Alpine Garden Club of British Columbia

A young *Dryas octapetala* in UBC Alpine Garden

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AGC-BC 2021

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Membership Renewals Due

Membership fees are past due for 2021. If you have not paid, please send a cheque for $30 to Membership Secretary, Jane Byra, with your name and contact info. Cheques should be made out to the Alpine Garden Club of BC. Please contact Jane at membership@agc-bc.ca for the mailing address.

Or renew online using your credit card through PayPal on our website www.agc-bc.ca/membership-renewal

Membership status can be checked on the website, after you sign in.

AGC-BC meetings are typically held on the second Wednesday of each month except July and August in the Floral Hall, VanDusen Botanical Garden. Doors and Library open at 7:00 p.m. and the meetings start at 7:30 p.m. **Please check Upcoming Events or website for information during the pandemic. To accommodate members and presenters from different time zones, meeting day and times may vary.**

2021 AGC-BC Upcoming Events

All in-person meetings and events are cancelled until further notice. The following events will be held online via Zoom.

- **May 2, Sunday, 1:00 pm - 2:00 pm** -AGC-BC General Meeting,
  - Michael Myers: Mountain Flowers of Eastern Europe - Poland, Slovenia, Czech Republic and Romania
- **June 2,** Wednesday, 7:00-8:30 pm - AGC-BC General Meeting
  - Alan Ayton- Tasmania: The Overland Track

For more information, visit http://www.agc-bc.ca/events

From the Editor

Laura Caddy

Happy spring! I hope it has found all of our Northern Hemisphere members by now and that our friends in the Southern Hemisphere are happily welcoming autumn.

The end of winter was a bit rougher on the Alpine Garden at UBC than I was expecting. I was watching for low temperature, as usual, and we really didn't have anything alarming. What we did have was a couple significant wind events in February and March that really took their toll on many of our broadleaves evergreens, especially those that are borderline hardy or particularly exposed. Most will recover eventually, but the jury is still on a few, unfortunately. On the bright side, it provided yet another learning opportunity regarding the different microclimates in the Alpine Garden.

Speaking of the bright side, we were blessed with a cool, dry, but lovely spring (so far) which brought us many flowers. With more to see everyday, I've been most excited about all the first time bloomers, such as *Iris acutiloba, Rhodothamnus chamaecistus*, *Paeonia cambessedesii*, *Ranunculus crithmifolius*, and *Dryas octopetala*. Coming from Alberta, I never thought I would have to "try" so hard to grow a *Dryas*! Which is why I am so tickled with it and gave it the front cover. Hopefully I don't jinx it!

Inside this issue we have another great article on growing saxifrages by David Sellars and a plant profile on *Oxyria digyna* by Dr. Richard Hebda, Royal BC Museum Curator of Botany and Earth History (Emeritus). We also have the conclusion to Alan Ayton's article *Tasmania: Its Plants and Mountains*. Be sure to hear all about his follow up trip to the area at our meeting in June. And finally, we have the Editor's ID Challenge which I chose a fruit for, to remind us it's never too early to start thinking about collecting seeds for the AGC-BC Seed Exchange!

Enjoy!

Editor's ID Challenge

Too easy? Too hard? Let me know at bulletin@agc-bc.ca

Tasmania: Its Plants and Mountains: Part 2

Alan Ayton

Originally published in *Journal of the Alpine Garden Society Victorian Group*, December, 2019.

