in the Cradle Mountain-Lake St. Clair National Park



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***Rubus gunnianus* – Alpine Raspberry** **Family – Rosaceae**

A prostrate mat forming herb that grows up to 60-80cm in width. Leaves are usually trifoliate, ovate with deeply divided margins, glossy green in colour. Flowers are single, white cream with five petals, flowering during summer. Fruit is red and fleshy. The Alpine Raspberry is widespread in all alpine vegetation communities except aquatic. This Tasmanian endemic is easy in cultivation requiring well drained moist soil with full sun.



Above and below: *Rubus gunnianus* in the Cradle Mountain-Lake St. Clair National Park.



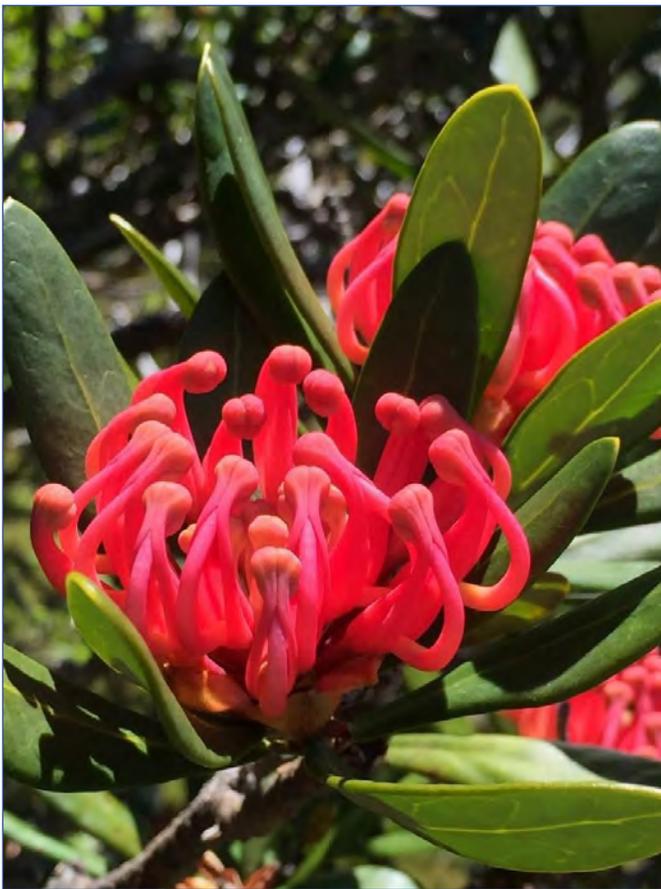
---International Rock Gardener---

***Telopea truncata* – Tasmanian waratah**

Family – Proteaceae

A beautiful small to large shrub or small tree, growing 1-4-6 metres tall. It is multi stemmed with erect or spreading branches. Leaves are sometimes crowded at the end of current seasons growth, 3-15cm long, 0.4-2.5cm wide, oblanceolate-spathulate, upper surface dark green, lower pale green. The inflorescence is a compact terminal, racemose head 5-8cm in diameter with 10-30 flowers in pairs, with showy tepals 1.5-2.5cm in length, scarlet to deep crimson red in colour, rarely yellow. Flowering from mid to late spring. The fruit consists of a follicle that dries to reveal numerous light brown winged seeds. This Tasmanian endemic is widespread and abundant on most dolerite mountains in montane and sub-montane forests, woodlands, and shrubberies from sea level up to 1400 metres. The yellow-flowered form, *T. truncata* f. *lutea*, occurs sporadically in populations of the normal form. The flowers are a clear, deep yellow and the leaves usually a little broader-spathulate than the red form. A stunning plant that's relatively easy to grow.

Below, left and right: The Tasmanian Waratah flowering in the Cradle Mountain-Lake St. Clair National Park.



***Veronica ciliolata* subsp. *fiordensis* syn. *Veronica ciliolata* – Ben Lomond Cushion Plant**

Family – Scrophulariaceae

The Ben Lomond cushion plant forms a dense compact cushion, growing to 40-50cm wide x 2-4cm high. The cushions are normally tightly compacted and rigid, leaves are stiffly imbricate, 2.5-4mm long x 1.5-2mm wide, narrow-ovate to ovate spatulate, subacute to acute, hairy, and light green in colour. The flowers are white with 5 lobes. This species only occurs in Tasmania at Hamilton Crags on Ben Lomond in an area the size of roughly 3-4 hectares with roughly 5000 mature plants.

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It is therefore considered threatened in Tasmania. It luckily is also present on the South Island of New Zealand. On Ben Lomond it occurs within low open alpine shrubland between 1470-1530 metres. It grows on skeletal soils derived from Jurassic dolerite, or crevices between boulders where no obvious soil exists. The main threats to this plant are climate change and inappropriate ski field developments as it grows on a rocky ridge 200 to 300 m east of a designated ski field development zone.



