The New Zealand

Native Orchid Journal

August 2022
No. 166

No 166 August 2022 ISSN 1177-4401

Contents

New Zealand Native Orchid Group Chair: Gael Donaghy, GaelDonaghy@gmail.com.
Secretary & Treasurer: Pam Shearer, pam@insidetrack.co.nz.
Membership secretary: Graeme Jane, gtjane@kinect.co.nz.
Webmaster: Bill Campbell, jccampbell@xtra.co.nz.
Editor: Ian St George, istge@yahoo.co.nz.

New Zealand Native Orchid Journal: Our main aim is to improve knowledge of NZ native orchids, so we allow others to reprint material published here, provided the source and author are acknowledged. The editor and members may not share authors' views. Published quarterly from February—deadline first of the month preceding.

If you don't have 3D specs for viewing this 3D image, please email the editor at istge@yahoo.co.nz

From the Chair: Gael Donaghy

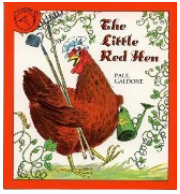
Kia ora tatou

I am sure you all know the story of the Little Red Hen? We need some people to do a variety of jobs in the barnyard (ie NZNOG) some little jobs, other bigger jobs. There is a very small group doing much of the work, and we need back-up people to learn the jobs.

We have learned from experience that having one person working alone leaves the group in jeopardy if something happens and that person cannot continue.

It doesn't matter if you have been a member for a long or a short time, your input would be welcome. Many of you will have skills from other areas of your lives that mean you could contribute in a valuable way.

Some of the skills / contributions / roles needed:



- editing the journal
- critiquing the website
- contributing to the website
- membership list maintenance
- secretary / treasurer

We do have people fulfilling these roles, but a few people have multiple roles, and it would make our Group more sustainable if these jobs were spread more evenly across the Group. You will not be left with the role if you volunteer to help – you will help for a period of time while you learn what is entailed, then you can decide if you want to continue on that basis, or take a more leading role.

Please contact me with any questions about how you might become more involved with the work of NZNOG, so we may "continue to sow and reap" in our field of orchids.

NZNOG supports research into our beloved orchids through summer research grants to students. In this issue there is a fascinating article on a rare NZ orchid (there were only 195 plants in the wild in 2011) – *Corybas carsei*. The writer, Carlos Lehenbach, (the lead researcher) is a member of NZNOG. The article shows how challenging it is to uncover the details needed to grow native orchids in captivity, and to determine suitable habitats for transplanting plants back into the wild. There is a good article on the result of controlled burning resulting in a good increase in plant numbers at https://blog.doc.govt.nz/ – put *Corybas carsei* in the search bar and you will find the article that references this (and the work that Carlos and his team are doing).

By the time this journal reaches you the "orchid spring" will be well underway. For me it really starts in late autumn (normal folks autumn that is) with *Acianthus* and the little *Pterostylis* species, *P. alobula* and *P. trullifolia,* and progresses on to *Bulbophyllum tuberculatum* and the kauri orchid *P. brumalis* (both in the far north mid-May) and the latter on the Coromandel Peninsula in the first week of June. Or perhaps it starts in April with the tiny Genoplesium flowers? Much to look forward to in the coming months.

Happy orchid hunting everyone!

2022 AGM and Field Days: Friday 30 Sept – Sunday 2 Oct at Waihi Beach in the sunny (hopefully!) Bay of Plenty.

We will meet from 6pm on Fri night 30 Sept at Waihi Beach RSA. I'm negotiating to use club rooms there. We can eat there for a reasonable price.

Everybody to book their own accommodation – the only group accommodation places available are Book-a-Bach houses, and they cost mega dollars (Waihi Beach is a playground for Aucklanders). There are plenty of camping ground cabins with three camping grounds in the town, and several motels.

We will have two days in the field on Sat 1 Oct and Sun 2 Oct. The orchid season here seems to be very good this year with lots of orchids where there are sometimes only smatterings. Timing is about average, so we should see plenty of *Corybas, Pterostylis, Cyrtostylis*. We will be too early for *Thelymitra*.

The AGM will be held at Waihi Beach RSA at 6pm on Sat 1 Oct, followed by a meal there.

PLEASE DO LET ME KNOW IF YOU ARE COMING SO I CAN PLAN FOR THE AGM, AND TO HAVE APPROXIMATE NUMBERS FOR THE RSA. SO FAR I HAVE AN INDICATION FROM ONLY 7 PEOPLE THAT THEY WILL ATTEND, AND THIS IS NOT A QUORUM FOR THE AGM.

2022 Tag-Along Tour to NW Nelson. Arrive in Nelson Mon 31 Oct, first day in the field 1 Nov, last day in the field Mon 7 Nov.

We have 12 registrations of interest for this NZNOG event. I will send out an email to these people with the details as soon as I have arranged them.

– Gael Donaghy (GaelDonaghy@gmail.com)

Original papers

Research supporting the conservation of the Nationally Critical swamp helmet orchid (*Corybas carsei*).

By Carlos A. Lehnebach, Museum of New Zealand Te Papa Tongarewa, E-mail: CarlosL@tepapa.govt.nz

This paper is reprinted from Trilipedia No. 217, April 2022 with the permission of the author and editor.
See also https://mailchi.mp/tepapa.govt.nz/orchid?e=1d6eb84dee—*Ed.*

Conservation of endangered plant species normally includes their propagation from cuttings, seeds, or a combination of both. The resulting plants are then used to reinforce small populations in the wild, reintroduce species to areas where they are now extinct, and establish *ex situ* collections at botanical gardens to serve as back-ups and research material. Propagation, followed by widespread cultivation, has successfully prevented the extinction of species such as *Clianthus puniceus* (kākābeak), *Muehlenbeckia astonii* (shrubby tororaro) and *Tecomanthe speciosa* (Tecomanthe). When it comes to orchids, however, conservation of threatened species becomes a long, complex, and challenging endeavour.

Orchids are well-known for their striking and unusual flowers, and their complex, sometimes highly specialised, pollinations systems. Orchids, however, have another very distinctive but hidden feature that complicates their propagation. All terrestrial orchids host a fungal associate inside their roots. The fungus helps the orchid to gain access to water and mineral nutrients from the soil, while the fungus receives carbon from the plant. This partnership starts very early in the life to the orchid. In fact, if the orchid seed is not "infected" by the right fungal species, it will not germinate. Unlike many other plants, orchid seeds lack resources to feed the embryo during germination, hence their reliance on the fungus. This mycorrhizal (*fungus-root*) interaction can be species-specific or generalist, with some orchids known to swap fungal partners along their life span. Understanding how these above- and below-ground interactions work, and identifying the organisms they involve (*i.e.* pollinator and mycorrhizal fungus) are fundamental for a conservation program to succeed.

In the last two years, I have been researching the swamp helmet orchid (*Corybas carsei*; **Figure 1**), in collaboration with a team of postgraduate students I co-supervised with scientists from Massey University, Ōtari Native Botanic Garden and Victoria University of Wellington. The swamp helmet orchid is one of New Zealand's most threatened orchids and is found only in the Whangamarino Wetland (Waikato) where about 400 individual plants grow. These plants are distributed across an area that is no larger than that of three carpark spaces and, if you were to put all the plants together side by side, they would easily fit in your kitchen sink!

Besides habitat destruction (drainage of wetlands), over-collection by botanists has been put forward as one of the causes for its decline. However, there are only a handful of historical herbarium specimens across New Zealand herbaria. These collections suggest this tiny orchid has always been uncommon and they confirm it once grew in wetlands in Northland.

Figure 1: Lizzie Sharp (Biodiversity Ranger, DoC) and Tingyu Qin (MSc student at Massey University) looking for plants of *Corybas carsei* in flower to hand-pollinate.

Soon after the discovery of the Whangamarino population in the 1980s the Department of Conservation initiated a research and monitoring program to inform management actions to maintain this last population and its habitat. Over the last decades, the site has been under a regime of controlled low-intensity burns to prevent competition from surrounding plants and annual surveying of the number of plants, flowering and fruiting events, and damage by browsing. Now that the population has reached over 400 plants, research is needed to understand how to propagate this orchid and establish new populations at other suitable sites. To achieve these goals understanding above- and below-ground partnerships and finding suitable seed germination methods is critical. Also of great importance is measuring the genetic diversity within this single population as this impacts reproductive fitness and adaptability to environmental changes.

