NEW ZEALAND PLANT CONSERVATION NETWORK

TRILEPIDEA

Newsletter of the New Zealand Plant Conservation Network

No. 216

March 2022

Deadline for next issue: Friday 22 April 2022

SUBMIT AN ARTICLE TO THE NEWSLETTER

Contributions are welcome to the newsletter at any time. The closing date for articles for each issue is approximately the 15th of each month.

Articles may be edited and used in the newsletter and/or on the website news page.

The Network will publish almost any article about plants and plant conservation with a particular focus on the plant life of New Zealand and Oceania.

Please send news items or event information to **info@nzpcn.org.nz**

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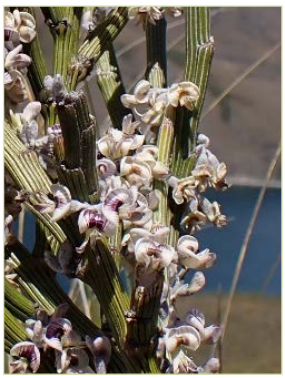


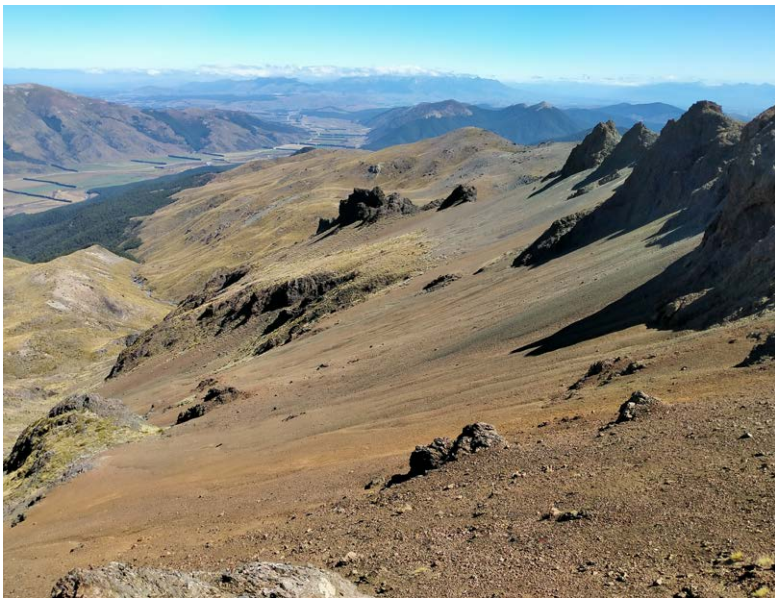
Carmichaelia crassicaulis subsp. *crassicualis*. Photo: Jane Gosden. See article on page 10.

Searching for forget-me-nots in the ultramafic mountains of Southland

Heidi Meudt, Botany Curator, Museum of New Zealand Te Papa Tongarewa (heidim@tepapa.govt.nz)

For the past decade or so, I've been spending several weeks each summer doing field work to find and make collections of native forget-me-nots (*Myosotis*) for my taxonomic research. Although most of my research involves looking at dried, pressed herbarium specimens, observing and collecting plants in their natural habitats is an important part of taxonomic research. On these field trips, I've been extremely fortunate to team up with many colleagues, landowners, iwi, students, and other keen beans (including several NZPCN and bot soc members), visiting most parts of the country where forget-me-nots are found. This year, for various reasons (including uncertainties around Covid, prioritising a family road trip, and simply a lack of time to do the necessary preparations beforehand), I had thought I wouldn't be doing any field work this summer. But Brian Rance, Ecologist at the Department of Conservation in Invercargill, had other ideas!

Late in 2021, Brian and I exchanged emails where he mapped out a potential week-long trip that would take us to several of the localities where we hoped to find and collect what may be a new ultramafic species of forget-me-not (tag-named *Myosotis* sp. "Mossburn"). Brian and others had seen these plants at the following Southland localities: West Dome, Black Ridge, Bald Hill, Coal Hill, and maybe the Livingstone Mountains, but there are few herbarium specimens of it. We wanted to visit these sites to make new collections of this unique forget-me-not and other close relatives growing nearby (*Myosotis* sp. "Livingstone" and *Myosotis lyallii* subsp. *elderi)*. Along the way, we would also collect any *Azorella* that we found for PhD student Weixuan Ning's thesis research on native *Azorella*.



The colourful geology of the southern Livingstone Mountains, Southland, New Zealand, January 2022. Photo: Heidi Meudt, Te Papa.

The trip was very ambitious, even compared to some of my previous demanding field trip itineraries. Because Brian is extremely organised and has many local connections, he was able to do most of the logistical preparations, including liaising with landowners and with DOC, and securing a base for us in Te Anau. He also amassed an amazing team to accompany us at various points along the trip, which included John Barkla and his wife Marilyn Barkla, and Geoff Rogers and his partner Mary Bruce. We did a quick calculation to discover that, when you tally up all the years that Brian, John and Geoff have worked in plant conservation, it amounts to an astounding 100 combined years of experience! So, it was bound to be a successful and stimulating trip.