Above: *Veronica ciliolata* subsp. *fiordensis* in the Hamilton Crags, Ben Lomond.

Photo by [Nuytsia @Tas](#)

Below: Foliage of *V. ciliolata* subsp. *fiordensis*



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***Xerochrysum milliganii* – (formerly *Helichrysum milliganii*) Snow everlasting** **Family – Asteraceae**

The Snow everlasting is a perennial herb with rosette-like leaves. The leaves are densely imbricate, thick, oblong-elliptic, obtuse to acute, growing to 2.5cm in length with a broad stem clasp base. Flowering stem to 25cm tall and is densely white-cottony. Capitulum solitary, to 3.5cm diameter, outer bracts ovate, sessile, white to crimson in colour, medial bracts are white and 18mm in length, flowering during summer. Fruit is an achene. This Tasmanian endemic can be found on the western and central mountains of Tasmania, growing in heath, short grassland, and sedgeland and fjaeldmark. In cultivation it requires a well-drained moist position in full sun but seems to be very hard to maintain. A showy little plant.

Below left and right: Alpine everlasting about to flower and leaf detail in the Cradle Mountain-Lake St. Clair National Park, photo taken at Marion's Lookout, a well-known spot to view Cradle Mountain.



Left: *X. milliganii* with fruit developing, the common name 'Snow everlasting' can be seen here to great effect with the papery bracts common amongst *Xerochrysum* species lasting for a very long time.

Photo by David W. Noble (used with permission).

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Right: A lovely photo of *X. milliganii* in full flower. Photo by David W. Noble (used with permission).



Below: My wife Janet admiring the view across the plateau to Mt. Pelion West, taken from the Overland Track in the Cradle Mountain-Lake St. Clair National Park.

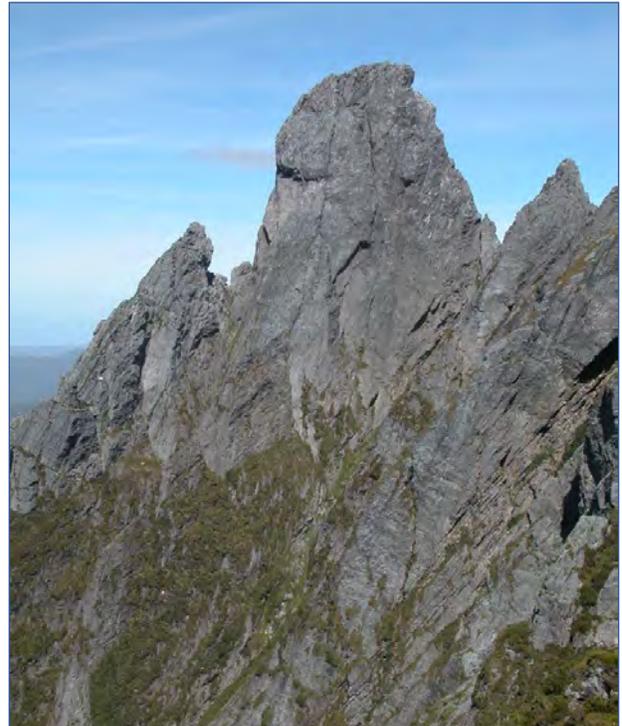


Of note above is the orangey brown coloured grass which is in fact a tussock forming sedge known as Button Grass, *Gymnoschoenus sphaerocephalus*.

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Above, below left and bottom: Some more incredible scenes from the Western Arthurs by David W. Noble (used with permission) really showcasing the rugged beauty of the Arthur range in South West Tasmania.



Above: Federation Peak, Eastern Arthurs, photo by David W. Noble (used with permission).



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These rugged landscapes we see in Tasmania have certainly helped in shaping the plants that exist here. One example we can see in the photo to the left – *Leptospermum rupestre*, the Alpine Tea tree, another Tasmanian endemic. It can be a shrub but here it is prostrate clinging to the rocks. Photo by David W. Noble (used with permission).

Below: Here we have a beautiful scene beside Crater lake in the Cradle Mountain-Lake St. Clair National Park with *Dracophyllum pandanifolia*, *Baeckea gunniana*, *Dracophyllum persistentifolium* and a young *Eucalyptus coccifera*.



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Time and space does not permit in this article to show every species in the alpine areas of Tasmania as there are over 260, this includes grasses and ferns. I hope you have enjoyed this quick delve into the wonderful island that is Tasmania, it certainly has left its mark on me and is never far from my thoughts.