Pollination and genetic diversity of the swamp helmet orchid

These two topics were investigated by MSc student Tingyu Qin (Tina) from Massey University (supervisors Dr Alastair Robertson, Dr Vaughan Symonds and Dr Jennifer Tate). Tina's research included a number of pollination experiments used to determine whether this orchid is self-incompatible (fruits are formed only if pollen from a genetically different plant fertilises the flower) and pollinator-dependant (the pollen can only reach the stigma if aided by an external agent). Hand-pollination experiments on *C. carsei* required a steady hand and precision work as the flower hardly reaches a centimetre long and the pollinia (a mass of pollen grains typical of orchids) is only a few millimetres (**Figure 2**). As noted in past surveys, only a few

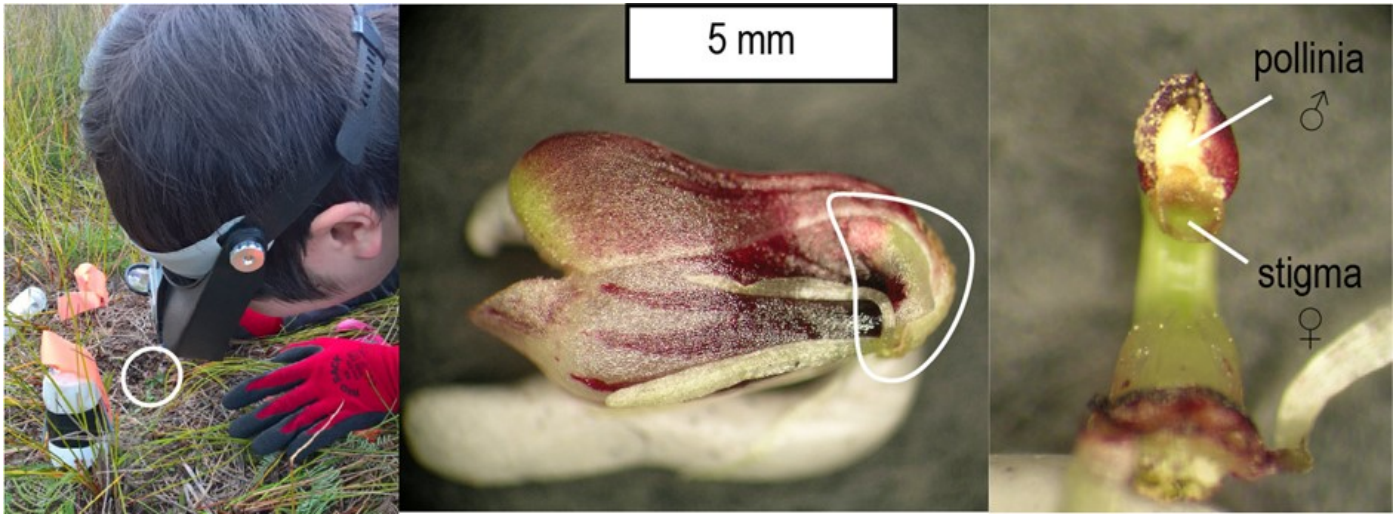


Figure 2: Tina setting up a pollination experiment (two plants encircled in white) (left), close up view of the flower (position of reproductive structures encircled in white) (center) and column with male and female structures (right).

plants flower each year and we had only about 30 flowers to work on between 2020 and 2021. Fortunately, some of our hand-pollination treatments were successful. Besides confirming *Corybas carsei* is a self-compatible and pollinator dependant species, Tina was able to obtain seeds for germination experiments (more about these below).

Based on previous research on *Corybas*, it is very likely that fungus gnats or other small Diptera are involved in the pollination of the swamp helmet orchid. *Corybas* are nectarless orchids and therefore do not reward their pollinators for their service. These nectarless orchids rely on deception to attract pollinators and consequently their visitation is very low. It is not surprising then that the pollinator of the swamp helmet orchid has remained a mystery. After 10 hours of filming and 1 hr of direct observations, spread across three visits, we did not observe any insects entering the flowers but only two flies landing nearby. Identifying these insects from the footage was impossible, as they were too small. Observations across the entire flowering period are likely to reveal what pollinates this tiny orchid. To do this, however, a system with cameras connected to a long-lasting power source is needed because daily visits to the site will damage the vegetation by trampling and cause compression of the peat.

To measure genetic diversity Tina removed the leaf of 41 plants, some of them were the same plants used in mycorrhizal studies (see below). Later in the lab she extracted DNA from them and used 20 genetic markers that she developed exclusively for *Corybas carsei* to investigate how much genetic diversity exist in the population and whether clonal propagation occurs at the site. Tina has submitted her thesis in early March 2022 and results from her research will be published soon. At this stage, I can only say results are not very favourable for *C. carsei*. This is not unexpected considering the small size of the population.

Identifying fungal partners and the effect of fire on the fungal community

These topics were explored by MSc student Jennifer Alderton-Moss at Victoria University of Wellington (supervisors Dr Andrew Munkacsi and Karin van der Walt). Identification of fungal associates involved digging out soil and vegetation from around robust plants and then cutting off a section of the plant called the root collar. It is here that the mycorrhizal coils (or pelotons) are normally more abundant. Tubers were left unharmed and reburied so the plant can regenerate. Once in the lab, Jennifer teased out fungal pelotons from the root collar, selected and cleaned a few, and then grew them on plates with different culture media (**Figure 3**). The aim was to grow the mycorrhizal fungus and use it for taxonomic identification (using DNA sequences) and germination experiments.

Identification of fungal partners by culture, however, has its downside. Only culturable species will grow. To avoid this bias, Jennifer also took a meta-genomics approach. This methodology allows identification of the entire fungal community associated with the swamp helmet orchid. She also used this approach to characterise the fungal community in the soil at the orchid site. Her metagenomics study will help us to identify whether orchid fungal partners are present at the site and understand how prescribed burns affect, or have affected, the

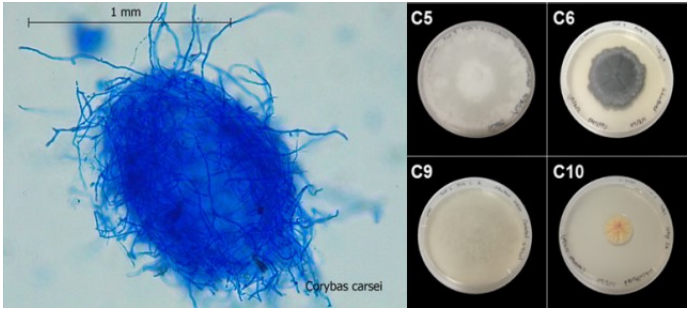


Figure 3: Peloton (stained blue for contrast purposes) (left) and Petri dishes with culture of four of the 11 fungus isolated from *Corybas carsei* (right, photo by J. Alderton-Moss).

fungal community over time. We are very thankful to Dr Lara Shepherd (Te Papa's geneticist) for helping us with this technique. Jennifer is currently writing up her thesis and a summary of her results will be shared in a forthcoming issue of *Trilepidea*.

Germination experiments

In November 2021 we collected the fruits formed by eight flowers that were hand-pollinated in September. We have used these seeds to trial different germination methods at the Lions Plant Conservation Lab (Ōtari Native Botanic Garden - Wellington). Our goal is to find a protocol suitable to germinate the seeds with the help of its mycorrhizal partner (symbiotic germination) and without it (asymbiotic germination). If seed and fungus meet and the partnership is formed, the seed coat will break apart and the first roots (rhizoids) will develop as shown in **Figure 4**. This is a long and slow process but, if successful, it will result in seedlings that we can be later reintroduced to sites where the orchid was previously found or planted in other suitable

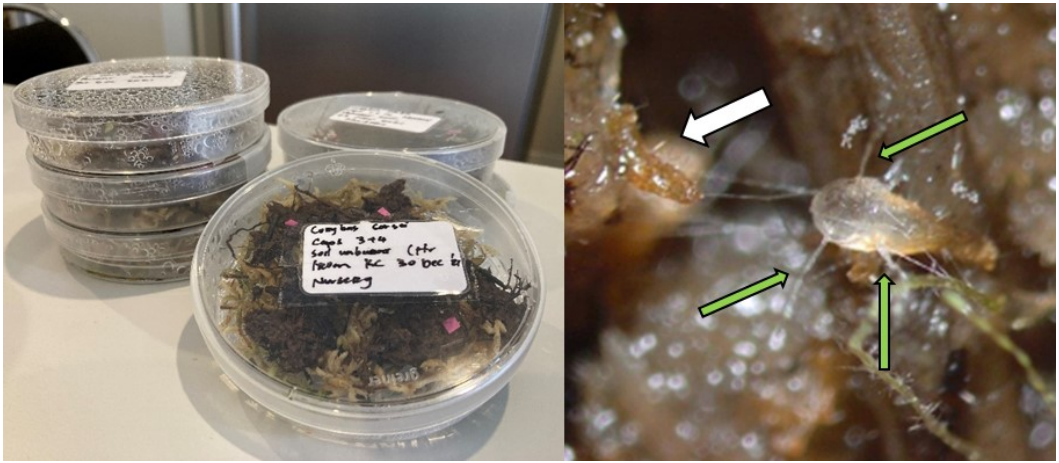


Figure 4: Germination experiments of *Corybas carsei* seeds at the Lions Plant Conservation Lab (Ōtari Native Botanic Garden – Wellington) (left) and close up view of seed germinating and forming rhizoids after 12 weeks (right, photo by K. van der Walt). White arrow points to ungerminated seed; green arrows point to rhizoids.

sites. Karin van der Walt (Conservation & Science Advisor – Ōtari) is also investigating how long seeds can remain viable and methods to keep them in long-term storage while maintaining their viability. Again, there will be more about this in future issues of *Trilepidea*.

Future directions

Although some aspects of this project are still in progress, it is already clear that a few areas will require further research. For instance, more research on pollination is needed. We have not been able to identify the pollinator nor the pollination strategy used by this orchid. Once the pollinator of *C. carsei* is identified research about the pollinator's biology, local abundance and distribution across New Zealand will be required. The latter is important because it will determine, along with the distribution of the fungal partner, the places where *C. carsei* can be translocated or re-introduced. Understanding the effect of fire on the life cycle and abundance of the pollinator is also important. Second, research on seed biology is urgently needed as this will provide guidelines for collection and long-term storage (i.e. seed baking). If seed banking is to be implemented, then methods for long-term storage of the orchid mycorrhizal partner will also be necessary.

As mentioned earlier, orchid conservation can be a long, complex, and challenging endeavour. I should also add fascinating as research in this field could not help but reveal the interconnectedness and balance that exist between the different organisms in an ecosystem.

Acknowledgements

We thank Lizzie Sharp, Kerry Jones and other DOC staff for their assistance with this project. This research was funded as part of DOC's Te Mana o te Taiao Threatened Species Research Workstream (contract number 2020-11: DOC-6230989).

We need your help! your observations can help improve our understanding of the New Zealand white sun orchid (*Thelymitra longifolia*).