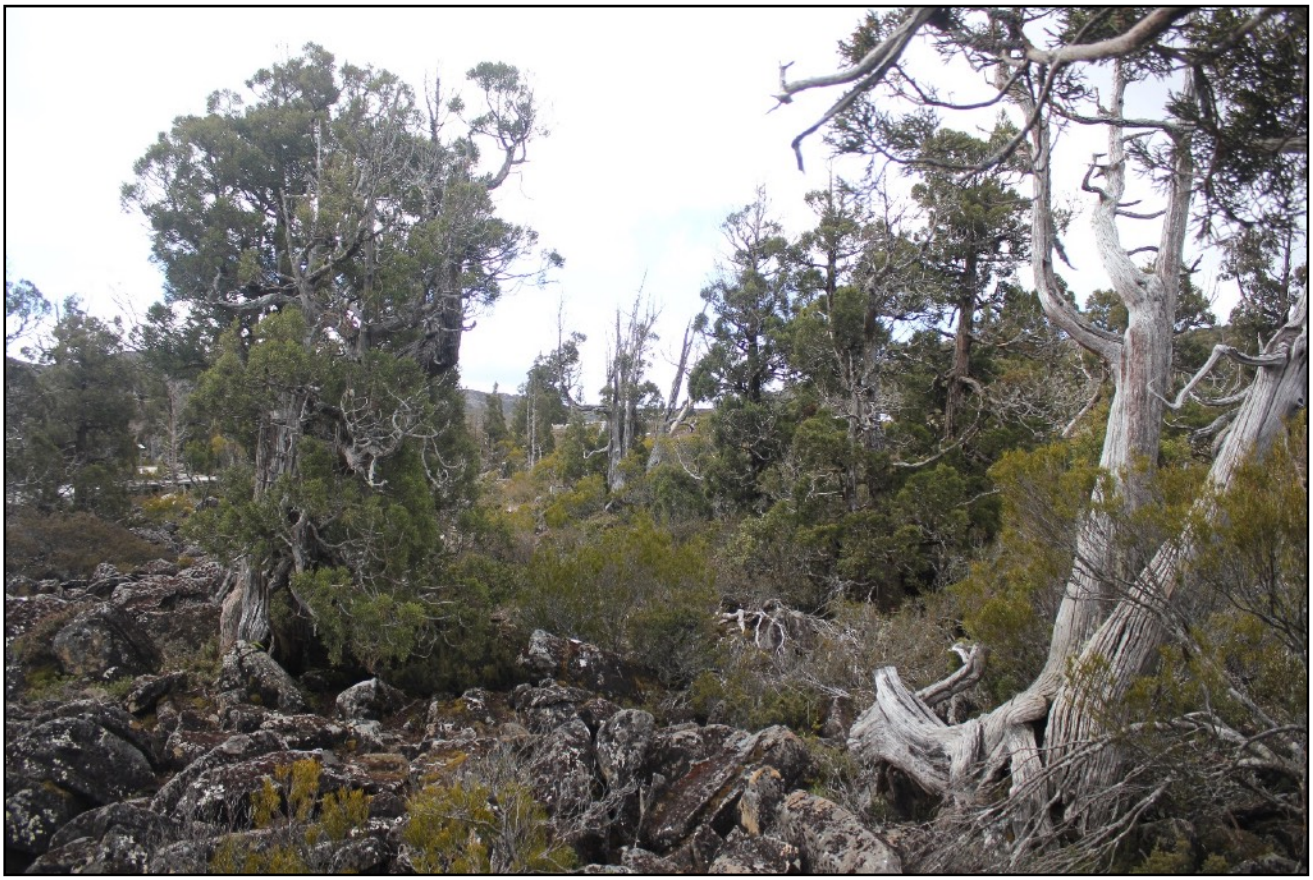
Pine Lake

As we moved north and higher across the central plateau heading towards our next base at Mole Creek, we stopped at Pine Lake which sits at about 1200m in altitude; it was a frigid 1 degree with an icy wind. It snowed the day before we were there. I received a car load of blank looks as to why anyone would want to stop here and experience the frigid weather! “We are checking out 1000+ year old pine trees” I told them. These endemic Pencil Pines are some of the most accessible ones to see in Tasmania. The Pine Lake walk is a short 400m boardwalk jaunt to the lake with twisted examples of Pencil Pines all along it with a nice stand at the end on the lake’s edge making for a picturesque show.