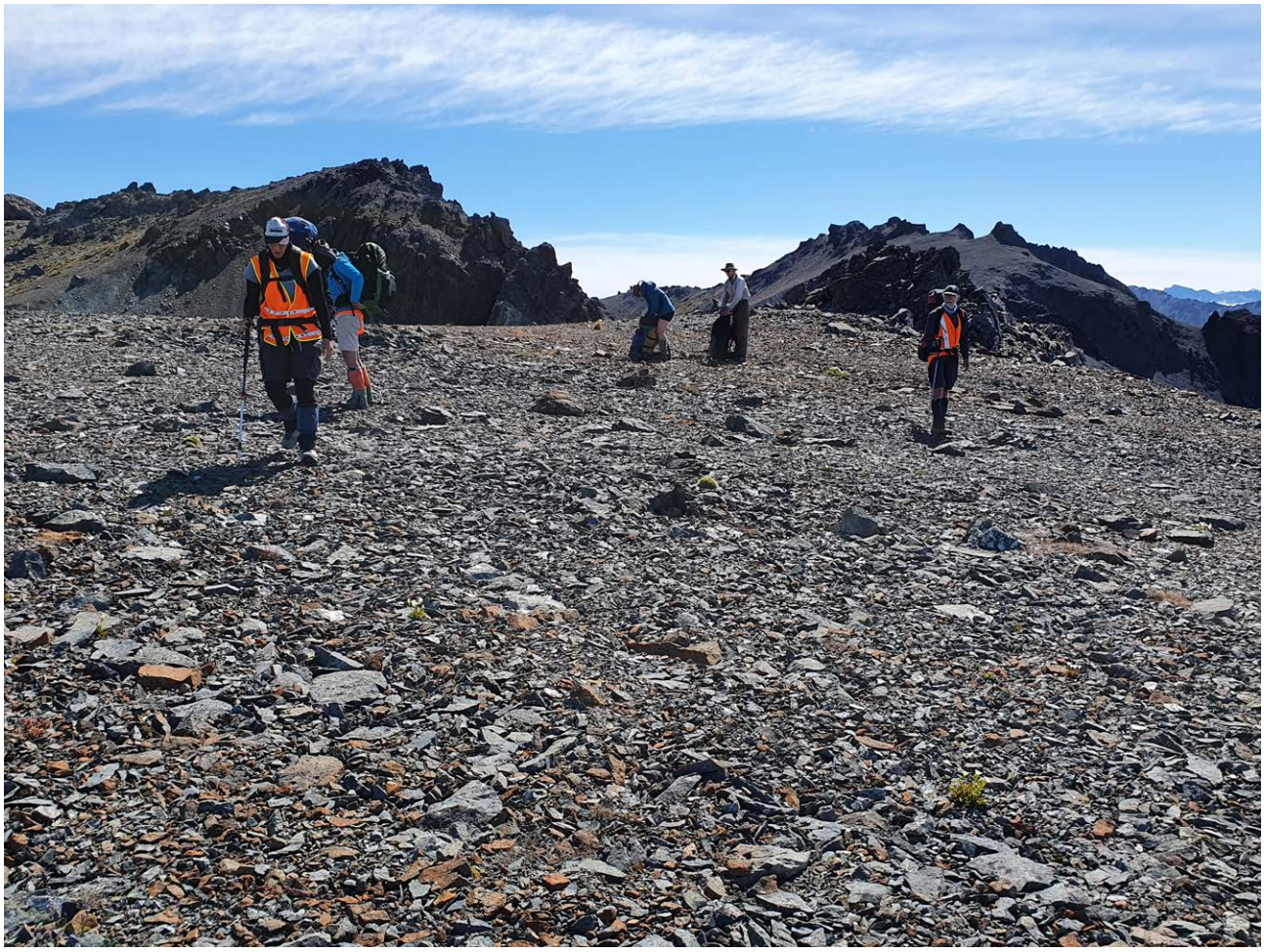
Flowering plants of *Myosotis* "Livingstone" that were very common in non-ultramafic areas of the Livingstone Mountains, January 2022. Photo: Heidi Meudt, Te Papa (SP114478).

For this trip, we chose a week in late January 2022, which lucky for us not only pre-dated the Omicron surge in New Zealand (just), but also had settled, almost perfect, weather for field work. After Brian picked me up from the Invercargill airport on Saturday, 22 January 2022, we went straight to our first destination: Black Ridge, near Mossburn, on private farmland. Landowners Grant and Katie Catto accompanied us up to the site, and we found a good population of *Myosotis* sp. "Mossburn" on the ridge top, just below 600 m above sea level, including one plant that was still flowering, even this late in the season.

We met up with John and Marilyn that night in Te Anau, and Geoff and Mary the next day near Kiwi Burn to catch our helicopter to the tops of the Livingstone Mountains. We broke up into two teams and were ferried up to two different sites around Acheron Lakes, before getting flown to our chosen campsite below Mt Cerberus (1668 m). This 'divide and conquer' strategy was useful in that we were able to get to more sites in less time, and one of the teams (Brian/Geoff/Mary) made a couple of collections of *Myosotis* and other plants (e.g. WELT SP114499).

After lunch, we had the rest of the afternoon to botanise around Cerberus. The colourful geology of the Livingstone Mountains is really stunning, and the plants also did not disappoint. We made additional collections of *Myosotis* sp. "Livingstone" on scree, and *M. lyallii* subsp. *elderi* on stable gravel. Although the latter was no longer flowering, *M.* sp. "Livingstone" was flowering profusely and there were literally thousands of plants on the steep slopes (e.g. WELT SP114477/A). Other notable plants we saw on the day included vast fields of *Cemisia semicordata* subsp. *stricta*, scree specialists such as *Stellaria roughii*, and cushion bogs ablaze with flowering *Euphrasia dyeri*, in which were hiding tiny plants of *Azorella cockaynei*.

After packing up camp the next morning, we had a long day ahead of us, tramping with our big packs back to the vehicles at Kiwi Burn and of course botanising on the way. While descending, we came across a large patch of ultramafic habitat. Ultramafic soils are rich in iron and magnesium, have high concentrations of toxic heavy metals, and have low concentrations (or availability) of major plant macro-nutrients. Such ultramafic outcrops are one example of a number of naturally rare New Zealand ecosystems with ultramafic geology (Williams et. al, 2007).



The team botanising the flora at an ultramafic site in the Livingstone Mountains. Although they contain many more rocks than plants, ultramafic sites like this one are home to some unique plant species that specialise on the iron- and magnesium-rich soils, January 2022. Photo: Brian Rance.

We relied both on Geoff's superior knowledge of geology, as well as the plants themselves, to determine whether we were on ultramafic soils rather than what seemed to be the more common fractured volcanic soils in the Livingstone Mountains. The presence of ultramafic geology was generally indicated by the plants present. Some of the indicator plants for ultramafic geology were *Carex uncifolia* and *Gentianella serotina* along with the beautiful *Celmisia spedenii, Pimelea suteri* and *Cardamine serpentina.* These latter three are ultramafic endemic species, i.e. they are *only* found on ultramafic soils (Lee 1992; see also a list here). We also found what Brian thinks may be a new ultramafic species of *Chaerophyllum.* Later, at some clearings just before treeline, Brian took us to another interesting *Myosotis* population that he remembered seeing many years ago, again on what appeared to be ultramafic soils.