Hayden Jones (Massey University – Palmerston North) & Carlos Lehnebach (Museum of New Zealand Te Papa Tongarewa - Wellington)

Introduction

Thelymitra longifolia, also known as the white sun orchid or māikuku, is a variable and widespread species of sun orchid native to New Zealand (NZ). Since its original description, many new species and tag names have been created to reflect such variation however these have all ultimately ended up lumped back under the epithet *longifolia,* which refers to the single long leaf on each plant. Today the Checklist of the New Zealand Flora by Schönberger *et al*. (2021) lists seven species names and two varieties as synonyms of *T. longifolia* (Table 1).

Table 1: List of names synonymised with *Thelymitra longifolia* according to the Checklist of the New Zealand Flora and tag names.

Name	Tag name
Serapias regularis Banks & Sol. ex G.Forst.	*Thelymitra* Whakapapa
Thelymitra alba Colenso	*Thelymitra* Fusca
Thelymitra angustifolia Hook.f.	*Thelymitra* Tholinigra
Thelymitra forsteri Sw.	*Thelymitra* Mangawhai
Thelymitra grandis F.Muel. ex Benth.	
Thelymitra longifolia var. *alba* (Colenso) Cheeseman	
Thelymitra longifolia var. *forsteri* (Sw.) Hatch	
Thelymitra megacalyptra R.D.Fitzg.	
Thelymitra nemoralis Colenso	
Thelymitra purpureo-fusca Colenso	

Despite some obvious differences in the shape and size of plants and their flowers (**Fig. 1**), and the previous attempts to split up *T. longifolia* into multiple species or varieties genetic studies, conducted by the first author as part of a summer research scholarship at Te Papa and Massey University, showed that little to no genetic difference exists among forms. As part of the same project, a number of statistical analyses were conducted on measurements from specimens stored at Te Papa's and Massey University's herbaria. Although these specimens were useful for our preliminary analyses, our dataset was limited in geographical representation and, because of the drying process, some floral structures were difficult to observe.

To overcome these limitations we are calling upon your help to build a larger and more comprehensive dataset. This would enable us to further investigate *T. longifolia* and properly categorise the variability this species exhibits in its fresh state. Understanding what is behind this variability is important from a conservation point of view. For instance, some of the forms associated with *T. longifolia* are uncommon, restricted to only a few sites in the country, and already of conservation concern. Understanding their uniqueness can help to focus research efforts and resources on the conservation of these potentially new species that could otherwise go extinct before they are properly recognised. Resolving the taxonomic status of these orchids, and other native orchids,

Figure 1: Diversity in flower colour and shape commonly observed in the white sun orchid (*Thelymitra longifolia*) across New Zealand. S: sepals; P: petals, PAL: post anther lobe.

is the main goal of a larger project led by the second author and funded by the Australia Pacific Science Foundation.

Objectives

The main objective of our project is to map and categorise the variation in morphology that we see within *T. longifolia*. To achieve this, we plan the following:

1. To use citizen scientists and crowd sourcing to build a comprehensive morphological dataset of *T. longifolia* that is broad in both the number of individual plants studied and in geographic scope.
2. To analyse this dataset using manual and statistical methods to identify and characterise potential morphological groups within *T. longifolia*.
3. To identify the distribution of these groups within NZ and detect whether they are restricted to specific geographic regions or widespread.
4. To communicate our results to a wider audience by publishing our findings in the *NZ Native Orchid Journal*, social media, and suitable peer-reviewed journals.

Data collection

To aid in data collection, we will make resources available to people who are interested. This will include but is not limited to: Data collection sheets, tutorials, and guides on data collection.

Based on previous analysis of morphological data, mostly from herbarium specimens, we have selected the following morphological characters as being the most important to distinguish among forms:

- Length and width of the stem bract and floral bract (mm) (**Fig. 2**)
- Leaf width (mm) (**Fig. 2**)
- Stem width (mm) (**Fig. 2**)
- Column length and width (mm) (**Fig. 3**)

The characters below are also of interest; however, their value remains untested:

- Number of flowers
- Presence or absence of scent
- Features of the post anther lobe (PAL) (**Fig. 4**)

In addition to taking these measurements, participants would also need to take photos of the entire plant and measured parts. A photographic record is necessary; as it will give us something to refer to if we do identify trends or an odd data point within the dataset that needs double checking. Having a photograph of the plants you study is like having a voucher specimen to back up your observations.

Once measurements and photos have been collected, data could be submitted directly to us. Your photos will be collected through our supporting *iNaturalist* project (https://inaturalist.nz/projects/thelymitra-longifolia-survey). More information on how to submit

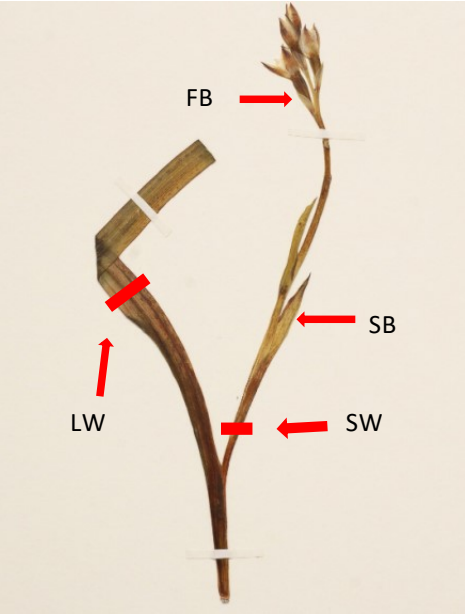


Figure 2: Herbarium specimen of the white sun orchid (*Thelymitra longifolia*) indicating structures to be measured. LW: leaf width; SW: stem width; SB: stem bract; FB: floral bract. Length and width are measured always at the longest/widest point.

Figure 3: Side (A) and front view (B) of the column of the white sun orchid (*Thelymitra longifolia*). Bars in white indicate the section of the column to be measured for height (A) and width (B).

Lobed type		Arched type	
L1 	Two distinct lobes with rounded ends. Border between the top of the PAL and column poorly defined.	**A1** 	PAL undivided and arched rather than split. Column colour variable. Border can be well defined.
L2 	Similar to L1 although PAL split almost entirely and border better defined. Lobe ends are pointy.	**A2** 	Similar to A1 but less arched and margin somewhat rough. Border very well defined.
L3 	Typically quite small. Lobes less defined but drawn to a point at the end. Border flat and well defined	**A3** 	Similar to A2 but PAL margin stepped and symmetrical. Border flat and well defined. (Pseudo-lobed)

Figure 4: Illustrations and descriptions of the variation in shape seen in the post anther lobe (PAL) of *Thelymitra longifolia*. These have been broadly grouped into Lobed and Arched types. In this figure, border (B) refers to the point at which the top of the PAL meets the column (C).

your observations along with other supporting resources will be made available soon by social media or by email.

If you are keen to participate, please sign up either using this link (https://forms.gle/3JAxKDjMDDJJh1Qr9), scanning the adjacent QR code, or emailing us to thelymitra.survey@gmail.com

Sign-up sheet

Thanks!

References

Schönberger I, Wilton A, Boardman Kate, Breitwieser I, de Lange P, Pauw B, Ford K, Gibb E, Glenny D, Greer P, Heenan P, Maule HG, Novis P, Prebble J, Smissen R, Tawiri K. (2021). Checklist of the New Zealand Flora – Seed Plants. DOI: 10.26065/ax7t-8y85.

The inbox

◄ *iNaturalist:* "rempson" photographed *Genoplesium nudum* near Wellington in midmarch.

"peterzika" photographed *Pterostylis banksii* on the Chathams, its synsepalum leaning more forward than usual: *iNaturalist*. ►

Kirsty Williams photographed *Corybas cheesemanii* in midmarch: *Facebook.* ▼

A *Corybas* aff. *trilobus* photographed by Pat Enright at Tinui, Wairarapa, 29 September 2018

▼▼ *Prasophyllum morganii,* the Australian mignonette leek orchid, has been rediscovered during post-wildfire surveys, after having been thought extinct for 90 years. Photos by Tobias Hayashi. *New Scientist* 13 April 2022. https://www.newscientist.com/article/2316113-rediscovered-orchid-was-presumed-extinct-for-almost-a-century/

"Discovery of rare orchid halts $10m funeral home development in NSW." *Cryptostylis hunterinia* ► has put the kibosh on the development of a crematorium on the South Coast. https://www.abc.net.au/news/2022-03-31/discovery-of-rare-orchid-stymies-10m-crematorium-development/100954222 .

"Albury artist finds unique elbow orchid after 11 years of searching."▼ https://www.abc.net.au/news/2022-01-19/albury-artist-finds-unique-orchid-after-11-years-of-searching/100766400

◄In Australia►

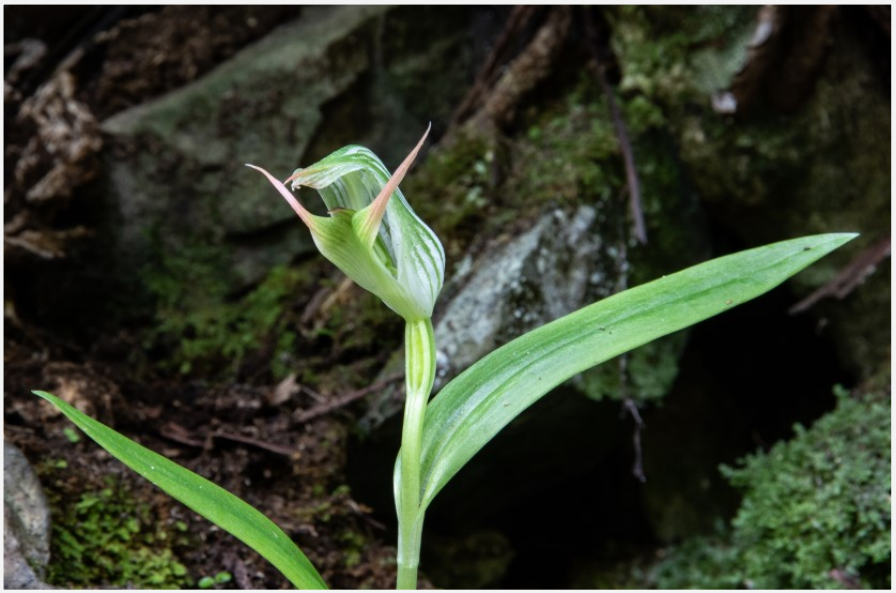
◄ *Rhizanthella speciosa.* The seeds of the rare Australian orchid genus are like ball bearings and may be spread by bandicoots, so re-introduction of that animal in areas where it (the bandicoot) has become extinct may encourage the orchid. Photo by Mark Clements. See https://phys.org/news/2020-12-life-mars-underground-orchid-australia.html for the full story.