Athrotaxis cupressoides, commonly called Pencil Pine, grows up to 15 metres and is conical in shape with a tapered trunk. The leaves are thick and up to 4mm long, overlapping and appressed to the point of being smooth to the touch (right). Male and female cones are on the same tree. The Pencil Pine can be found in montane to subalpine environments at (700-1,300 m elevation) on peaty or wet-rocky soils. It regenerates from seed and also by root suckers which are normally only seen in bog and dense forest situations. The Pencil Pine is also one of Australia's hardiest plants, being able to survive the cold down to -12 degrees. To top it off as already mentioned some of these gnarled twisted beauties are over a 1000 years old. Oh, the stories they could tell!

There are five different plant communities at Pine Lake, starting from the shoreline and moving out, there is the 'River and Lake Edge' communities containing Pineapple Grass, Mountain Cord Rush and Spreading Rope Rush. Next is a bog community with Sphagnum Moss, Pineapple Grass, Alpine Coral Fern and others. Then there is a 'Block Stream' like the one we saw at Mount Field National Park (a river of rock) which contains the Pencil Pine, Plum Pine, Creeping Tea Tree and other plants. The 'Bolster' community comes next with cushion plants and Pineapple Grass and finally the 'Tall Alpine Herb' field with Flag Iris, Billy Buttons and Orange Everlasting Daisies. Pine Lake shows us the complexity of plant communities in this harsh sub-alpine/alpine environment.

Above are some lovely examples of Pencil Pines at Pine Lake and below are some interesting gnarly old trunks below with evidence of the ‘Block Stream’ at their feet.



There were many other impressive plants here apart from the Pencil Pines, in particularly *Richea scoparia*, which were in abundance and cushion plants. I originally thought the cushion plants were *Donatia novae-zelandiae* but upon looking at other photos from Pine Lake, particularly from Harry Jans wonderful photo galleries online, these may actually be *Abrotanella forsteroides*. It forms dense dark green cushions that are often intermixed with other cushion plants. It has a fine hair at the tip of each leaf and is very easily confused with *Donatia novae-zelandiae* which doesn't have the fine hair at the leaf tip. Below is *Richea scoparia* mixing with the cushion plants.

There was also plenty of *Leptospermum rupestre* (Mountain Teatree), *Boronia citriodora* (Central Lemon Boronia), some *Telopea truncata* (Tasmanian Waratah) and *Tasmannia lanceolata* (Mountain Pepper) at Pine Lake as well.

Pine Lake is on The Central Plateau which is the most extensive alpine plateau in Australia and one of our most glaciated landscapes with tarns and lakes in the thousands dotted throughout. Many of the large boulder fields and scree slopes

you can see started to form in the last glacial age. The northern and eastern edge of the plateau rises sharply with large escarpments including the Great Western Tiers. To the west we have the glaciated landscapes of Cradle Mountain and Lake St. Clair and to the south the plateau merges gently into the Derwent Valley.

Soils began forming after the glaciers retreated about 7000 years ago which then lead to vegetation invading these areas. On the Central Plateau, the better drained locations usually have very rocky yellow brown mineral soils, while more poorly drained locations including Pine Lake, and those in higher rainfall areas such as Lake St Clair, have dark organic or peat soils.

Scree slope and Boulder fields can be seen to great effect above. Although, on the Lake Highway, which has now been sealed all the way through, Pine Lake is a blink and you'll miss it type place. Well worth taking the time though to stop and marvel at yet more outstanding geological history and flora of Tasmania. As the rest of the family was starting to freeze, it was time to move on.

Cradle Mountain

Cradle Mountain had the same effect on me as did Uluru three years ago. At the time I thought Uluru was just a big rock in the middle of nowhere. Yes we had seen many pictures and images of Uluru over the years but to stand before it was something else. Its grandeur, beauty, and cultural significance was something to behold and still remains with me today: awe inspiring. Cradle Mountain had the same effect on me.

One couldn't have asked for a better day weather wise as well. Cradle Mountain reaches 1545m in height. Although not tall, it juts straight up into the skyline reminiscent of Patagonia or somewhere like that. The landscape here at Cradle Mountain and all throughout the south west of Tasmania reminds us of the brute force of glaciers and the beauty they leave behind once gone. In fact during the last ice age, which was only 15,000 years ago, an ice cap covered most of the Cradle plateau, Du Cane range and the Central Plateau. The ice cap and its glaciers provided the views we have today. Cradle Mountain was proclaimed a National Park in 1922 and then in 1947 it was united with Lake St Clair thus forming the Cradle Mountain-Lake St Clair National Park.