Above: Mt. Geryon and The Acropolis in the Labyrinth, Pine Valley (Cradle Mountain-Lake St. Clair National Park) with *Nothofagus gunnii* in the foreground in its autumn colour with a dusting of snow. Photo by David W. Noble (used with permission). Below: The Acropolis and Mt. Geryon from a different angle with *Melaleuca squamea* flowering in the foreground amongst *Gymnoschoenus sphaerocephalus*.



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Acknowledgements

I would like to thank David W. Noble and Louise Fairfax for the use of some of their amazing photographs - each photo has been acknowledged in the text. For more of their beautiful photographs please see their websites below.

<http://www.david-noble.net>

<https://www.natureloverswalks.com>

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--- Plant Portrait ---

Gymnospermium – An Undeservedly Little-Known Genus

Text and photos: Vlastimil Pilous

'He who hesitates is lost', so the saying goes: I have been going to write an article about the genus *Gymnospermium* for so long that Pavel Holík preceded me in our magazine, *Skalničky*, albeit with only one species of *Gymnospermium odessanum*. After following this extremely interesting genus for many years, I managed to put together a collection of all its available types - some are practically "unattainable" to this day. Our Czech growers got acquainted with this genus for the first time thanks to the legendary expeditions of Mr. Polívky, namely with the species *Gymnospermium albertii* from the then Soviet Central Asia.



Gymnospermium odessanum

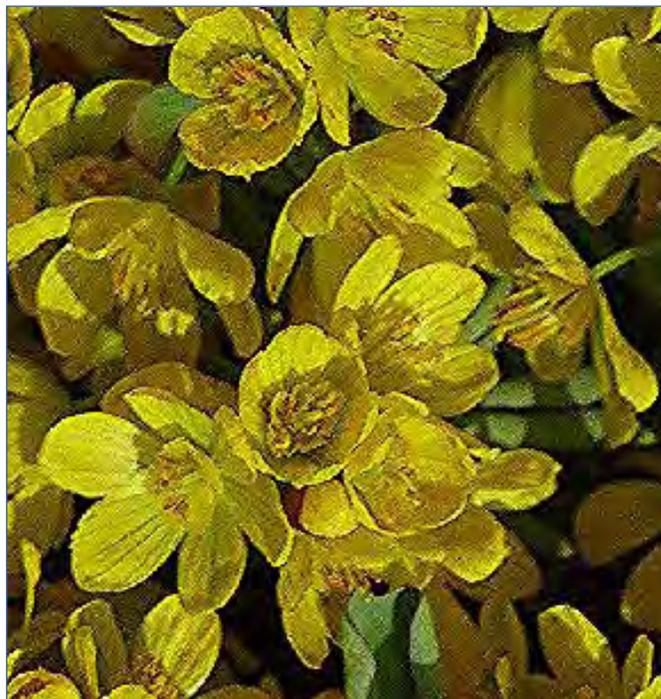
The genus *Gymnospermium*, together with some other attractive perennials, belongs to the Barberry family, Berberidaceae. However, these are mostly Asian and American plants, which is why they are usually less well known in our country. This family also includes a number of shrubs, including our only original domestic representative of this family of the common shrub. In China, however, the Barberry has "taken off"; there are 215 species growing there, 197 of them endemic! However, the beauty of this genus lies not so much in individual flowers, which are not very large (usually 1-2 cm in diameter), but in the attractiveness of the whole inflorescence, and also in the unusual, perhaps even striking habit of plants. However, their big 'plus' is their early flowering, as they are among the first spring plants competing with the earliest bulbs. However, their habit, especially their intriguingly marked leaves, is fundamentally different from all monocotyledonous bulbs and has the advantage that they do not suffer from fungal diseases and viruses quite frequently found in bulbs.

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In the ground, they have tubers resembling slightly small bumpy potatoes (of different sizes for each species), with numerous small protrusions from which the roots grow. Given these two characteristics, we could classify them among what the English literature commonly refers to as "dwarf bulbs," although it has nothing to do with strict botany, as it includes numerous tuberous and even rhizomatous plants. As with spring bulbs, the seeds of all *Gymnospermium* species soon ripen and immediately the plants enter senescence. So, you won't find them in nature in summer. Several flowering stems sprout from the adult tubers (not one, as is sometimes stated).

It also differs fundamentally from bulbs sprouting from the ground with a pointed bud in that it protrudes with a bent stem, which protects against damage to the inflorescences bent downwards. Each stem bears a triple to five-lobed leaf, which is the main cause of the unusual appearance of the plant and is finished with a bunch of six flowered blooms. All species have yellow flowers, although in some they change to ochre shades; however, the color may change with the age of the flower, which later fades. The seeds are large and without packaging, ie "naked", which gave the plant its name (in Latin, *gymnos* is naked and *spermium* seed).