◄ "Secret crop of near-extinct Oaklands donkey orchids discovered in the Riverina." https://www.abc.net.au/news/2021-12-21/secret-crop-of-near-extinct-native-orchid-discovered/100715998

A big winter flowering greenhood

Rebecca Bowater emailed, “This plant was flowering in the Brook sanctuary, the same place as last winter. They were taken on 6th and 13th May 2022.”

I sent the images to Mark Moorhouse who commented, “This is the entity I alluded to recently in my article in the journal.



“It is very much a look-alike half way house species that is quite common in the Tasman Bay coastal region. It has the shorter dorsal sepal of *Pterostylis australis* [which is montane to subalpine at Nelson latitudes] but the narrower leaves of *P. banksii* [which is present but scarce in Nelson sites] and the lax attitude of the foliage of *P. auriculata* [but narrower], so none of which it mimics perfectly…. This flowering time is near its earliest recorded.”

The Type locality

Prasophyllum pauciflorum Col. in the hills west of Napier

In J61 we asked, "William Colenso's *Prasophyllum pauciflorum* – is it different from *P. colensoi*?" but received no answer. Oh well, I suppose it was a rhetorical question. In 1883 William Colenso described it,

1. *P. pauciflorum*, sp. nov.

Slender, erect; stem 7 inches high. Leaf-sheath 3 inches longer than spike, narrow, tip thickened, acute, blackish. Spike short, few-flowered (7); flowers distant, pedicelled, pedicels very short; bracts small, truncate with sinuous margin, or notched. Perianth rather small, sub ¼ inch, spreading, light yellowish-green; dorsal sepal broadly ovate, acute; lateral sepals united from middle downwards, acute slightly acuminate, entire not notched; petals linear, obtuse, 3-nerved, the lateral nerves only reaching half-way; lip small, broadly orbicular-ovate; lamina thin, 3-veined, the 2 outer veins branched, margin entire but slightly sinuate; claw very short; tip recurved with a small yellow globular lump adnate at the bend; column very short and thickish, with a broad membranous rounded hood at back above anther, margin of hood entire, and 4 minute erect linear lateral staminodia; ovary short, turgid.

Hab. Hills, country west of Napier; 1883: *W.C.*

Obs. I have obtained only one specimen of this plant; and, though early satisfied of its being very distinct from the three published New Zealand species, and also from all the Australian and Tasmanian ones described by Bentham in "Flora Australiensis," I wished to get more specimens before describing it, as there may be some variation in size and number of flowers; not, however, being successful, I now make it known.

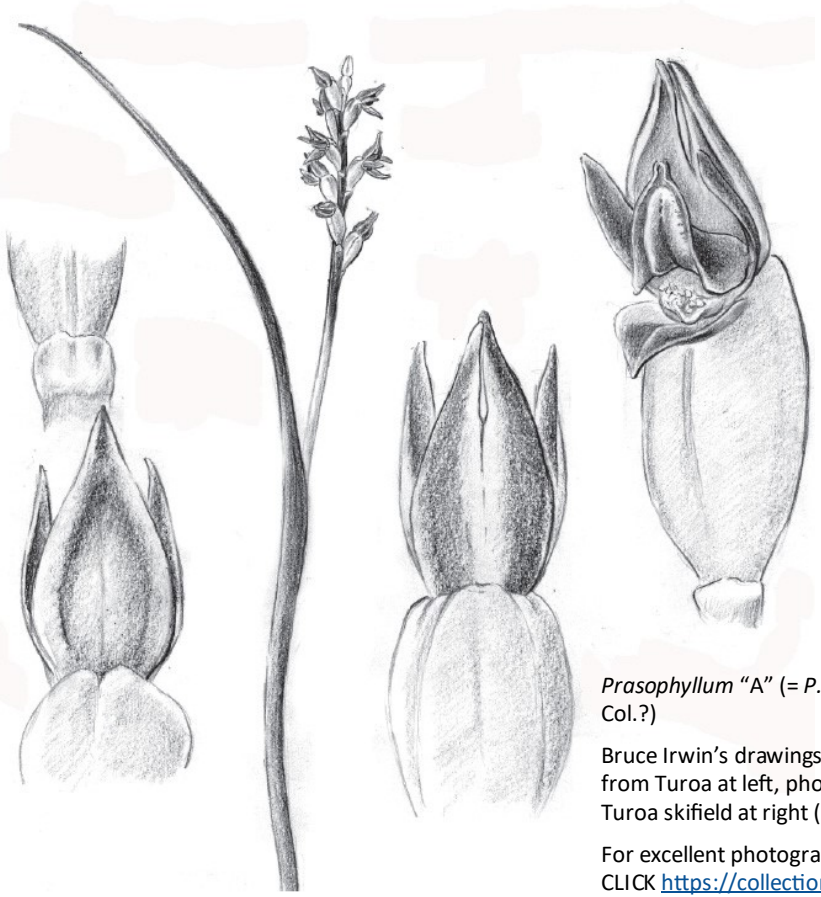
The type specimen has, alas, been lost, but the protologue seems to describe the flowers Bruce Irwin designated *Prasophyllum* "A", the small yellow flowered alpine plant illustrated overleaf (Turoa, 2003). There are no isotypes, paratype, nor illustration in Colenso's paper and no other specimens annotated by Colenso: a neotype agreeing with the protologue would have to be chosen if the name were resurrected.

Colenso in 1887

Many years earlier Colenso had sent specimens to Kew from near his mission station at Waitangi east of Napier and Hooker had named them *Prasophyllum colensoi*. Brian Molloy designated them the "lectotype". They have flowers with long sepals, the laterals not united.

Further Colenso specimens at Kew are similar and Brian Molloy designated them lectoparatypes of *P. colensoi.* They all appear to match the flowers Bruce Irwin designated *Prasophyllum* "B".

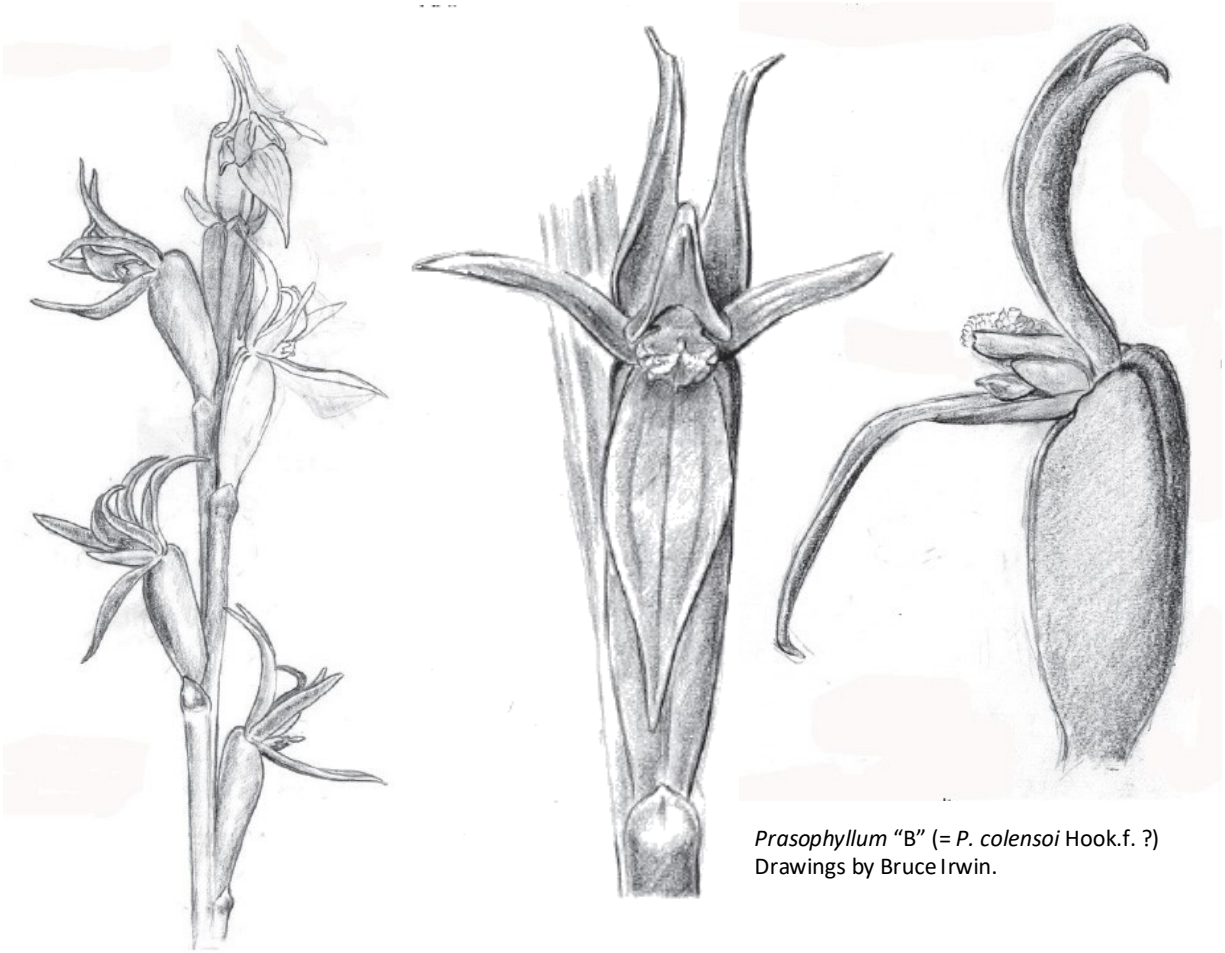
Clearly Colenso regarded the small yellow-flowered plants he had collected in 1883 from hills in the country west of Napier as different. His diaries for that period are lost, so there is no record of where he may have collected the plant. But if indeed it was the same as the Turoa plant, it might be montane, ie in the Kaweka.