Celmisia spedenii, an ultramafic endemic plant species, in the Livingstone Mountains, January 2022. Finding this species was a clue that we had found a patch of ultramafic soils. Photo: Brian Rance.

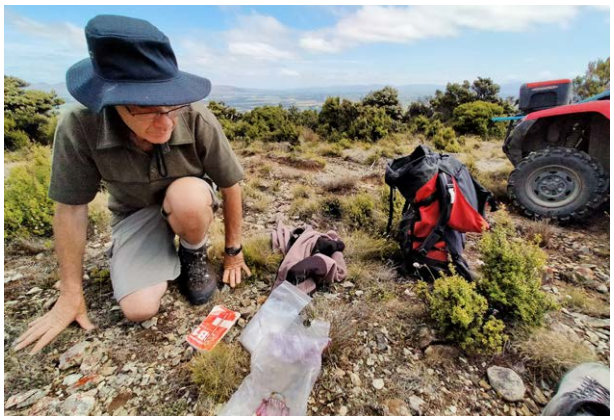
The first half of the trip had gone very well so far, and although we were sad to say goodbye to Geoff and Mary, who were being called to other adventures, the rest of us were hopeful we could keep the momentum going for the final three days. We did two day trips in the northern fringes of the Livingstone Mountains in Fiordland National Park. This included a physically challenging, wet-feet

day, walking up Cascade Creek to the headwaters (the only day we did not find *Myosotis*), and another day following the track to Boyd Creek tops, Countess Range (where we found *M. lyallii* subsp. *elderi* on the top of the ridge, but interestingly no *M.* sp. "Livingstone" even though it had been collected there previously by David Lyttle. On that day, John's fitbit registered over 42,000 steps, which also including going up 1200 m in elevation (and then going back down again). Given the early starts, the long days in the field, and the long evenings processing plant specimens, making and eating dinner, and preparing for the next day's trip, needless to say we were getting pretty physically tired by this time.

On the last day, we again split into two teams, with John and Marilyn hitting Coal Hill, and Brian and I going up Bald Hill. Both teams were successful in finding *Myosotis* sp. "Mossburn" on ultramafic soils.

Over the course of the week, many exciting plants were observed, plant lists for the inspection areas were made or updated, and several plant records and images were recorded on iNaturalist.nz (see John Barkla's and Brian Rance's iNaturalist observations for 23–27 January 2022). The success of this trip really came down to the experience and expertise (and fitness!) of the field team, as well as a bit of good luck with the weather. Marilyn's homemade muesli slice and fruit cake also kept us going when the going got tough, and John and Fay Whitehead's wonderful house in Te Anau was the perfect base in Te Anau.

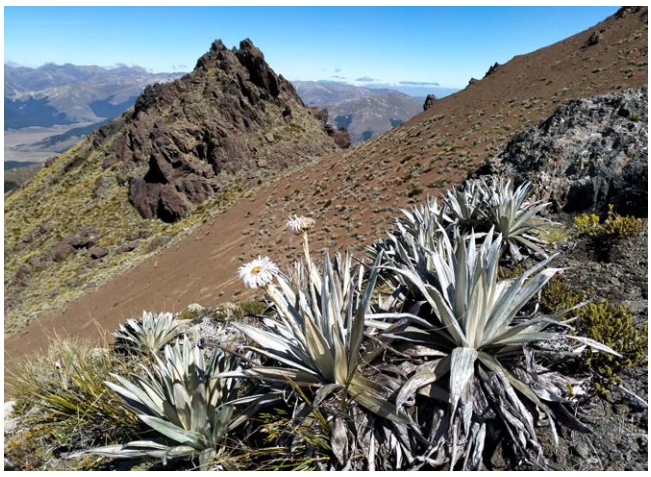
We made over 30 plant collections with a focus on plants that are of current research interest, including 13 collections comprising of five *Myosotis* taxa (i.e. *Myosotis* "Mossburn", *M.* "Livingstone", *M. lyallii* subsp. *elderii*, *M. tenericaulis* and *M. drucei*, as well as seeing *M. forsteri*), many of which can be seen here on Collections Online. These collections are key components of my ongoing taxonomic research on native forget-me-nots, and of PhD student Weixuan Ning's thesis research on native *Azorella*.



Brian Rance making a collection of *Myosotis* "Mossburn" from Black Ridge at an ultramafic site, January 2022. Photo: Heidi Meudt, Te Papa (SP114475).

We collected *Myosotis lyallii* subsp. *elderi* on Bald Hill in a non-ultramafic habitat at a higher elevation compared to *Myosotis* "Mossburn", January 2022. Current research will determine how to tell the two species apart. Photo: Heidi Meudt, Te Papa (SP114494).

Stellaria roughii is a common scree specialist in the Livingstone Mountains, January 2022. Photo: John Barkla.



Celmisia semicordata subsp. *stricta* forms extensive patches on the margins of screes in the Livingstone Mountains, January 2022. Photo: John Barkla.

You can read more about this trip, learn about ultramafic areas in New Zealand, and see more photos from the trip in this blog post: Botanising New Zealand's southern ultramafic mountains in the South Island. You can read about some of my previous *Myosotis* field trip adventures here.

Acknowledgements

I would like to thank the following people and organisations for supporting this field research—Grant and Katie Catto (Black Ridge), Paul Ewing (Haycocks Farm/Hikuraki Station), John and Fay Whitehead, Chris Rance, the Department of Conservation, Te Papa, and everyone who came out with me in the field—John Barkla, Marilyn Barkla, Geoff Rogers, Mary Bruce, and especially Brian Rance.

References

Lee WG. 1992. New Zealand ultramafics. In: Roberts BA, Proctor J eds The ecology of areas with serpentinized rocks. A world view. The Netherlands, Kluwer. Pp. 375–418.