Gymnospermium odessanum



Gymnospermium is a Eurasian genus whose representatives grow from the Balkans to northeastern China and Korea, but the genus is markedly disjunctive, i.e. the areas of individual species are geographically separated from each other, sometimes very significantly, by hundreds or even thousands of kilometres. Most species are rare in nature, which is probably the reason why some (and surprisingly most Europeans!) were found and described very late, one may say only recently. It is typical of most species that their distribution can be characterized as "rare, but at the same time often locally plentiful". When they occur in a locality, they can be literally "dense" on a site with whole areas of hundreds to thousands of plants, but then for kilometres and kilometres, you will not find a single specimen.

The reason can be seen in large seeds, which are difficult to spread over longer distances. This is probably why some species were found so late - if you do not happen upon such a "patch", often in a remote and strongly rugged mountain landscape, you don't stand a chance. It is also surprising that the existing literature pays virtually no attention to the fact that the genus is divided into two groups according to the nature of habitats, namely forest (*G. scipetarum*, *G. smirnowii*, probably also *G. sylvaticum*, by name, and probably both Chinese species), while others prefer a more open habitat of sparse shrubs or even mountain meadows; this specific position is taken by *G. maloi* as it is somewhere halfway with habitats of low sparse forests and shrubs. For forest species, at least those that I have had the opportunity to see in nature, it is characteristic that they are generally more robust (perhaps due to the need for a larger assimilation area) and also have significantly larger tubers.



Gymnospermium altaicum

Until a few decades ago, the only species known in Europe was *G. odessanum* (referred to in older literature as *G. altaicum* ssp. *odessanum*), which was written about by P. Holík in the Czech Skalničky bulletin. This species was lucky enough to grow in the low, regular settlements and easily accessible locations of Crimea, western Ukraine (it was actually named after the city of Odessa), Moldova, and the northern part of Dobruji, Romania; that is why it is quite threatened by agricultural activity, especially intensive grazing. In nature, it grows on sparsely bushy slopes, or sparse oak forests.

While most species of *Gymnospermium* are distinguishable from others at first glance, this one is very similar to *G. altaicum*, so it is no wonder that it was originally described only as a subspecies. The differences between them fall into the sphere of professional botany, but for growers they are practically interchangeable. However, it is all the more curious that the geographical distance (hiatus) between their areas is in the order of thousands of kilometres, while, for example, Central Asian species, whose habitats are so much closer together, are noticeably different.

Only much later were three other species found in the western and southern Balkans.

The first was *G. scipetarum* (originally *G. shqipetarum*) described in 1984 from central Albania (based on the fact that Albanians call themselves Škipetaři), but growing in the south of Montenegro. It belongs to the more robust forest species, growing mainly in beech forests. At first glance, it differs from the very similar but richly green *G. smirnowii* by the greyish colour of the whole plant and the purplish lower half of the stems.

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Gymnospermium scipetarum

Another difference lies in the delayed growing season, by up to 10 days (from the phase of emergence from the ground, through the flowering period to retraction). A recent novelty is that in 2018 it was also described from southern Italy, as a new subspecies of the subspecies *G. scipetarum* subsp. *eddae*.



Gymnospermium peloponnesiacum

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This was followed by the species *G. peloponnesiacum* (first described as a subspecies of *G. altaicum* subsp. *peloponnesiacum*, and only in 2009 as a separate species) growing in Greece, as the name suggests, mainly in the Peloponnese. However, it differs very distinctly from *G. altaicum*. It grows in more open locations, on rocky slopes or in very sparse, plantation fir forests and is the lowest (up to 10 cm) and overall smallest species of the whole genus. Its special feature is a very narrow purple edging of leaf segments.

The last to be added was the most recent (in 2011) found and described as *G. maloi* from the hard-to-reach mountains of southern Albania, where it grows on limestone bedrock in low and sparse deciduous stands. With its greater height, it belongs to the taller-growing forest species. However, given its geographical proximity, it is not surprising that it is quite similar to *G. scipetarum*. It is named after the Albanian botanical S. Malo.

Gymnospermium maloi

This is followed by a great leap to the Caucasus, where *G. smirnowii* has a very limited area on the southern slopes of the mountains on the border of Georgia and Azerbaijan. This species from deciduous forest areas is the most robust of the whole genus, has the largest leaves of a lighter green color, is very early and also dies back quickly.



Gymnospermium smirnowii

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Then there is again a larger hiatus in the area of Central Asian deserts. East of them, however, five species grow in the strip from the Altai through the Central Asian mountains to Afghanistan, but there are also some ambiguities associated with them. *G. altaicum* grows to the north, which is quite logically named after the Altai Mountains, where it grows in Russia, Kazakhstan and China, and probably in Mongolia, which, however, is not confirmed in the deserted regions. Apart from the Altai, however, it also grows in the southern mountains up to the Tien Shan.