Prasophyllum "A" (= *P. pauciflorum* Col.?)

Bruce Irwin's drawings of a plant from Turoa at left, photographs from Turoa skifield at right (Ed.).

For excellent photographs CTRL-CLICK https://collections.tepapa.govt.nz/object/1928601



Prasophyllum "B" (= *P. colensoi* Hook.f. ?)
Drawings by Bruce Irwin.

◄ Colenso's collection no. 912 at Kew, selected as the lectotype of *Prasophyllum colensoi* by Brian Molloy in 1981. Colenso wrote, "a new (?) Orchis – grassy spots, near Station – of which I have plenty for you: stalks dark red, & brown, – flowers scented – pl. 10–14 in."

Detail ▼

Prasophyllum colensoi,
Queenstown Hill,
16 December 2017 ▼

We looked in the Kaweka: at Blowhard Bush and the road to the Comet hut on 5 December 2021, guided by advice from Mike Lusk. We found a range of *Prasophylla,* including two with yellow flowers, one of which was a good match for Colenso's description with partly joined lateral sepals; the other had free lateral sepals but looked otherwise identical.

A plant with partly connate (joined) lateral sepals

A plant with free (not joined) lateral sepals

Queenstown

Te Anau

Queenstown

Hawke's Bay (Mike Lusk)

What have I learnt? photographs are poor at distinguishing connate from merely overlapping lateral sepals; the yellow flowered alpine taxon may have connate or free lateral sepals: Colenso's one plant had connate, mine had both: this, I suspect, is simply not a very useful distinguishing feature.

The editor's 2022 list

This is a personal view of the New Zealand orchids and does not necessarily represent the opinions of the Group or its other members

Acianthus R.Br. Prodr. Fl. Nov. Holland. : 321 (1810).

Acianthus sinclairii Hook.f. Fl. Nov.-Zel. 1: 245 (1853).
Acianthus fornicatus var. sinclairii Hatch. Trans. & Proc. Roy. Soc. New Zealand 75: 369 (1945).

Adenochilus Hook.f. Fl Nov.-Zel. 1: 246, t.56 (1853)

Adenochilus gracilis Hook. f. Fl. Nov.-Zel. 1: 246, t.56 (1853).

Aporostylis Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 60 (1946)

Aporostylis bifolia (Hook. f.) Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 60 (1946).
Caladenia bifolia Hook.f. Fl. Nov.-Zel. 1: 247 (1853).
Chiloglottis traversii F.Muell. Veg. Chath. Is. 51 (1864).
Caladenia macrophylla Colenso. Trans. & Proc. New Zealand Inst. 27: 396 (1895).
Chiloglottis bifolia (Hook.f.) Schltr. Engl. Bot. Jahrb. 45: 383 (1911).

Bulbophyllum Thouars. Hist. Orchid., Tabl. Esp. 3. (1822).

Bulbophyllum pygmaeum (Sm.) Lindl. Gen. Sp. Orchid. Pl. 58 (1830).
Dendrobium pygmaeum Sm. in Rees. Cycl. (Rees) 11: n.27 (1808).
Bolbophyllum ichthyostomum Colenso. Trans. & Proc. New Zealand Inst. 26: 319 (1894).
Ichthyostomum pygmaeum (Sm.) D.L.Jones, M.A.Clem. & Molloy. Orchadian 13: 499 (2002).

Bulbophyllum tuberculatum Colenso. Trans. & Proc. New Zealand Inst. 16: 336 (1884).
Addopetalum tuberculatum (Colenso) D.L.Jones, M.A.Clem. & Molloy. Orchadian 13: 498 (2002).
Bulbophyllum exiguum as meant by Buchanan. Trans. & Proc. New Zealand Inst. 16: 397 (1884), is not that of F. Muell. (1861).

Caladenia R.Br. (1810). Prodr. Fl. Nov. Holland. 323 (1810).

Caladenia alata R.Br. Prodr. Fl. Nov. Holland.: 324 (1810).
Caladenia minor var. exigua Cheeseman. Man. New Zealand Fl. 688 (1906).
Caladenia exigua Cheeseman. Trans. & Proc. New Zealand Inst. 45: 96 (1913).
Caladenia carnea var. alata (R.Br.) Domin. Bibliotheca Botanica Heft 85: 549 (1915).
Caladenia carnea var. exigua (Cheeseman) Rupp. Proc. Linn. Soc. New South Wales 69: 75 (1944).
Caladenia holmesii Rupp. Vict. Naturalist 70: 179 (1954).
Caladenia catenata var. exigua (Cheeseman) W.M.Curtis. Stud. Fl. Tasman., 4A: 133 (1979).
Petalochilus alatus (R.Br.) D.L.Jones & M.A.Clem. Orchadian 13: 406 (2001).

Caladenia atradenia D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 221 (1997).
Stegostyla atradenia (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones & M.A.Clem. Orchadian 13: 414 (2001).
Caladenia iridescens as meant by Hatch. NZNOG Newsletter 16: 1 (1985), is not that of R.S.Rogers (1920).
Caladenia carnea var. minor forma calliniger Hatch. Trans. Roy. Soc. New Zealand, Bot. 2: 187 (1963).

Caladenia bartlettii (Hatch) D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 227 (1997).
Caladenia carnea var. bartlettii Hatch. Trans. & Proc. Roy. Soc. New Zealand 77: 402 (1949).
Petalochilus bartlettii (Hatch) D.L.Jones & M.A.Clem. Orchadian 13: 406 (2001).
The name Caladenia bartlettii Hatch has mistakenly been applied to C. minor for some years, but clearly Hatch described C. "nitidoa rosea", which had been described informally in Matthews's Ms. It appears to include C. "speckles".

Caladenia chlorostyla D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 223 fl (1997).
Petalochilus chlorostylus (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones & M.A.Clem. Orchadian 13: 406 (2001).
Caladenia catenata as meant by Cooper. Field guide to the NZ native orchids 17 (1984), referred to an aggregate of spp., several now separated, so is not that of Druce (1917).
Caladenia alba is a name used for an Australian plant once confused with NZ taxa.
Petalochilus calyciformis R.S.Rogers. J. Bot. 62: 66 (1924) and Petalochilus saccatus R.S.Rogers. J. Bot. 62: 66, t. 571, 4–7 (1924) are regarded as aberrant floral mutations, probably of this species.
A number of similar forms have been tagged C. "redstem", C. "greenstem", etc.

Caladenia lyallii Hook.f. Fl. Nov.-Zel. 1: 247 (1853).
Stegostyla lyallii (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13: 413 (2001).
There may be a number of taxa included in C. lyallii. Some appear close to the Australian Caladenia alpina.

Caladenia minor Hook.f. Fl. Nov.-Zel. 1: 247, t.56b (1853).
Caladenia carnea var. minor Hatch. Trans. & Proc. Roy. Soc. New Zealand 77: 401 (1949).
Caladenia catenata var. minor W.M.Curtis. Stud. Fl. Tasman., 4A: 106 (1979).
Petalochilus minor (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13: 410 (2001).
Caladenia aff. pusilla probably = C. minor, so the NZ plants may differ from C. pusilla W.M.Curtis. Stud. Fl. Tasman., 4A: 133 (1980).
Caladenia minor is the plant whose flowers have rounded tepals, for years mistakenly identified as C. bartlettii.

Caladenia nothofageti D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 226, f.1 (1997).
Petalochilus nothofageti (D.L.Jones, Molloy & M.A.Clem.) Jones & M.A.Clem. Orchadian 13: 410 (2001).

Caladenia variegata Colenso. Trans. & Proc. New Zealand Inst. 17: 248 (1885).
Petalochilus variegatus (Colenso) D.L.Jones & M.A.Clem. Orchadian 13: 410 (2001).
Some have a clear two rows of calli and are close to C. bartlettii, others have extra calli scattered to either side of the two rows.

Caleana R.Br. Prodr. Fl. Nov. Holland. : 329 (1810).

Caleana minor R.Br. Prodr. Fl. Nov. Holland.: 329 (1810).
Paracaleana minor (R.Br.) Blaxell. Contr. New South Wales Natl. Herb. 4: 280 (1972).
Caleya minor (R.Br.) Sweet. Hort. Brit. (Sweet) 385 (1826).
Caleya sullivanii F.Muell. Australas. Chem. Druggist 4: 44 (1882).
Caleana nublingii Nicholls. Vict. Naturalist 48: 15 (1931).
Paracaleana sullivanii (F.Muell.) Blaxell. Contr. New South Wales Natl. Herb. 4:280 (1972).
Sullivania minor (R.Br.) D.L.Jones & M.A.Clem. Orchadian 15: 36 (2005).