Williams PA, Wiser S, Clarkson B, Stanley MC. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology 31(2)*:119–28.

Footnote

During this trip a potentially new species of *Chaerophyllum* was rediscovered by Brian Rance. A link to that story follows. https://www.doc.govt.nz/news/media-releases/2022-media-releases/ecologist-excited-by-potential-new-plant-discovery/

Notice of new threat assessment of indigenous vascular plants of Aotearoa / New Zealand

Pascale Michel (pmichel@doc.govt.nz), Technical Advisor - Ecology / Kaimātanga Mātai Taiāo / National Office / Whare Kaupapa Atawhai / Department of Conservation / Te Papa Atawhai, *Peter J. de Lange (pdelange@unitec.ac.nz), Threat Listing Panel Chair, School of Environmental & Animal Sciences, Unitec Institute of Technology, Auckland*

The conservation status of the indigenous vascular plants of Aotearoa / New Zealand were last assessed in 2017 by de Lange et al. (2018). The Department of Conservation (DOC) is currently facilitating a review of this assessment and preparatory to wish to gather information on the conservation status of indigenous vascular plant taxa of Aotearoa / New Zealand.

Context

The New Zealand Threat Classification System (NZTCS) is a rules-based system used to assess the risk of extinction faced by organisms indigenous to that archipelago. It was established in 2002 to complement the International Union for Conservation of Nature's (IUCN's) Red List system. Categories and criteria were defined to reflect New Zealand's unique environments, accounting for the country's relatively small size and diversity of ecosystems, and the large number of taxa with naturally restricted ranges and/or small population sizes. The NZTCS is administered by DOC on behalf of all New Zealanders. It is used by members of the public and organisations (e.g. MfE, MPI, StatsNZ) throughout New Zealand. NZTCS assessments underpin biodiversity management priorities for DOC, local government, other agencies and communities who participate in conservation.

NZTCS species group assessments are reviewed approximatively every five years by a panel of experts. Vascular plants were last assessed in 2017 (de Lange et al. 2018). The review of that assessment is scheduled for mid-October 2022. In preparation for this review, we are enquiring for information to support the panel decision.

What information is required

Assessments follow the NZTCS manual 2008, the supplement 2021 and amendment 2021 which can be downloaded on the DOC website. The full list of species to be re-assessed can be downloaded on the NZTCS website (https://nztcs.org.nz/reports/38).

We are looking for estimates of threats, population size and trend data that you might like to offer, for native species that occur in your region where your Society has some up-to-date knowledge and a regional overview of those species:

- Identified threats to the species (e.g. diseases, predation from herbivores).
- population size is either the number of mature individuals (reproducing) or the area of occupancy (in ha).
- population trend is the past trend for as long a period as possible and the future predicted trend over three generations or 10 years whichever is the longest.

We would like to obtain detailed information particularly for species that:

- have been assessed nationally Threatened or At Risk in the past
- are likely to have a change of conservation status because of new or increasing threats.

Information can be providing using the pre-formatted template (Word document). Alternatively, the information can also be collated in an Excel spread sheet.

We would like to receive this information before **9 September 2022**.

Information should be compiled and sent using this template:

Information for NZTCS Assessments

The aim is to collate information on species or taxa relevant to assessments under the New Zealand Threat Classification System (NZTCS, https://nztcs.org.nz). Please complete this form and provide as much detailed information as possible, anecdotal information is also welcomed. Complete a separate form for each species or lower-level taxon individually by duplicating the 'Taxon Details" headings below as needed. Do not use jargon, be clear and concise. When completed, send to the NZTCS administrator at ThreatStatus@doc.govt.nz.

Supplier's Contact Details	
Your name	
Address	
E-mail	
Telephone numbers	
Taxon Details	
Scientific name	
Common name	
Taxonomic status	*Does the taxon have a formally published name that is generally accepted by those working on the group?* **Yes / No**
Notes	*(provide any relevant information known about this taxon)*
Population Size & Trend	
Location	*(geographic extent of this information)*

Estimated population size	*(Provide estimates for the total number of individuals or area of occupancy, number of sub-populations, multiple-year estimates if available)*
Estimated number of mature individuals	*(Provide estimates of total number of breeding individuals, multiple-year estimates if available,)*
Estimated population trend – Past	*(Provide estimates of trend: stable, percentage increase or decrease, estimated period in years, is the trend consistent across the species range?)*
Estimated population trend - Future	*(Provide estimates of percentage increase or decrease, estimated period [10 years or 3 generation time], is the trend expected to be consistent across the species range?)*
Identified threats	*(list and explain identified threats that are impacting on population size and trend, e.g. predator, habitat loss, etc…)*
Notes on population size and trend	*(e.g. change in population range)*
Conservation Status & Qualifiers	
Current threat status and qualifiers	*(if the taxon has not been assessed before, it is a 'New Listing')*
Recommended threat category and conservation status	*(using the latest NZTCS manual, suggest the relevant threat category for the taxon)*
Recommended qualifiers	*(see list of qualifiers below, explain why these qualifiers apply to the taxon)*
Notes	*(provide any further information to support your recommendations)*

Qualifiers

Qualifiers are an integral part of this classification system. They provide additional information about a taxon's assessment, status and management. Detailed definitions can be found at https://nztcs.org.nz—click the Qualifiers link on the left of the homepage.

- **BIOLOGICALLY SPARSE (Sp)**: The taxon naturally occurs within typically small and widely scattered subpopulations. This qualifier can apply to any 'Threatened' or 'At Risk' taxon.
- **CLIMATE IMPACT(CI):** The taxon is adversely affected by long-term climate trends and/or extreme climatic events.
- **CONSERVATION DEPENDENT (CD):** The taxon is likely to move to a worse conservation status if current management ceases.
- **CONSERVATION RESEARCH NEEDED (CR):** Causes of decline and/or solutions for recovery are poorly understood and research is required.
- **DATA POOR: RECOGNITION (DPR)**: Confidence in the assessment is low because of difficulties in determining the identity of the taxon in the field and/or in the laboratory.
- **DATA POOR SIZE (DPS)**: Confidence in the assessment is low because of a lack of data on population size.
- **DATA POOR: TREND (DPT)**: Confidence in the assessment is low because of a lack of data on population trend.