Data on it is quite modest, but it is clear that in this mountain range it grows mainly in the foothills, or only lower positions. However, it is not picky about its habitats, it grows on steppe hills, rocky slopes, meadows and sparse fir forests. It belongs to the medium-high species and, due to its indistinct green leaves and lighter flowers, to the less attractive ones within the genus.



Gymnospermium albertii

G. albertii is the most widespread in the southern Central Asian mountains, where it grows on mountain meadows and rocky slopes. Although it is one of the tallest, within the genus it is one of the most beautiful due to its ochre colouration of the whole young plants as well as later stems, buds and outer sides of petals, and also the flowers themselves have a darker colour.



Gymnospermium darwasicum, emerging in Spring.



Gymnospermium darwasicum

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Another Central Asian species, *G. darwasicum*, on the other hand, has a small area, limited to a relatively small area in the Darvaz Mountains, at the bend of the Pyanj River near the Afghan border. By being one of the lowest growing species and at the same time with the most pronounced copper colouration of most parts, it is clearly the most attractive within the whole genus; in addition, the colour contrast of the ochre parts with the leaf surface, which is silvery grey, is also beautiful. Especially in the initial stage of vegetation, the plant with its rich ochre colour in combination with the unusual habit represents a wonderful spectacle, which I look forward to every year through the winter.



Gymnospermium darwasicum

It is worth mentioning that Jánis Rukšáns also offered it in his catalogue, but unfortunately it was a mistake, as is clear from the attached photo, and from the fact that he mentions the Varzob Valley, above Dušanbe (Dushanbe) as his locality, where the real *G. darwasicum* does not grow.

This is a confusion with *G. vitellinum*, which has a curious history. It was described in 1981 by the Czech M. Král according to plants in a vase in a hotel in Dushanbe in the town of the same name, and he was unable to determine the original locality. In any case, it must have been a location close to the city, in which case the Varzob valley is directly offered, as it begins directly at the city's upper edge. This species, unlike other species, has strikingly different leaves, which are otherwise "folded" at the early stage of development, have the most pronounced grey color, and their pointed segments are also striking. It also has smaller greyish-yellow flowers and the petals are directly grey on the outside in the lower half.



Gymnospermium vitellinum

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The last of this area is *G. sylvaticum* from eastern Afghanistan, where it grows at relatively high altitudes in oak forests along the border with Pakistan.

However, given the current conditions there, it is almost certain that it is not in cultivation at all (only that some commando rangers would hunt there for it) and they probably won't be there for a long time, so we don't even know exactly what it looks like.

The survey concludes with two Chinese species that grow again some thousand kilometres to the east. To the north is *G. microrrhynchum* from Jilin Province in Manchuria and the Korean Peninsula, and much further south is *G. kiangnanensis* from Hangzhou Province west of Shanghai, where it grows in low positions at the edges of forests. Although it has flowers very similar to European species, but within the whole genus also the most different leaves, which are markedly lobed at the edges.

Almost certainly, neither of these species is yet in cultivation (at least not the European one) and so we know little about them. Unfortunately, my attempts to get them through a Chinese colleague ended with him offering me *G. altaicum*, which I have had for a long time.

Due to their earliness and exotic appearance, these plants are a welcome revitalization of the garden in Spring. In addition, they are completely undemanding to the substrate - wherever you put them, they grow there. I 'bake' light-loving species from the Balkans and Central Asia in the summer, but forest representatives *G. scipetarum* and *G. smirnowii* prefer a shaded location and year-round moist (but not wet) soil. All species are winter hardy; an exception may be *G. kiangnanensis* from a warmer area, which no one has grown yet.



Gymnospermium smirnowii

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--- Gardner's Gatherings ---

Letter From America July 2021 – Chris Gardner



Lilium pardalinum

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The ravages of COVID-19 have left many of us with fewer options than before, no doubt resulting in us finding many a nook and cranny we didn't know existed in our local areas. Much the same happened to us, it's just our local area is quite large. However, as you know [our business](#) is showing wonderful flowers in wild places and it has been frustrating not being able to research new holidays during this time. Thankfully, the 'land of liberty' (the USA) is open for business, and I set off to look at the summer flowers in California, in particular the lilies. I was well aware it was an unusual season, with lower-than-normal rainfall and then a heatwave cooking states immediately to the north. However, my experience of lilies is they are tough and persistent, managing to flower regardless and at more or less the same time of year. You have to remain optimistic in this current world.

A lengthy flight and overnight at the airport saw me driving east the next morning, planning to rendezvous with a local lily enthusiast. The parched surroundings meant I didn't feel tempted to stop until I'd driven beyond Sacramento and begun to climb into the Sierra Nevada. I took the odd wrong turn but eventually met Barbara, who had kindly brought me some tasty gazpacho soup for lunch. She passed on her map with lots of notes and gave me some lily-finding tips. Unfortunately, California road construction thwarted my first attempt, but luckily, I had already spotted my first lily - the modest *Lilium parvum* var. *crocatum* as I drove to meet Barbara. It got better, when a flash of orange as I drove along the freeway turned out to be a colony of magnificent *L. pardalinum* with a variety of colour variations and the amount of spotting. Some of them were taller than I was, thriving on the moisture of the seep they grew in and in perfect condition.