Calochilus R.Br. Prodr. Fl. Nov. Holland. : 320 (1810)

Calochilus herbaceus Lindl. Gen. & Sp. Orch. Plant.: 45 (1840).
Calochilus campestris as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 77: 248 (1949), is not that of R.Br. (1810).

Calochilus paludosus R.Br. Prodr. Fl. Nov. Holland.: 320 (1810).

Calochilus robertsonii Benth. Fl. Austral. 6: 315 (1873).
Calochilus imberbis R.S. Rogers Trans. & Proc. R. Soc. South Australia 51: 4 (1927).
Calochilus platychilus D.L. Jones. Orchadian 15(12): 547 (2008).
Calochilus campestris as meant by Fitzg. Austral. Orchids 1: t.6 (1878), is not that of R.Br. (1810).
Calochilus campestris as meant by Cheeseman. Man. New Zealand Fl. 686 (1906), is not that of R.Br. (1810).

Chiloglottis R.Br. Prodr. Fl. Nov. Holland.: 322 (1810).

Chiloglottis cornuta Hook.f. Fl. Antarct.: 69 (1844).
Caladenia cornuta (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Simpliglottis cornuta (Hook.f.) Szlach. Polish Bot. J. 46: 13 (2001).

Chiloglottis formicifera Fitzg. Austral. Orchids 1: (1877).
Myrmechila formicifera (Fitzg.) D.L.Jones & M.A.Clem. Orchadian 15: 37 (2005).
Only one NZ record of this vagrant over a century ago.

Chiloglottis trapeziformis Fitzg. Austral. Orchid 1: (1877).
Myrmechila trapeziformis (Fitzg.) D.L.Jones & M.A.Clem. Orchadian 15: 37 (2005).

Chiloglottis valida D.L.Jones. Austral. Orchid Res. 2: 43–44, t. 54, plate p. 92 (1991).
Simpliglottis valida (D.L.Jones) Szlach. Polish Bot. J. 46: 14 (2001).
Chiloglottis gunnii as meant by Molloy. Native orchids of NZ: 9 (1983), is not that of Lindl. (1840).

Corybas Salisb. Parad. Lond. t.83 (1807).

Corybas acuminatus M.A.Clem. & Hatch. New Zealand J. Bot. 23: 491, f.2 (1985).
Nematoceras acuminatum (M.A.Clem. & Hatch) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Corysanthes acuminata (M.A.Clem. & Hatch) Szlach. Richardiana 3: 97 (2003).
Corybas rivularis as meant by Cheeseman. Man. New Zealand Fl. 697 (1906), and others (1906–1985), is not Acianthus rivularis of A.Cunn. (1837).

Corybas carsei (Cheeseman) Hatch. Trans. & Proc. Roy. Soc. New Zealand 75: 367 (1945).
Corysanthes carsei Cheeseman. Trans. & Proc. New Zealand Inst. 44: 162 (1912).
Anzybas carsei (Cheeseman) D.L.Jones & M.A.Clem. Orchadian 13: 443 (2002).
Corybas unguiculatus as meant by L.B.Moore. Fl. New Zealand Vol. 2: 116 (1970) is not Corysanthes unguiculatus of R.Br. (1810).

Corybas cheesemanii (Hook.f. ex Kirk) Kuntze. Revis. Gen. Pl. 2: 657 (1891).
Corysanthes cheesemanii Hook.f. ex Kirk. Trans. & Proc. New Zealand Inst. 3: 180 (1871).
Corybas aconitiflorus as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 75: 367 (1945), is not that of Salisb. (1807).

Corybas confusus Lehnebach Phytotaxa 270: 9 (2016).

Corybas cryptanthus Hatch. Trans. Roy. Soc. New Zealand 83: 577 (1956).
Molloybas cryptanthus (Hatch) D.L.Jones & M.A.Clem. Orchadian 13: 448 (2002).

Corybas saprophyticus as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 366, t.71 (1952), is not that of Schltr. (1923).

Corybas dienemus D.L. Jones Fl. Australia 50: 572 (1993).
Corysanthes dienema (D.L.Jones) Szlach. Richardiana 3: 98 (2003).
Nematoceras dienemum D.L. Jones et al. Orchadian 13: 449 (2002).

Corybas hatchii Lehnebach. N.Z. Native Orchid Journal 139: 4 (2016).
Corybas macranthus var. longipetalus Hatch. Trans. & Proc. Roy. Soc. New Zealand 76: 580, t. 60 (1947).
Nematoceras longipetalum (Hatch) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Corybas longipetalus (Hatch) Hatch. NZNOG Journal 47: 6 (1993), is not that of Schltr. (1923).

Corybas hypogaeus (Colenso) Lehnebach. N.Z. Native Orchid Journal 139: 5 (2016).
Corysanthes hypogaea Colenso. Trans. & Proc. New Zealand Inst. 16: 336 (1884).
Nematoceras hypogaeum (Colenso) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).

Corybas iridescens Irwin & Molloy. New Zealand J. Bot. 34: 1, f.1 (1996).
Nematoceras iridescens (Irwin & Molloy) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Corysanthes iridescens (Irwin & Molloy) Szlach. Richardiana 3: 98 (2003).

Corybas macranthus (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Nematoceras macranthum Hook.f Fl. Nov.-Zel. 1: 250 (1853).
Corysanthes macrantha (Hook.f.) Hook.f. Handb. N. Zeal. Fl. 266 (1864).
There are several taxa in the C. macranthus complex.

Corybas oblongus (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Singularybas oblongus (Hook.f.) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Nematoceras oblonga Hook.f Fl. Nov.-Zel. 1: 250, t.57B (1853).
Corysanthes oblonga (Hook.f.) Hook.f. Handb. N. Zeal. Fl. 266 (1864).
Two or three taxa in this complex. One may be HB Matthews's Corysanthes "aestivalis" and a white flowered form (Nelson lakes and subantarctic islands) appears to be separate.

Corybas obscurus Lehnebach Phytotaxa 270: 11 (2016).

Corybas orbiculatus (Colenso) L.B.Moore. Fl. New Zealand Vol. 2: 118 (1970).
Corysanthes orbiculata Colenso. Trans. & Proc. New Zealand Inst. 23: 389 (1891).
Nematoceras orbiculatum (Colenso) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Corybas orbiculatus as meant by L.B.Moore. Fl. New Zealand Vol. 2: 118 (1970) and others (1970–1996), is not Corysanthes orbiculata of Colenso (1891) (see Molloy & Irwin. New Zealand J. Bot. 34: 5 [1996]).

Corybas papa Molloy & Irwin. New Zealand J. Bot. 34: 5, f.1 (1996).
Nematoceras papa (Molloy & Irwin) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Corysanthes papa (Molloy & Irwin) Szlach. Richardiana 3: 98 (2003).

Corybas papillosus (Colenso) Lehnebach. N.Z. Native Orchid Journal 139: 5 (2016).
Corysanthes papillosa Colenso. Trans. & Proc. New Zealand Inst. 16: 337 (1884).
Nematoceras papillosum (Colenso) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Nothing clearly separates it from *Corybas macranthus*.

Corybas rivularis (A.Cunn.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Acianthus rivularis A.Cunn. Companion Bot. Mag. 2: 376 (1837).
Nematoceras rivulare (A.Cunn.) Hook.f Fl. Nov.-Zel. 1: 251 (1853).
Corysanthes rivularis (A.Cunn.) Hook.f. Handb. N. Zeal. Fl. 266 (1864).
Nematoceras paduratum (Cheeseman) Molloy, D.L.Jones & M.A.Clem. Orchadian 13: 449 (2002).
Corysanthes rotundifolia var. paduarata Cheeseman. Man. New Zealand Fl. 366 (1925), is not Nematoceras rotundifolia of Hook.f.
Corysanthes rotundifolia as meant by Cheeseman. Man. New Zealand Fl. 697 (1906), is not Nematoceras rotundifolia of Hook. f. (1853).
Corybas orbiculatus as meant by L.B.Moore. Fl. NZ Vol. 2: 118 (1970) and others (1970–1996), is not Corysanthes orbiculata of Colenso (1891).
Undescribed related plants have been tagged C. "Kaimai", C. "rest area", C. "Kaitarakihi", C. "whiskers" (aka C. "viridis"), C. "Mangahuia", C. "sphagnum", C. "Pollok" and C. "Motutangi".

Corybas rotundifolius (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Nematoceras rotundifolia Hook.f Fl. Nov.-Zel. 1: 251 (1853).
Corysanthes rotundifolia (Hook.f.) Hook.f. Handb. N. Zeal. Fl. 266 (1864).
Corysanthes matthewsii Cheeseman. Trans. & Proc. New Zealand Inst. 31: 351 (1899).
Corybas matthewsii (Cheeseman) Schltr. Repert. Spec. Nov. Regni Veg. 19: 23 (1923).
Anzybas rotundifolius (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13: 443 (2002).
Corybas unguiculatus as meant by Hatch. Trans. & Proc. Roy. Soc. NZ 75: 367 (1945), is not Corysanthes unguiculatus of R.Br. (1810).

Corybas sancti-georgianus Lehnebach Phytotaxa 270: 12 (2016).

Corybas sulcatus (M.A. Clem. et D.L. Jones) G.N. Backh. Vict. Naturalist 127: 57 (2010).
Nematoceras sulcatum M.A.Clem. & D.L.Jones. Telopea. 11: 406 (2007).

Corybas triloba (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Nematoceras triloba Hook.f Fl. Nov.-Zel. 1: 250 (1853).
Corysanthes triloba (Hook.f.) Hook.f. Handb. N. Zeal. Fl. 265 (1864).
A number of taxa in the Corybas trilobus group of speculative taxonomic status include the tiny May to July flowering forms with the tagname C. "pygmy", as well as C. "Remutaka", C. "Rewanui", C. "tribrive", C. "tridodd", C. "Trotters" and others.