- **EXTREME FLUCTUATIONS (EF):** The taxon experiences extreme unnatural population fluctuations, or natural fluctuations overlaying human-induced declines, that increase the threat of extinction. When ranking taxa with extreme fluctuations, the lowest estimate of mature individuals should be used for determining population size, as a precautionary measure.
- **EXTINCT IN THE WILD (EW):** The taxon is known only in captivity or cultivation or has been reintroduced to the wild but is not self-sustaining.
- **INCREASING (Inc)**: There is an ongoing or forecast increase of > 10% in the total population, taken over the next 10 years or three generations, whichever is longer. Note that this qualifier is redundant for taxa ranked as 'Recovering'.
- **ISLAND ENDEMIC (IE)**: A taxon whose natural distribution is restricted to one island archipelago (e.g. Auckland Islands) and is not part of the North or South Islands or Stewart Island/Rakiura.
- **NATURAL STATE (NS)**: A taxon that has a stable or increasing population that is presumed to be in a natural condition, i.e., has not experienced historical human-induced decline.
- **NATURALISED OVERSEAS (NO):** A New Zealand endemic taxon that has been introduced by human agency to another country (deliberately or accidentally) and has naturalised there e.g., *Olearia traversiorum* in the Republic of Ireland.
- **ONE LOCATION (OL):** Found at one location in New Zealand (geographically or ecologically distinct area) of less than 100 000 ha (1000 km^2), in which a single event (e.g. a predator irruption) could easily affect all individuals of the taxon, e.g. L'Esperance Rock groundsel (*Senecio esperensis*) and Open Bay Island leech (*Hirudobdella antipodum*). 'OL' can apply to all 'Threatened', 'At Risk', Non-resident Native – Coloniser and Non-resident Native – Migrant taxa, regardless of whether their restricted distribution in New Zealand is natural or human-induced. Resident native taxa with restricted distributions but where it is unlikely that all sub-populations would be threatened by a single event (e.g. because water channels within an archipelago are larger than known terrestrial predator swimming distances) should be qualified as 'Range Restricted' (RR).
- **PARTIAL DECLINE (PD):** The taxon is declining over most of its range, but with one or more secure populations (such as on offshore islands).
- **POPULATION FRAGMENTATION (PF):** Gene flow between subpopulations is hampered as a direct or indirect result of human activity. Naturally disjunct populations are not considered to be 'fragmented'.
- **POSSIBLY EXTINCT (PE):** A taxon that has not been observed for more than 50 years but for which there is little or no evidence to support declaring it extinct. This qualifier might apply to several Data Deficient and Nationally Critical taxa.
- **RANGE RESTRICTED (RR)**: A taxon naturally confined to specific substrates, habitats or geographic areas of less than 1000 km2 (100 000 ha); this is assessed by taking into account the area of occupied habitat of all sub-populations (and summing the areas of habitat if there is more than one sub-population), e.g. Chatham Island forget-me-not (*Myosotidium hortensia*) and Auckland Island snipe (*Coenocorypha aucklandica aucklandica*).This qualifier can apply to any 'Threatened' or 'At Risk' taxon. It is redundant if a taxon is confined to 'One Location' (OL).
- **RECRUITMENT FAILURE (RF):** The age structure of the current population is such that a catastrophic decline is likely in the future.
- **RELICT (Rel):** The taxon has declined since human arrival to less than 10% of its former range but its population has stabilised.
- **SECURE OVERSEAS (SO):** The taxon is secure in the parts of its natural range outside New Zealand.
- **SECURE OVERSEAS? (SO?):** It is uncertain whether a taxon of the same name that is secure in the parts of its natural range outside New Zealand is conspecific with the New Zealand taxon.
- **SECURE? OVERSEAS (S?O):** It is uncertain whether the taxon is secure in the parts of its natural

range outside New Zealand.

- **THREATENED OVERSEAS (TO):** The taxon is threatened in the parts of its natural range outside New Zealand.
- **THREATENED OVERSEAS? (TO?):** It is uncertain whether a taxon of the same name that is threatened in the parts of its natural range outside New Zealand is conspecific with the New Zealand taxon.
- **THREATENED? OVERSEAS (T?O):** It is uncertain whether the taxon is threatened in the parts of its natural range outside New Zealand.

If you have any questions, please do not hesitate to contact Pascale Michel, NZTCS Administrator, at **ThreatStatus@doc.govt.nz**.

Second Record of *Taeniophyllum northlandicum* for New Zealand

Bill Campbell (billcampbell@xtra.co.nz). Originally published in NZ Native Orchid Group Journal 165, March 2022.

On Tuesday 21 December 2021 I became aware that what appeared to be a *Taeniophyllum* species had been observed somewhere in Northland. This was documented on the Native Orchid Facebook page https://www.facebook.com/groups/774564432616525/search/?q=Taeniophyllum and by the observer on iNaturalist https://www.inaturalist.org/observations/103382277.

The posted images closely matched those for *Taeniophyllum northlandicum* (originally believed to be *T. norfolkianum*), which had been recorded only once previously from the original discovery site on farmland near Waipu in Northland.

I was able to make contact with the property owner/observer via iNaturalist messaging and quickly ascertained that the observation had been made at a locality only 20 minutes from my home. Cutting a long story short, I was able to arrange to visit the property the same day and get to view the plants on their host species.

It is well documented that the sole known host species at the Waipu site is gorse (*Ulex europaeus*), so it was somewhat of a surprise to find that the host species on this occasion is feijoa (*Acca sellowiana*).

Three views of *Taeniophyllum northlandicum* on feijoa, 21 December 2021. Photos: Bill Campbell.

The site is a small orchard on a 24-hectare lifestyle at Peria, near Kaitaia. Apart from a small cleared area around two houses on the property the bulk of the land is covered in regenerating and mature native forest, protected by a QEII covenant.