I overnighted somewhere bland and then headed for the hills, ostensibly to reach the lush northern coastal areas. The route passed through sun-baked grasslands and blue oak woodlands and then

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began to climb. I stopped for a wonderful woolly thistle *Cirsium occidentale* var. *candidissimum* on the way and there were some fine views across the Coast Ranges.



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In a wet flush was another colony of *Lilium pardalinum*, along with a few slender, white *Platanthera dilatata* orchids. However, if the lilies were not striking enough the huge swallowtails pollinating them created a dazzling scene and I spent as much time trying to capture them at work, their underwings becoming coated in rich red-brown pollen.



I made it to the coast and spent some time in the low dunes, which were covered in the pink bobbles of *Eriogonum latifolium*, trailing yellow *Abronia latifolia* and dense tufts of peculiar *Castilleja exserta* subsp. *latifolia*. Something about broad leaves going on there (*latifolia* = wide-leaved)! From here I struck inland and lily heaven.

Rising into an area of cool woods the verges were peppered with gorgeous *Lilium kelloggii*, my joint favourite Californian lily. This lovely flower was delicately marked inside with red sprinkles and yellow stripes, from which outsize reddish anthers dangled. And there was barely a spent flower to be seen, they were all so fresh. Further on were denser stands, in fact in places the verges couldn't be walked on without crushing lilies. Interestingly, big swallowtail butterflies were pollinating these lilies too, which explains the huge protruding anthers. It was hard to leave but these research trips are manic affairs and I now sped onto another prime site an hour and a half hence.



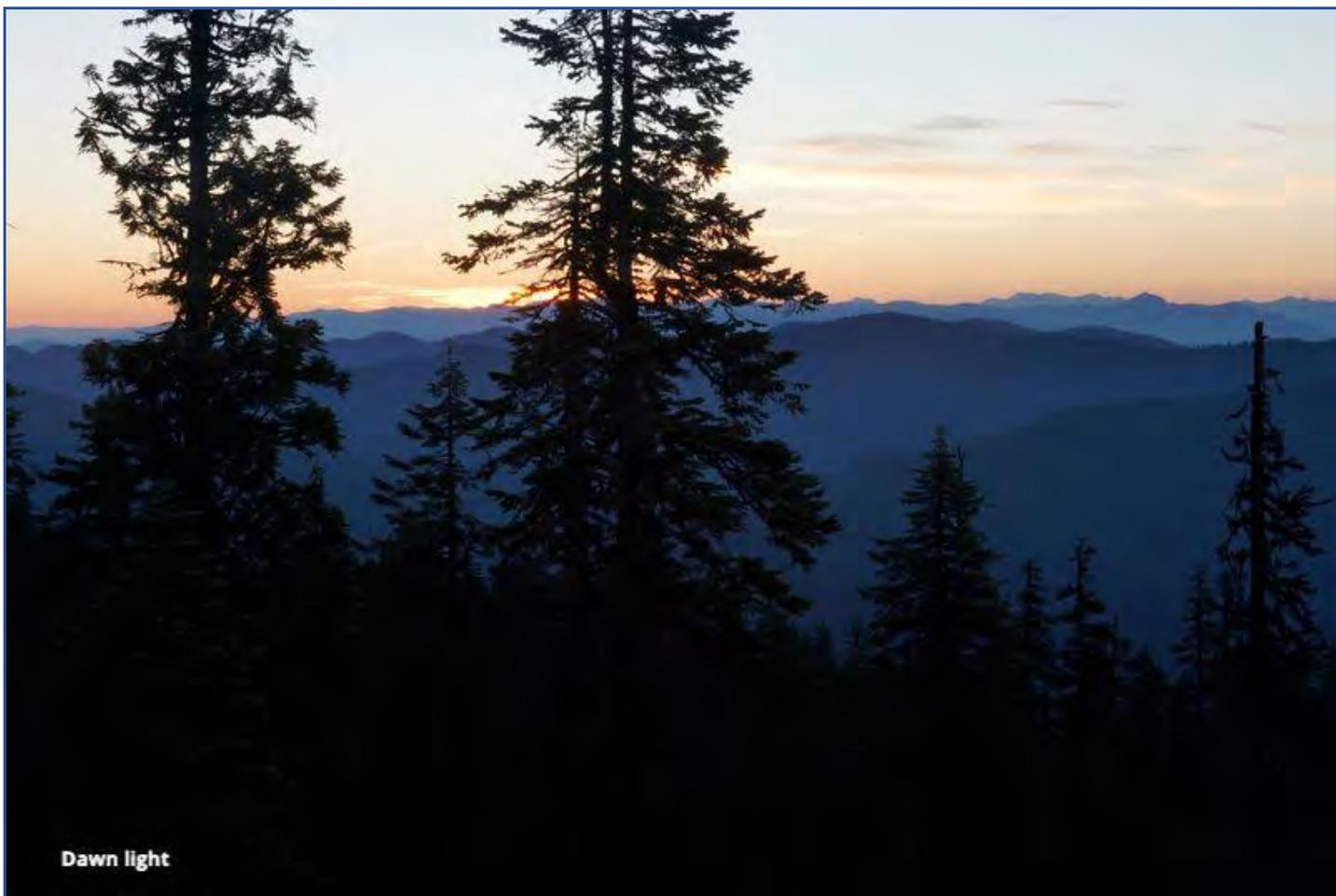
It was very warm, and I didn't fancy camping at 30+ degrees, so reaching the mountain turnoff I climbed up to the cool of 1400 metres and spent the night camping in blissful solitude, save for hooting horned owls. The stars were fabulous in the crystal sky.