Corybas vitreus Lehnebach Phytotaxa 270: 12 (2016).

Corybas walliae Lehnebach Phytotaxa 270: 13 (2016).

Cryptostylis R.Br. Prodr. Fl. Nov. Holland.: 317 (1810)

Cryptostylis subulata (Labill.) Rchb.f. Beitr. Syst. Pflanzenk. 15 (1871).
Malaxis subulata Labill. Nov. Holl. Pl. 2: 62, t.212 (1806).

Cyrtostylis R.Br. Prodr. Fl. Nov. Holland.: 322 (1810).

Cyrtostylis oblonga Hook.f. Fl. Nov.-Zel. 1: 246 (1853).
Acianthus reniformis var. oblonga Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 59 (1946).

Cyrtostylis rotundifolia Hook.f. Fl. Nov.-Zel. 1: 246 (1853).
Cyrtostylis macrophylla Hook.f Fl. Nov.-Zel. 1: 246 (1853).
Caladenia reniformis (R.Br.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Cyrtostylis oblonga var. rotundifolia Cheeseman. Man. New Zealand Fl. 685 (1906).
Acianthus reniformis (R.Br.) Schltr. Engl. Bot. Jahrb. 34: 39 (1906).
Acianthus reniformis var. reniformis Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 59 (1946).
Cyrtostylis reniformis when used for NZ plants is not that of R.Br. Prodr. Fl. Nov. Holland.: 322 (1810).

Danhatchia Garay & Christenson. Orchadian 11: 469, f.471 (1995)

Danhatchia australis (Hatch) Garay & Christenson. Orchadian 11: 470 (1995).
Yoania australis Hatch. Trans. Roy. Soc. New Zealand, Bot. 2: 185 (1963).
Danhatchia novaehollandiae Jones, D.L. & Clements, M.A. (2018), Australian Orchid Review 83.

Dendrobium Swartz. Nova Acta Regiae Soc. Sci. Upsal., ser. 2, 6: 82. (1799).

Dendrobium cunninghamii Lindl. Bot. Reg. 21 sub. t. 1756 (1835).
Dendrobium biflorum as meant by A.Rich. Essai Fl. Nov. Zel. 221 (1832), is not that of Sw. (1800).
Dendrobium lessonii Colenso. Trans. & Proc. New Zealand Inst. 15: 326 (1883).
Winika cunninghamii (Lindl.) M.A.Clem., D.L.Jones & Molloy. Orchadian 12: 214 (1997).

Drymoanthus Nicholls. Vict. Naturalist 59: 173 (1943)

Drymoanthus adversus (Hook.f.) Dockrill. Australasian Sarcanthinae: 32, t.3 (1967).
Sarcochilus adversus Hook.f. Fl. Nov.-Zel. 1: 241 (1853).
Sarcochilus breviscapa Colenso. Trans. & Proc. New Zealand Inst. 14: 332 (1882).
Newzealochilus adversus (Hook.f.) R.Rice. Intro. Aust. & NZ Bulbophyllum and Vandaceous orchids (2019).

Drymoanthus flavus St George & Molloy. New Zealand J. Bot. 32: 416, f.1 (1994).
Newzealochilus flavus (St George & Molloy) R. Rice. Introduction to the Australian and New Zealand Bulbophyllum and Vandaceous orchids (2019).

Earina Lindl. Bot. Reg. sub t.1699 (1834)

Earina aestivalis Cheeseman. Trans. & Proc. New Zealand Inst. 51: 93 (1919). Questionably different from E. mucronata.

Earina autumnalis (G.Forst.) Hook.f. Fl. Nov.-Zel. 1: 239 (1853).
Epidendrum autumnale G.Forst. Fl. Ins. Austr. Prodr. 60 (1786).
Earina suaveolens Lindl. Bot. Reg. 29: 61 (1843).
Earina alba Colenso. Trans. & Proc. New Zealand Inst. 18: 267 (1886).

Earina mucronata Lindl. Bot. Reg. 20 sub t. 1699 (1834).
Earina quadrilobata Colenso. Trans. & Proc. New Zealand Inst. 15: 325 (1883).

Gastrodia R.Br. Prodr. Fl. Nov. Holland.: 330 (1810)

Gastrodia cooperae Lehnebach & J.R.Rolfe. Phytotaxa 277: 242 (2016).

Gastrodia cunninghamii Hook.f Fl. Nov.-Zel. 1: 251 (1853).
Gastrodia leucopetala Colenso. Trans. & Proc. New Zealand Inst. 18: 268 (1886).

Gastrodia minor Petrie. Trans. & Proc. New Zealand Inst. 25: 273, t.20, f.5–7 (1893).

Gastrodia molloyi Lehnebach & J.R.Rolfe. Phytotaxa 277: 244 (2016).

Gastrodia sesamoides R. Br. Prodr. Fl. Nov. Holland.: 330 (1810).

Genoplesium (Hook.f.) D.L.Jones & M.A.Clem. Lindleyana 4: 144 (1989).

Genoplesium nudum (Hook.f.) D.L.Jones & M.A.Clem. Lindleyana 4: 144 (1989).
Prasophyllum nudum Hook.f Fl. Nov.-Zel. 1: 242 (1853).
Prasophyllum tunicatum Hook.f Fl. Nov.-Zel. 1: 242 (1853).
Prasophyllum variegatum Colenso. Trans. & Proc. New Zealand Inst. 20: 208 (1888).
Corunastylis nuda (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13: 461 (2002).

Genoplesium pumilum (Hook.f.) D.L.Jones & M.A.Clem. Lindleyana 4: 144 (1989).
Prasophyllum pumilum Hook.f. Fl. Nov.-Zel. 1: 242 (1853).

Corunastylis pumila (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13: 461 (2002).

Microtis R.Br. Prodr. Fl. Nov. Holland.: 320 (1810).

Microtis arenaria Lindl. Gen. Sp. Orchid. Pl. t. 306 (1840).
Microtis biloba Nicholls. Vict. Naturalist 66: 93, f.O–L (1949).
Microtis papillosa Colenso. Trans. & Proc. New Zealand Inst. 18: 269 (1886). The type has not been found but Colenso's notched labellum suggests M. arenaria.

Microtis longifolia Colenso. Trans. & Proc. New Zealand Inst. 17: 247 (1885). A small autumn flowering grassland form, probably distinct from M. unifolia.

Microtis oligantha L.B.Moore. New Zealand J. Bot. 6: 473, f.1 (1969).
Microtis magnadenia as meant by Hatch. Trans. Roy. Soc. New Zealand, Bot. 2: 185–189 (1963), is not that of R.S.Rogers (1930).

Microtis parviflora R.Br. Prodr. Fl. Nov. Holland.: 321 (1810).
Microtis javanica Rchb.f. Bonplandia 5: 36 (1857).
Microtis benthamiana Rchb.f. Beitr. Syst. Pflanzenk. 24 (1871.)
Microtis porrifolia var. parviflora (R.Br.) Rodway. Tasman. Fl. 195 (1903).
Microtis aemula Schltr. Bot. Jahrb. Syst. 39: 37 (1906).
Microtis bipulvinaris Nicholls. Vict. Naturalist 66: 92, f.A–F (1949).
Microtis holmesii Nicholls. Vict. Naturalist 66: 94 (1949).
The NZ plant may differ from the Australian M. parviflora.

Microtis unifolia (G.Forst.) Rchb.f. Beitr. Syst. Pflanzenk. 62 (1871).
Ophrys unifolia G.Forst. Fl. Ins. Austr. 59 (1786).
Epipactis porrifolia Sw. Kongl. Vetensk. Acad. Nya Handl. 21: 233 (1800).
Microtis porrifolia (Sw.) R.Br. Prodr. Fl. Nov. Holland. 320 (1810).
Microtis banksii A.Cunn. ex Hook. Bot. Mag. 62: sub t.3377 (1835).
Microtis frutetorum Schltdl. Linnaea 20: 568 (1847).
Microtis viridis F.Muell. Fragm. (Mueller) 5: 97 (1865).

Orthoceras R.Br. Prodr. Fl. Nov. Holland.: 316 (1810)

Orthoceras novae-zealandiae (A.Rich.) M.A.Clem., D.L.Jones & Molloy. Austral. Orchid Res., 1: 100 (1989).
Diuris novae-zealandiae A.Rich. Essai Fl. Nov. Zel. 163 t.25, f.1 (1832).
Orthoceras solandri Lindl. Gen. Sp. Orchid. Pl. 512 (1840).
Orthoceras rubrum Colenso. Trans. & Proc. New Zealand Inst. 18: 278 (1886).
Orthoceras caput-serpentis Colenso. Trans. & Proc. New Zealand Inst. 22: 490 (1890).
Orthoceras strictum R.Br. forma viride Hatch. Trans. Roy. Soc. N.Z. Bot. 2; 195 (1963).

Orthoceras strictum R.Br. Prodr. Fl. Nov. Holland.: 317 (1810).
Many botanists regard Orthoceras as monotypic; the reported differences between O. strictum and O. novae-zelandiae are inconsistent.

Prasophyllum R.Br. Prodr. Fl. Nov. Holland.: 317 (1810)

Prasophyllum colensoi Hook.f. Fl. Nov.-Zel. 1: 241 (1853).
Prasophyllum pauciflorum Colenso. Trans. & Proc. New Zealand Inst. 18: 273 (1886). This appears to be Irwin's Prasophyllum " A".
Prasophyllum rogersii as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 76: 290 (1946), is not that of R.S.Rogers & Rees (1921).
Irwin's Prasophyllum "B" in NZNOG Journal 79: 9–10 (2001) appears to match P. colensoi.
HB Matthews's P. "patentifolium" in Ms is a smaller plant. Others in this group do not fit easily into any of the above.