Taeniophyllum northlandicum was observed on two feijoa trees in the orchard at the time of my visit and a subsequent search by the property owner later the same day resulted in further discoveries on another feijoa and also a southern magnolia (*Magnolia grandiflora*).

Brief searches were made of other species in the vicinity, including kānuka (*Kunzea linearis*) and a juvenile pōhutukawa (*Metrosideros excelsa*), but no other plants were able to be located. It is intended that a more detailed survey will be carried out at about the same time later this year when the plants will be at their most conspicuous. Being so small, one can imagine that the plants will be almost impossible to see when not flowering/fruiting.

This was an intriguing find, more so given that *Taeniophyllum northlandicum* was described as a New Zealand endemic species by Rice in 2019. Here we have an endemic species that so far has been recorded only growing on species that are quite new additions to the NZ flora. Given its very small size, it is quite possible that this species is more widespread and it may well be growing on native species, with similar bark features to the currently known hosts.

Matt Renner, who was associated with both the original discovery and the subsequent description of the species as *T. nothlandicum*, has suggested via personal communication that the New Zealand entity may be an undescribed *Taeniophyllum* known from New South Wales, Australia, that has somehow managed to find its own way here, as orchids tend to do from time to time. Only further study and genetic analysis will tell us what it is we actually do have here in New Zealand.

References

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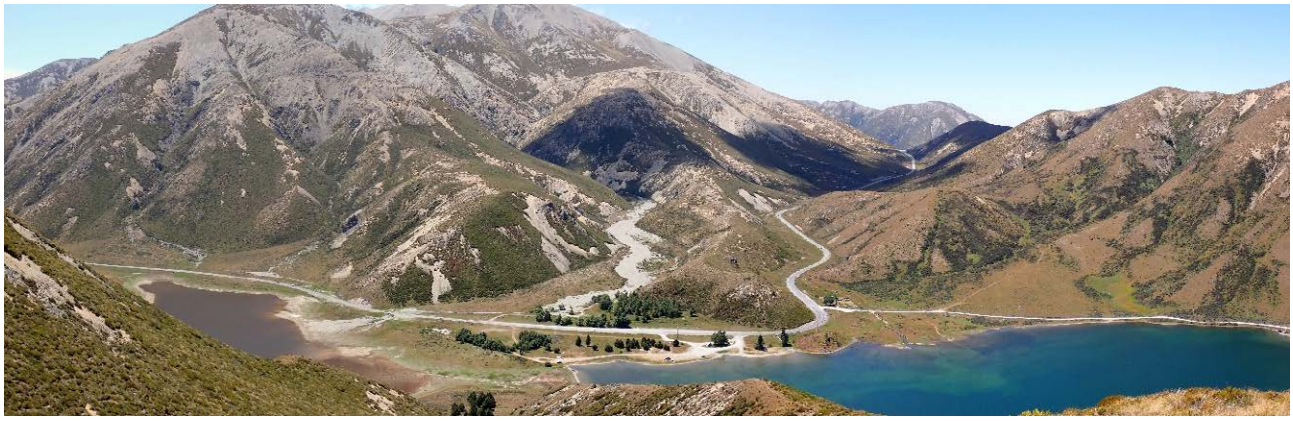
Rice, R. 2019: Introduction to the Australian & New Zealand *Bulbophyllum* & Vandaceous Orchids (with other observations in subtribe Aeridinae). Nature & Travel Books, Sydney.

10 reasons to botanise around Lake Lyndon

Jane Gosden (Plant ecologist, Ōtautahi/Christchurch, jlgosden@gmail.com)



Lake Lyndon and its 'dry' tarn to the North, tucked into the base of Porters Pass along SH73, Canterbury. As viewed from the side of Mt Lyndon. Photo: Jane Gosden, January 2022.

At first glance this unassuming lake may not draw your botanical eye. It is a common spot to pull over and use a public toilet, perhaps stretch your legs on the journey over the passes or to let a car past… and then carry on. Maybe you have stopped and then been put off by the weeds (there are many). But (in the opinion of this botanist) Lake Lyndon is one of the most interesting botanical sites in Canterbury. So here are 10 reasons to make Lake Lyndon a destination rather than a pit stop.

Coral broom (*Carmichaelia crassicaulis* subsp. *crassicualis*, At Risk – Declining) on the hills above Lake Lyndon. Photo: Jane Gosden, January 2022.

1. In the 2021 summer a large and flourishing population of the fish guts plant (*Chenopodium detestans*) was rediscovered (after an apparent absence of ~10 years) along the foreshore. The

fish guts plant is Threatened – Nationally Critical[1] and is honestly named reflecting its pungent stench when crushed. Fish guts plant was once more widespread through Canterbury and Otago—with concerns more recently that the species may have become restricted to the foreshore of Lake Tekapo. This summer the lake levels have been unusually high (as pictured on 16 January 2022), in stark comparison to the previous summer where the lake was incredibly low. Take care when searching for fish guts plant, as the introduced fat hen (*Chenopodium album*) grows here too.

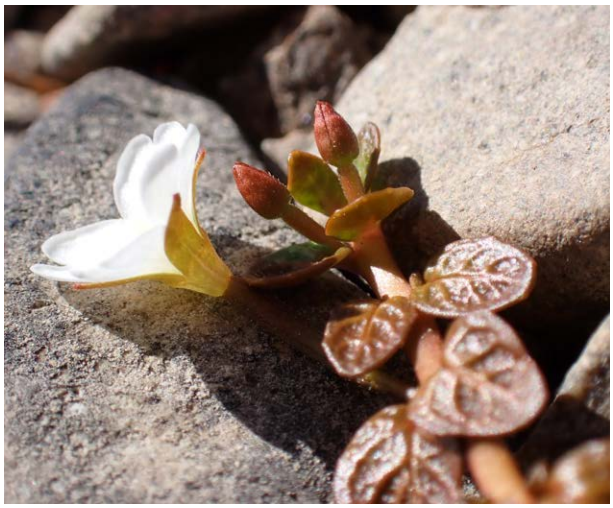
Close up of the fish guts plant (*Chenopodium detestans*, Threatened – Nationally Critical). Photo: Jane Gosden, March 2021.