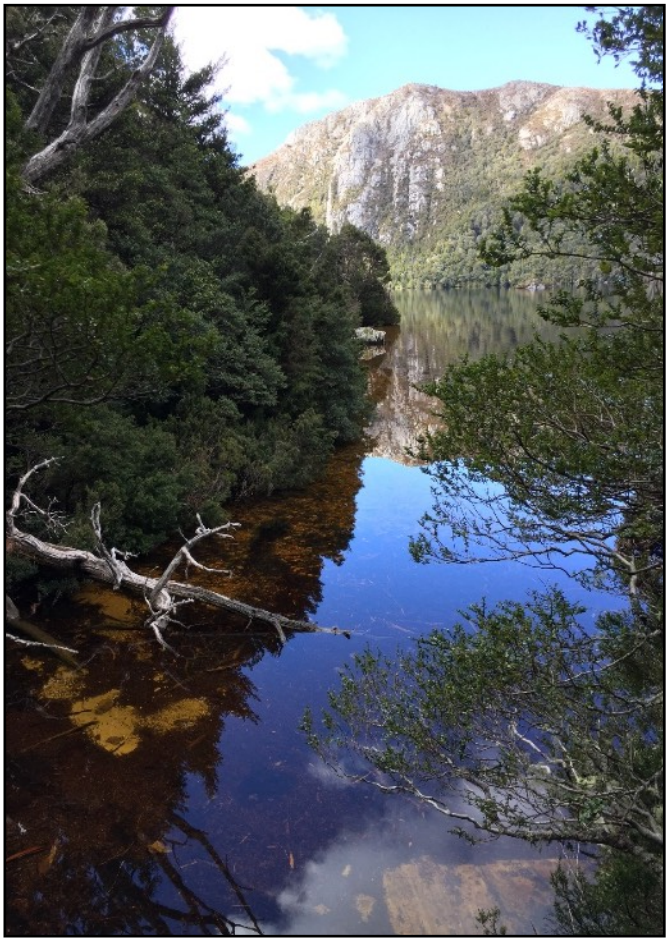
Annual rainfall varies from 1500mm-3000mm in the park, so be prepared for wet weather. As with other mountainous areas of Tasmania wild weather and snow can arrive at any time of the year.

A view from the Dove Lake circuit. The lake was very still making for some great reflections.

Walking options at Cradle Mountain are many. There are over 15 options from 15 minute strolls through to 8 hour hikes, as well as the famous Overland Track which normally takes 5-7 days, longer depending on how many side trips and rest days one has. All of these walks showcase the beauty of this area from tarns and lakes to waterfalls, rugged mountains and deep valleys, button grass plains to alpine moorlands, *Nothofagus* rainforests through to pine forests, towering Pandani through to diminutive alpines and much more.

With up to a 3 metre annual rainfall at Cradle Valley, the mosses and lichens were incredible, coating many surfaces. This tree trunk (top right) was covered in all sorts of organisms. The bottom left photo shows a *Nothofagus cunninghamii* covered in moss and a *Richea pandanifolia* growing out of it as well. The bottom right photo shows some trunks with maybe a dozen or more species of mosses, lichens and other plants growing all on top of each other creating a tapestry of green colours. We did the Dove Lake circuit which is a 5.4 km walk around Dove Lake although we took a slightly different route just before the Boatshed. We went straight up the side of the valley to Marions Lookout, which provides fine views of Cradle mountain and the Cradle plateau. Then we continued back via Wombat Pool and Lake Lilla. All up it was about 3 km extra, which ended up a good day's walk of about 8kms.