It has to be said I wish I bought a better mattress with me. Waking very early, I saw in the dawn and had a 4 km walk before breakfast.

---International Rock Gardener---

Then it was flower time, although the first thing I found was not a lily but the lovely creamy-green-tipped cerise tubes of *Dichelostemma ida-maia*, a rather graceful bulb. The gorgeous cherry red bells of *Lilium bolanderi* were next (the other half of my joint favourite California lily) and I found quite a few including some of the yellowish variant. But, for me it is the uniquely coloured red form that wins. Lower down and the tracksides were full of lovely *L. rubescens*, the flowers opening ivory and aging to pink, creating a delightful contrast. I spent another night up in this peaceful place, seeing in another dawn with fine views across the Coast Ranges. I stopped for *L. rubescens* again when I left and caught the first flowers of sweet-scented *L. washingtonianum*.

Dichelostemma ida-maia



The cooler climates of the coast (where summer fogs keep the temperature well down compared to inland) were next and I saw more lilies along the coastal road than I've ever seen, with thousands of *Lilium columbianum* in flower, covering the banks in bright orange. They looked amazing with the immense towering redwood trees behind. These trees are worth the visit alone and some wonderful tracts still remain. However, I had more lilies to find first and headed high on the back roads, finding more *L. kelloggii* and *L. bolanderi* and then at a small bog was *L. pardalinum* subsp. *vollmeri* (with its characteristic narrow leaves) growing alongside the extraordinary domed pitchers of *Darlingtonia californica* (but more of them later). I opted to sleep high (and cool) again and camped near a population of *Lilium washingtonianum* subsp. *purpurascens*. There were some impressive spikes of *Veratrum insolitum* too, growing in an area of burned-out forest.



Lilium kelloggii

---International Rock Gardener---



Lilium columbianum



Lilium rubescens



Lilium bolanderi



Veratrum insolitum

---International Rock Gardener---

The next morning was spent revelling in the redwoods (*Sequoia sempervirens*) with fabulous giant trees and misty, moss-covered boughs of maples and other trees.



---International Rock Gardener---

Moving north through Oregon I found several more populations of *Lilium pardalinum* subsp. *vollmeri* and then climbed into an area that had recently been devastated by fire. The scale of these burns is vast and has to be seen to be believed with whole mountains and valleys denuded of trees as far as the eye can see. The rub is fine displays of other plants quickly fill the gap and found some nice meadows full of *Sidalcea* sp., as well as *Lilium washingtonianum* subsp. *purpurascens* and some fiery drifts of *Castilleja applegatei*.



---International Rock Gardener---



A little lower down was *L. pardalinum* subsp. *wigginsii* (broader leaves, generally orange flowers) and there were lots more of the latter on a side valley I found, which has lots of other plants too including gullies full of sweet-scented *Philadelphus lewisii* (very similar to the well-known mock orange, *P.*

coronarius) stands of robust *Aruncus dioicus* and a lovely combination of blue *Penstemon laetus* and pale yellow *Eriogonum nudum*.



Penstemon laetus

---International Rock Gardener---



Calochortus macrocarpus

I took a break from lilies the next day and pursued their relatives the mariposa lilies (*Calochortus*) instead. Although most species in this wonderful genus flower in May/June, there are a few stunners that flower later. Unfortunately, my first attempts were fruitless, and I began to wonder if the dry season meant none were flowering.

However, I did see the fantastic bristling fireworks of *Mentzelia laevicaulis* (giant blazingstar) along the way and there were also some good stands of *Asclepias speciosa*, a rather impressive plant with complex round flower heads.