2. See how many plants of *Myosotis brevis* (Threatened – Nationally Vulnerable) you can find. Lake Lyndon plants are typically grey/brown and often very small (< 20 × 20 mm). The combination of colour and size make *M. brevis* one of the more challenging plants to spot at this site because it grows amongst the muds and gravels on the lake shore. Once you've found it, look closely to spot a flower (< 1 mm in diameter).

Cryptic *Myosotis brevis* (Threatened – Nationally Endangered). Photo: Jane Gosden, March 2021.

3. Test yourself on the differences between small, grey, trailing plants of ephemeral wetlands and see if you can spot *Veronica liliputiana* (At Risk – Declining, formerly *Parahebe candescans*), *Leptinella maniototo* (At Risk – Relict), and *Lobelia perpusilla*. The *Leptinella* can sometimes be found growing in the carpark. The *Veronica* will give itself away when it flowers (typically coloured blue but occasionally white).
4. Learn the difference between *Epilobium kommarovianum* and *E. angustum* as both grow together here side-by-side. Hint, look for short glandular hairs on the pedicel, ovary, sepals, and capsules of *E. angustum*. And note that *E. angustum* becomes the dominant species in the wetter soils.

Leptinella maniototo (At Risk – Relict) in full flower. Photo Jane Gosden, March 2021.



The willowherb *Epilobium angustum* in flower and bud. Photo: Jane Gosden, March 2021.

5. Find the sedge *Carex cirrhosa* (Threatened – Nationally Endangered). The *C. cirrhosa* plants at Lake Lyndon are typically the green coloured form.

6. Climb Mt Lyndon and, if your timing is right, admire the coral broom (*Carmichaelia crassicaulis* subsp. *crassicualis,* At Risk – Declining) covered in clusters of flowers that range in colour from purple to beige. Look for the low growing stout dwarf broom (*Carmichelia monroi*, At Risk – Declining) growing alongside.

Close up of a flowering stout dwarf broom (*Carmichelia monroi*, At Risk – Declining). Photo: Jane Gosden, January 2022.

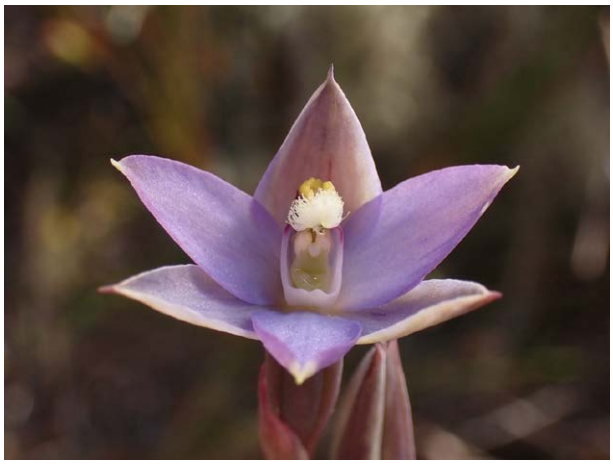
7. Ponder *Epilobium* identification further by working out what the plants growing on the summit of Mt Lyndon are. My current ID (with help from a friend) is *Epilobium krulleanum* (= *Epilobium hectorii*), but perhaps it is something else. Let me know how you get on.
8. Find other Threatened and At-Risk vascular plants recorded previously from around the Lake Lyndon area, these include:
   - *Carex rubicunda* (Threatened – Nationally Vulnerable).
   - *Carmichaelia corrugata* (Threatened – Nationally Vulnerable).
   - *Carmichaelia juncea* (Threatened – Nationally Vulnerable, likely extinct in Canterbury).
   - *Carmichaelia uniflora* (At Risk – Declining).
   - *Craspedia incana* (Threatened – Nationally Critical).
   - Haast's buttercup (*Ranunculus haastii*, At Risk – Declining).
   - *Hypericum rubicundulum* (Threatened – Nationally Endangered).
   - Hypsela (*Lobelia ionantha*, At Risk – Declining).
   - Matagouri (*Discaria toumatou*, At Risk – Declining).
   - *Montia angustifolia* (At Risk – Naturally Uncommon).
   - *Montia eryophylla* (At Risk – Naturally Uncommon).
   - Parsley fern/patorara (*Botrychium australe*, At Risk – Naturally Uncommon).
   - *Pterostylis tanypoda* (At Risk – Declining).
   - *Pterosytlis tristis* (At Risk – Declining).
   - Pygmy clubrush (*Isolepis basilaris,* At Risk – Declining).
   - Pygmy goosefoot (*Dysphania pusilla*, Threatened – Nationally Endangered).
   - *Rytidosperma buchananii* (At Risk – Naturally Uncommon).
   - Scree pea (*Montigena novae*-zelandiae, At Risk – Declining).
   - *Veronica tetrasticha* (At Risk – Naturally Uncommon, formerly *Leonohebe tetrasticha*).
   - Water brome (*Amphibromus fluitans,* Threatened – Nationally Vulnerable)

9. Admire all the non-threatened plants too. Find mudwort (*Limosella lineata*) growing in the turf with threads of dwarf bedstraw (*Galium perpusillum*). While in the turf, look closely for one of New Zealand's smallest grasses, the pincushion grass (*Agrostis muscosa*). Venture into the surrounding grasslands and see two mat forming *Coprosma* species (*C. atropurpurea* and *C. petriei*) growing side by side. Climb Mt Lyndon and find *Azorella hydrocotyloides*. Or look for Hatch's sun orchid (*Thelymitra hatchii*) in flower. And many more species beyond those listed here.

The tiny pincushion grass (*Agrostis muscosa*). Photo: Jane Gosden, March 2021.

Two mat forming *Coprosma*, *C. atropupurea* (left) and *C. petriei* (right) growing side-by-side. Photo: Jane Gosden, March 2021.

Azorella hydrocotyliodes in full flower. Photo: Jane Gosden, January 2022.



A flowering *Thelymitra hatchii.* Photo: Jane Gosden, January 2022.