Here we are battling up the side of the valley wall heading for Marions Lookout. Not for the faint of heart! On the left of the photo you can see a *Nothofagus gunnii*, the deciduous fagus known as Tanglefoot (reasons for common name explained in part 1). This climb was basically straight up in some parts. Our youngest, Tully, who was seven then, did a remarkable job getting up there! He just about did it better than his parents were able to! Cradle Mountain is a popular destination during autumn for the turning of the *Nothofagus*. Apparently it's quite a site to see it in its autumnal tones. Maybe one day! Winter time draws people here as well with its winter coat putting on a show. Cradle draws a crowd any time of year with summer being the busiest. Below is a lovely view of Dove Lake from Marions lookout. Definitely well worth the climb!!



Another beautiful reflection in the still waters of Dove Lake above left and on the right we have the Ballroom Forest, which is at the southern end of the Dove Lake circuit. It is a forest of *Nothofagus cunninghamii* (Myrtle Beech), *Athrotaxis selaginoides* (King Billy Pine), *Richea pandanifolia* (Pandani) and some *Eucalyptus* spp. Another view (bottom right) from Marions Lookout towards Cradle Mountain and Little Horn.

Marions Lookout, which is on the harsh open Cradle Plateau finds plant life (such as the *Microcachrys tetragona* (creeping pine) pictured here) looking for any protected spot it can find, hugging rocks and any small depression that's available to get out of the weather. The wind can be extreme as well as the temperature, with snow and ice making for an unforgiving landscape.

Another Tasmanian endemic is the King Billy Pine, *Athrotaxis selaginoides* which can be a tree to 40m tall but also stunted in higher exposed places. This one had an interesting bend in its trunk. It is also found in association with *Nothofagus cunninghamii* (Myrtle Beech).

It's about time to leave this wonderful place and we will miss its beauty and uniqueness. One thing is for sure, allow more than 1 day here! This two part series has by no means covered even 5% of the mountains of Tasmania or its plants.

The Tasmanian vascular plant survey of 2017 lists 2,719 species of which 1,388 are non-endemic natives, 530 endemic natives and 801 species naturalized. I may have listed between 10-15 endemic plants. Amazing to think that this small island holds over 500 endemic species.

There is a saying that "the only straight roads in Tassie are bridges and even these can be curved", although we travelled on plenty of straight roads this saying just confirms that Tasmania has a lot of mountains. It is one of the most mountainous islands in the world and is our most mountainous state. There are many parts that we've yet to see and explore particularly in the alpine areas.

Our next adventure in Tasmania has been planned and booked. At the end of the year we will be tackling the famous Overland Track from Cradle Mountain to Lake St. Clair. From the highest mountain peaks of Tasmania to the deepest lake in Australia, hopefully we will be seeing plenty of alpine habitats and alpine plants in flower. Fingers crossed the weather won't be too bad, but that's the beauty of Tasmania. It will always surprise you!

Construction of a Tufa Rock Garden for Porophyllum Saxifrages

David Sellars

Here in coastal British Columbia we have very wet winters and hot dry summers. It is not an ideal climate for growing Porophyllum saxifrages in the open garden. I have been experimenting with different growing conditions and observed that *Saxifraga* 'Winifred' has been growing really well in a north facing tufa crevice partly protected by an overhanging rock. This was the inspiration, a few years ago, to construct a new tufa rock garden specifically for growing Porophyllum saxifrages.

Saxifraga 'Winifred'

Coming from an engineering background I set out a number of criteria for the rock garden:

- The location should be partly north facing to protect the plants from hot afternoon sun in the summer months
- The rock garden should be steep and open to maintain good airflow and maximize light
- There should a be a variety of planting aspects some with natural overhangs for rain protection
- The rock garden should be built mostly of tufa

I cleared a steep northwest facing slope adjacent to our driveway. Based on local experience I would have preferred a northeast facing slope to provide early morning sun and protect the plants from the late afternoon sun. However, a large cherry tree the other side of the driveway does provide some afternoon sun protection. I built up a lower layer of granite boulders which are readily available in our area. Some of these were placed with flat tops to provide standing access to the higher parts of the bank for planting and maintenance.