Asclepias speciosa



Mentzelia laevicaulis



Plant hunting requires persistence and despite the huge wildfire progressing up the flanks of Mount Shasta the road was open and allowed me to try another location, where, as I drove up a very rough track the first beautiful pale pink *Calochortus macrocarpus* waved in the breeze, glowing with backlight. There were many and they were stunning and worth the 35 degrees heat I was having to photograph them in! Well satisfied, cooler climes beckoned, and I went up into the hills to camp.

---International Rock Gardener---



My camp was next to an incredible bog with thousands of *Darlingtonia californica* and the next morning before sunrise I was photographing these and the slender white orchid *Platanthera dilatata*.

During the day I drove about and found many seeps with *Lilium pardalinum* subsp. *shastense* growing in, often in association with the *Darlingtonia*, or alongside bogs with hundreds of golden spikes of *Narthecium californicum*. The lilies seemed rather variable, and I wondered if there was a mixture of *L. pardalinum* and *L. kelleyanum*, which I also found further on.



---International Rock Gardener---



Veratrum californicum

Sadly, it was time to start heading south and I spent my last day exploring Lassen national park. A trail through the forest led to some higher meadows with lots of *Veratrum californicum* in damp meadows and beside the streams together with delightful stands of *Aconitum columbianum* in both lilac and white forms. The scarlet of *Aquilegia formosa* was plentiful (and had been in just about every moist situation I'd found throughout the trip) though outdone by the intense red of scarlet gilia *Ipomopsis aggregata*, which grew mingled among a dainty blue *Penstemon*.

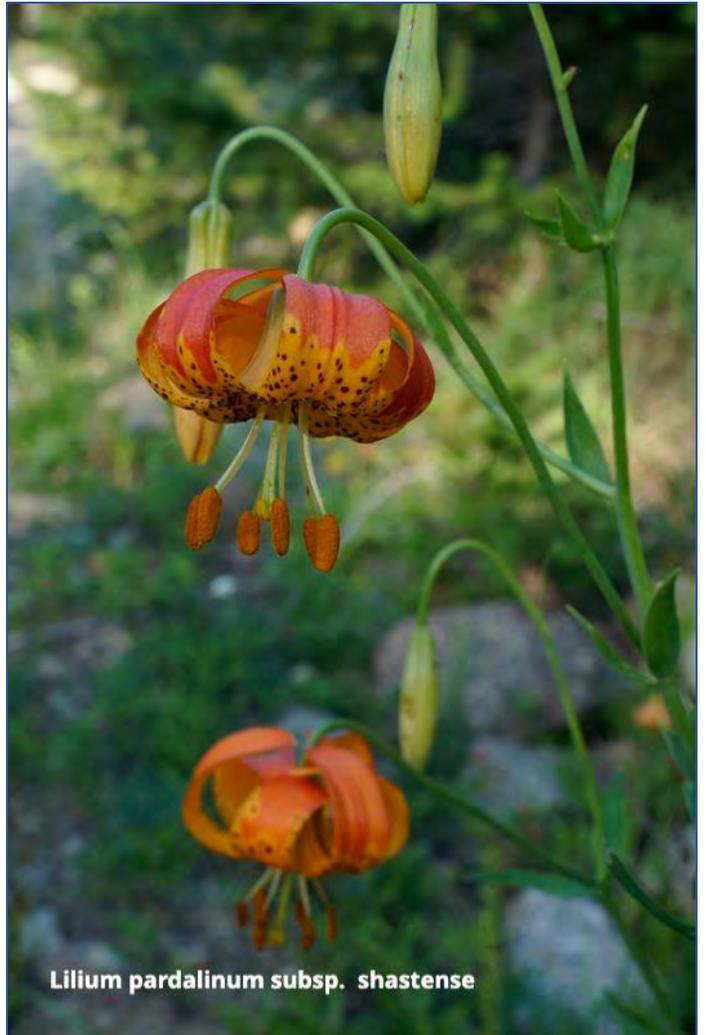
---International Rock Gardener---



Aconitum columbianum



Ipomopsis aggregata



Lilium pardalinum subsp. *shastense*

---International Rock Gardener---



Drifts of mint scented *Monardella odoratissima* were abundant throughout as were the silvery leaves of *Lupinus albifrons*. These were in more impressive effect on the way to the sulphurous, steaming geothermal area known rather dramatically as Bumpass Hell. Here, appearing suddenly among the dark forests was a stark ochre and alabaster landscape, containing a series of hot pools, one a pleasant sky blue, with adjacent hissing steam vents and bubbling mud pots.

The late afternoon light was perfect for both this and the lupines and as I wandered back, I had the added final bonus of a deep red-pink form of *Penstemon newberryi* glowing with late sun - the cherry on the cake.



Penstemon newberryi