10. Lake Lyndon is also home to a wide variety of weedy plants. Therefore, it is a good spot to become familiar with weeds of ephemeral wetlands. Look for marsh foxtail (*Alopecurus geniculatus*), oval sedge (*Carex leporina*, formerly *Carex ovalis*), and the willow weed *Persicaria maculosa*. However, in summer the dominant weed is scentless mayweed (*Tripleurospermum inodorum*) as it forms broad swards of growth that advance towards the retreating lake.

And if none of the reasons above appeal to you then Lake Lyndon is also a great place to fish, swim, walk up a hill (Mt Lyndon has views across the Castle Hill Basin, into the Craigieburn Range, of Foggy Peak and Porter's Pass, and over to Lake Coleridge), or birdwatch (notably crested grebes and sometimes banded dotterels).

References

de Lange P.J.; Rolfe J.R.; Barkla J.W.; Courtney S.P.; Champion P.D.; Perrie L.R.; Beadel S.M.; Ford K.A.; Breitwieser I.; Schonberger I.; Hindmarsh-Walls R.; Heenan P.B.; Ladley K. 2018: Conservation status of New Zealand indigenous vascular plants, 2017. New Zealand Threat Classification Series 22. Department of Conservation, Wellington. 82 p.

Wanted: cultivated *Veronica armstrongii* plants

Ben Gibbons[1], Debra Wotton[1,2], Pieter Pelser[1] & Dave Kelly[1]
1 School of Biological Sciences, University of Canterbury; 2 Moa's Ark Research.

In September 2021 we were awarded the NZPCN David Given Threatened Plant Scholarship for our project "*Seeking alleles from lost populations of the rare Canterbury endemic, Armstrong's whipcord hebe*" (*Trilepidea* issue 211). *Veronica armstrongii* was first described from populations in the upper Rangitata region which are no longer extant. Armstrong's whipcord hebe is today considered to be the plant equivalent of the takahē, after presumably being extinct in the wild for 50 years before its rediscovery in 1974.

Veronica armstrongii is now Nationally Endangered with fewer than 2000 plants left in the wild.

Since being awarded the scholarship, we have been busy collecting wild plant material from Mt White station and Enys Scientific Reserve (the last two wild populations remaining) to determine which genetic variation (i.e., alleles) is present in these natural populations.

Veronica armstrongii diagnostic characters. Photo: Pieter Pelser.

With wild material secured, the next step for the project is finding some cultivated specimens of *V. armstrongii* to determine if these contain alleles no longer found in wild populations. We can use this information to aid us in making a conservation recommendation to the Department of Conservation on how best to manage *V. armstongii* moving forward. We have been able to locate a handful of cultivated plants so far, but we need a few more to make the project as informative as possible. If you have any observations of cultivated *V. armstrongii* plants, plants of unknown wild origin and of old age preferred, please email Ben Gibbons: blg36@uclive.ac.nz.

Veronica armstrongii has distinctive ringed bark, a whipcord growth form, yellow-green leaves and small white flowers (out of season now). It is most likely to be confused with *V. annulata* from which it differs by the more slender branchlets, slightly mucronate (leaves with a fine, sharp leaf extension), and by the foliage being less tightly overlapping and not so appressed to the stem (NZPCN website, for more details, see https://www.nzpcn.org.nz/flora/species/veronica-armstrongii/).

A healthy, full-grown *Veronica armstrongii* in Enys reserve. Photo: Debra Wotton.

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If you or your organisation is in a position to show your support please contact us now for a sponsorship package at fergusa@landcareresearch.co.nz.

UPCOMING EVENTS

If you have events or news that you would like publicised via this newsletter please email the Network (info@nzpcn.org.nz).

Please note that that the Covid-19 situation may impact on some advertised events. Please check with the appropriate Botanical Society beforehand.

Waikato Botanical Society

Field Trip: Sunday 3 April to Pukerimu Ecological Area, Mamaku Plateau (Combined with Rotorua Botanical Society). **Meet:** Rotorua carpark at 8.15am or end of Key Road (off Mossop Road) at 9.30am. **Grade**: Medium.	**Leader:** Paul Cashmore, email pcashmore@doc.govt.nz, ph. 07 349 7432 (wk) or 027 650 7264.

Rotorua Botanical Society

Field Trip: Sunday 3 April to Pukerimu Ecological Area, Mamaku Plateau (Combined with Waikato Botanical Society). **Meet:** Rotorua carpark at 8.15am or end of Key Road (off Mossop Road) at 9.30am. **Grade**: Medium.	**Leader:** Paul Cashmore, email pcashmore@doc.govt.nz, ph. 07 349 7432 (wk) or 027 650 7264.

Wellington Botanical Society

Field Trip: Saturday 2 and Sunday 3 April to Ocean Beach; Te Rata Road Covenant, South Wairarapa	**Postponed.**
Meeting: Monday 19 April at 7.30pm. **Speaker**: Sarah Herbert, Visiting Scholar, School of Biological Sciences, Victoria University. **Topic**: Is habitat enhancement a viable strategy for lizard conservation in New Zealand? Results of a case study on Wellington's coastal lizard communities.	**Venue:** Via Zoom only.

Nelson Botanical Society

Field Trip/Meeting: Please refer to the website: https://www.nelsonbotanicalsociety.org/trips-meetings, for details.

Canterbury Botanical Society

Meeting: Monday 4 April at 7.30pm. (via Zoom only) **Speaker**: Marley Ford, Ecologist/Lichenologist. **Topic**: The mycorrhizal communities of ramarama (*Lophomyrtus bullata*) (Myrtaceae).

Field Trip: Saturday 9 April to Mt. Alford beech forest –above the treeline.

Botanical Society of Otago

Meeting: Wednesday 13 April at 5.20pm with a botanical quiz instead of a speaker.	**Venue:** Otago Pioneer Women's Association Inc. building, 362 Moray Place, Dunedin Central.
Field Trip: Saturday 30 April to Okia Reserve. **Meet:** Botany Department carpark (464 Great King Street North) at 9.00am or the Okia Reserve carpark (end of Dick Road) at 9.40am.	**Contact:** John Barkla, ph. 027 423 7917.