On the steep bank above the granite boulders I placed a layer of plastic mesh to discourage moles from tunnelling out of the slope. Large tufa rocks were obtained from a quarry located in the Columbia River Valley in the Rocky Mountains and I set them near vertical with a partial overhang. By offsetting the vertical pieces I created recesses and niches to provide different habitats. The backfill was a local sand product called Sechelt Sand used by local landscapers for paving. It is a coarse washed sand containing about 15% fines and sharp particles left over from a rock crushing operation. At the top of the bank I installed leaky hose embedded in the sand so I can water the plants by wetting the sand behind the tufa blocks. Overall the tufa rock garden is about 5 m long and 2 m high.

Top: Mole netting.
Lower right: Leaky hose installation.

Since 2015, I have been planting saxifrages in the crevices and into the tufa rock. For planting directly into the tufa, I drill a 16 mm diameter hole slightly longer than the roots of the plant and pack any spaces with a mixture of sand and tufa dust. Around the crown of the plant I push small pieces of stone to keep the saxifrage firmly in place. For planting into an overhanging rock I initiate the hole perpendicular to the face and then slant the hole downwards. Even using this method there is a tendency for some saxifrages to hang out from the overhanging tufa especially those that are vigorous growers. I have found that plants about one to one and a half years old after taking cuttings is the best age for planting directly into tufa.

The rock garden in 2020.

In general I have planted the Porophyllum saxifrages in shaded positions and Ligulatae saxifrages on the sunnier side of the tufa blocks. While most of the saxifrages planted are hybrids I reserve some special places for species. Species saxifrages that are growing well in the tufa rock garden include *Saxifraga oppositifolia, S. iranica, S. ramsarica, S. squarrosa, S. dinnikii, S. marginata, S. longifolia, S. cochlearis* and *S. media.* In the granite block area, *Saxifraga lilacina* seems to be very happy.

Top left: *Saxifraga media*

Top right: *Saxifraga dinnikii*

Bottom: Central section of tufa bed

Porophyllum saxifrage hybrids that have grown particularly well in the new rock garden include *Saxifraga* 'Aladdin', *S.* 'Cumulus', *S. '*Kvety Coventry', *S. '*Sizy Coventry', *S.* 'Frederik Chopin', *S. '*Bohemian Karst', *S. '*Your Smile', *S. '*Paul Gauguin', *S. '*Peach Melba', *S. '*Jocelynn Bacci', *S. '*Sissi, Gregor', *S. '*Allendale Citation', and *S. '*Allendale Ghost'. Not all the saxifrages have survived but it is easy to replace them.

At the top of the rock garden I have planted a few saxifrages plus other alpines. *Daphne arbuscula* grows very well in sand with adjacent tufa blocks. *Androsace villosa* is happily crouching behind a rock and in sunnier locations, *Globularia repens* 'Nana' crawls over the tufa putting down adventitious roots.

To keep track of the locations of plants in tufa beds I use an electronic labelling system. I take a photo of a section of the bed and then label the plants using PowerPoint. I originally kept prints of the labelled image in plastic sleeves held in a binder but now I make a pdf file that I can view on my smart phone. By dating the images they are also useful for tracking plant performance and growth.

The tufa rock garden has been in place for five years and results have been excellent. There is no organic matter in the rock garden which does not seem to be necessary for growing saxifrages in our climate. With the complexity of the rock outcrops created, I am still able to find new planting places.

Originally published in Saxifrage Magazine.

Oxyria dignya, Mountain Sorrel

Dr. Richard Hebda

Wild nibbles make a pleasant treat while hiking in the bush. Most often the tasty treat consists of berries of one sort or another, but the occasional green provides a refreshing chew. Mountain sorrel *(Oxyria digyna)* can spare a leaf or two for the adventurous alpine wanderer.

This delightful hardy herb grows from the top of a tenacious stout tap root. Fleshy, kidney-shaped leaves arise on leaf stalks attached to a short erect stem.

A thriving mountain sorrel plant showing typical leaves and reddish flowers and fruits. Photo Dr. Richard Hebda.

Leaf blades range from 1-5 cm (0.4-2”) wide, their stalks 4-8 cm (1.6-3.2”) long. Normally they are coloured bright green but may turn greenish red as the season advances or in really tough sites. There is usually also a single leaf on the stem. The leaves have a sour, but refreshing, acid taste, hence the botanical name *Oxyria* derived from Greek the word “oxys” which means sharp.

Like all members of the Buckwheat Family (Polygonaceae), mountain sorrel has small hard- to-see flowers. They cluster irregularly along a 10 to 60 cm (4-24”) tall, narrow flower stalk. Each green to reddish flower consists of four tiny “petals” joined at the base. Two of the petals are keeled, the other two are not. Inside the flowers reside six stamens and a two-parted pistil. Flowers appear from June to August according to elevation and latitude. At maturity, the fruit is broadly winged, turning a showy reddish purple. The fruit is mostly translucent and literally shines when the sun’s light passes through it.

Mountain sorrel ranges throughout the mountains of British Columbia and Alberta, south to New Mexico and California, and north through Alaska and the Yukon and across the Arctic. It also inhabits most of the mountains of Asia and Europe. In our province, mountain sorrel thrives in alpine scree and rock crevices and can be found in suitable habitats on almost every high mountain, to the elevation where no other plants can survive.

Surprisingly this delightful little mountain nibble will grow in lowland rock gardens. It needs a relatively moist gritty run for its root and full sun. In our coastal lowlands mountain sorrel probably needs to be sheltered from full scorching mid-day heat. Plants are best raised from seed sown carefully in the site where it is to grow. Sow the seeds in very stony and moist, but not rich, soil.

Okanagan First Peoples ate fresh raw leaves, but never too many at a time because the oxalic (sour) acid in the plant can be harmful if taken in large quantity. This sorrel contains abundant Vitamins A and C and was used against scurvy in Europe. Like other wild and cultivated sorrels it was widely cooked as a pot herb. A few leaves add a spritely bite when mixed into a salad.

This amazing plant has an incredible story to tell about the glacial history of our province. Studies of the chloroplast DNA by Royal BC Museum and University of Victoria reveal that the genetic makeup of the alpine herb in BC is surprisingly diverse. Within BC, the high diversity and the occurrence of ancient genetic forms suggest that high elevation mountains in the north escaped the last glaciation, contrary to widely accepted thinking.

Mountain sorrel is hardy to zone 0 in Canada. In fact, it is pretty much the hardiest of all plants in the world.

Originally published in the Winter 2014 issue of What's inSight Magazine.

The typical harsh high mountain home of mountain sorrel at Shelagyote Peak north of Smithers BC with pink River beauty (*Epilobium latifolium*) dotting the slope. Photo Dr. Richard Hebda.

Editor's ID Challenge

Did I stump anyone? You may recognize it by the angles on the leaves. But I was sure confused when I first saw this! At first glance I thought they were bulbs pushed up to the surface by a rodent or maybe by overcrowding. Upon closer inspection I realized they were in fact fruit. What I first thought was the bulb tunic started to peel back and break away to reveal the three carpel capsule - a typical trait for this family.

There are some members of Iridaceae (notably *Crocus*) that have flowers borne on a very short underground stem and the fruit develops underground (geoflory) or just above ground level (basiflory).However, our mystery plant is an *Iris* and I've never had to harvest fruit from the soil surface or underground for an iris before. It made me realize that I'd only superficially admired its flowers in the past, as I had no idea where the ovary was hanging out. Turns out this stemless (acaulis) flower has a very long perianth (sepals and petals) tube that arises out of the ground (to help illustrate this I've included a full sized picture of this plant in flower and bud on the next page).

Since I was already examining the capsules (and they are so easy to collect!) I went ahead and did so last year - so our mystery plant was in the 2020 AGCBC Seed Exchange. In fact, I've already mentioned that it was, as this is the same plant as last editions Editor's ID Challenge!

For those who have grown other members and cultivars of the Reticulata Section of *Iris,* you may have never seen fruit on your plants. I never had before growing this species, as I had only ever grown cultivars that were the result of crossing different species. Such offspring are often not fertile, so one doesn't get to admire or collect the fruit.

Iris histrioides grows in the UBC Alpine Garden's bulb frame, and was in last years Seed Exchange.