Prasophyllum hectorii (Buchanan) Molloy, D.L.Jones & M.A.Clem. Orchadian 15: 41 (2005).
Gastrodia hectori Buchanan. Trans. & Proc. New Zealand Inst. 19: 214 (1886).
Prasophyllum patens as meant by Cheeseman. Man. New Zealand Fl. 675 (1906), is not that of R.Br. (1810).
Prasophyllum suttoni as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 76: 291 (1946), is not that of Rüpp (1928).

Pterostylis R.Br. Prodr. Fl. Nov. Holland.: 326 (1810).

Pterostylis agathicola D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 266 (1997).
Pterostylis graminea var. rubricaulis H.B.Matthews ex Cheeseman. Man. New Zealand Fl. 351 (1925).
Pterostylis montana var. rubricaulis (Cheeseman) Hatch. Trans. & Proc. R.oy. Soc. New Zealand 77: 240, plate 23 (1949).

Pterostylis alobula (Hatch) L.B.Moore. New Zealand J. Bot. 6: 486, f.3 (1969).
Pterostylis trullifolia var. alobula Hatch. Trans. Roy. Soc. NZ 77: 244, t.30, f.3E–H (1949).
Diplodium alobulum (Hatch) D.L.Jones, Molloy & M.A.Clem. Austral. Orchid Res. 4: 70 (2002).
Pterostylis trullifolia as meant by Cheeseman. Man. New Zealand Fl. 682 (1906) does not separate it from P. alobula.

Pterostylis alveata Garnet. Vict. Naturalist 59: 91 (1939).
Diplodium alveatum (Garnet) D.L.Jones & M.A.Clem. Austral. Orchid Res. 4: 70 (2002).

Pterostylis areolata Petrie. Trans. & Proc. New Zealand Inst. 50: 210 (1918).

Pterostylis auriculata Colenso. Trans. & Proc. New Zealand Inst. 22: 489 (1890).

Pterostylis australis Hook.f. Fl. Nov.-Zel. 1: 248 (1853).

Pterostylis brumalis L.B.Moore. New Zealand J. Bot. 6: 485 (1968).
Pterostylis trullifolia var. rubella Hatch. Trans. & Proc. R.oy. Soc. New Zealand 77: 244 (1949).
Diplodium brumale (L.B.Moore) D.L.Jones, Molloy & M.A.Clem. Austral. Orchid Res. 4: 70 (2002).

Pterostylis banksii A.Cunn. Companion Bot. Mag. 2: 376 (1837).

Pterostylis cardiostigma D.Cooper. New Zealand J. Bot. 21: 97, f.1,2 (1983).

Pterostylis cernua D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 267, f.2 (1997).

Pterostylis emarginata Colenso. Trans. & Proc. New Zealand Inst. 15: 328 (1883).
Structurally similar to P. banksii but consistently smaller and with a consistently notched labellum tip.

Pterostylis foliata Hook.f. Fl. Nov.-Zel. 1: 249 (1853).
Pterostylis vereenae R.S.Rogers. Trans. & Proc. R.oy. Soc. South Australia 38: 360–361, f.18(2) (1914).
Pterostylis gracilis Nicholls. Vict. Naturalist 43: 324–326 (1927).

Pterostylis graminea Hook.f. Fl. Nov.-Zel. 1: 248 (1853).
There appear to be more than one taxon in the P. graminea complex, perhaps including tagnamed P. "sphagnum" and P. "peninsula".

Pterostylis humilis R.S.Rogers. Trans. & Proc. Roy. Soc. South Australia 46: 151 (1922).

Pterostylis irsoniana Hatch. Trans. & Proc. R.oy. Soc. New Zealand 78: 104, t.18 (1950).

Pterostylis irwinii D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 269 (1997).

Pterostylis micromega Hook.f. Fl. Nov.-Zel. 1: 248 (1853).
Pterostylis polyphylla Colenso. Trans. & Proc. New Zealand Inst. 22: 489 (1890).
Pterostylis furcata var. micromega Hatch. Trans. R.oy. Soc. New Zealand 80: 326 (1953).

Pterostylis montana Hatch. Trans. & Proc. R.oy. Soc. New Zealand 77: 239, t.22 (1949).
Pterostylis montana is highly variable and may be a group including several undescribed taxa.

Pterostylis nutans R.Br. Prodr. Fl. Nov. Holland.: 327 (1810).
Pterostylis matthewsii Cheeseman. Trans. & Proc. New Zealand Inst. 47: 46 (1915).

Pterostylis oliveri Petrie. Trans. & Proc. New Zealand Inst. 26: 270 (1894).

Pterostylis paludosa D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 271 (1997).
Pterostylis furcata var. linearis Hatch. Trans. & Proc. R.oy. Soc. NZ 77: 243, plate 29, 2 (1949).

Pterostylis patens Colenso. Trans. & Proc. New Zealand Inst. 18: 270 (1886).
Pterostylis banksii var. patens Hatch. Trans. & Proc. R.oy. Soc. New Zealand 75: 370 (1945).

Pterostylis porrecta D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 272 (1997).

Pterostylis puberula Hook.f. Fl. Nov.-Zel. 1: 249 (1853).
Linguella puberula (Hook.f.) D.L.Jones, M.A.Clem. & Molloy. Austral. Orchid Res. 4: 75 (2002).
Pterostylis nana as meant by Hatch. Trans. & Proc. R.oy. Soc. New Zealand 77: 237 (1949) is not that of R.Br. (1810).

Pterostylis silvicultrix (F.Muell.) Molloy, D.L.Jones & M.A.Clem. Austral. Orchid Res. 4: 66 (2002).
Pterostylis banksii var. silvicultrix F.Muell. Veg. Chath. Is. 51 (1864).

Pterostylis speciosa Colenso. Trans. & Proc. New Zealand Inst. 22: 488 (1890).
This name may apply to a widespread entity similar to P. patens but with shorter tepals.

Pterostylis subsimilis Colenso. Trans. & Proc. New Zealand Inst. 28: 611 (1896).
This name is here applied to distinct large-flowered Ruahine and Tararua plants.

Pterostylis tanypoda D.L.Jones, Molloy & M.A.Clem. Orchadian 12: 273 (1997).
Hymenochilus tanypodus (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones, M.A.Clem. & Molloy. Austral. Orchid Res. 4: 74 (2002).
Pterostylis cycnocephala as meant by L.B.Moore. Fl. New Zealand Vol. 2: 135 (1970) and others (1970–1997), is not that of Fitzg. (1876).

Pterostylis tasmanica D.L.Jones. Muelleria 8: 190 (1994).
Plumatichilos tasmanicum (D.L.Jones) Szlach. Polish Bot. J. 46: 23 (2001).
Pterostylis squamata as meant by Hook.f. Fl. Nov.-Zel. 1: 249 (1853), is not that of R.Br. (1810).
Pterostylis barbata as meant by Cheeseman. Man. New Zealand Fl. 683 (1906), is not that of Lindl. (1840).
Pterostylis plumosa as meant by Cooper. Field guide to NZ native orchids 51 (1981), is not that of Cady (1969).

Pterostylis tristis Colenso. Trans. & Proc. New Zealand Inst. 18: 271 (1886).
Hymenochilus tristis (Colenso) D.L.Jones, M.A.Clem. & Molloy. Austral. Orchid Res. 4: 74 (2002).
Pterostylis mutica as meant by Cheeseman. Trans. & Proc. New Zealand Inst. 15: 300 (1883), is not that of R.Br. (1810).

Pterostylis trullifolia Hook.f. Fl. Nov.-Zel. 1: 249 (1853).
Pterostylis rubella Colenso. Trans. & Proc. New Zealand Inst. 18: 271 (1886).
Pterostylis trullifolia var. gracilis Cheeseman. Trans. & Proc. New Zealand Inst. 47: 271 (1915).
Diplodium trullifolium (Hook.f.) D.L.Jones, Molloy & M.A.Clem. Austral. Orchid Res. 4: 72 (2002).

Pterostylsi venosa Colenso. Trans. & Proc. New Zealand Inst. 28: 610 (1896).
Pterostylis trifolia Colenso. Trans. & Proc. New Zealand Inst. 31: 281 (1899)
Pterostylis confertifolia Allan. Trans. & Proc. New Zealand Inst. 56: 32 (1926).

Spiranthes Rich. De Orchid. Eur. 20, 28, 36 (1817)

Spiranthes australis Lindl. Bot. Reg. subt. 823 (1824).
Spiranthes novae-zelandiae Hook.f. Fl. Nov.-Zel. 1: 243 (1853).
Neottia australis R.Br. Prodr. (1810).
Spiranthes sinensis as meant by Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 58 (1946), is not that of Ames (1908).
Spiranthes lancea as meant by Hatch. Trans. Roy. Soc. New Zealand 82: 614 (1954), is not that of Backer, Bakh.f. & Steenis (1950).

Spiranthes "Motutangi" appears a larger and structurally different plant, but is not separable by DNA.

Taeniophyllum Blume, Bijdr. Fl. Ned. Ind.: 355 (1825)

Taeniophyllum norfolkianum D.L.Jones, B.Gray & M.A.Clem., Orchadian 15: 157 (2006).
Taeniophyllum northlandicum R.Rice et M.A.M.Renner Introd. Austral. New Zealand Vandaceous Orchids 65 (2019)

Thelymitra J.R.Forst. & G.Forst. Char. Gen. Pl. 97 t.49 (1776)

Thelymitra aemula Cheeseman. Trans. & Proc. New Zealand Inst. 51: 94 (1919).
Thelymitra alba Colenso. Trans. & Proc. New Zealand Inst. 18: 272 (1886).
Thelymitra longifolia var. alba Cheeseman. Man. New Zealand Fl. 339 (1925).
Thelymitra "Whakapapa", an undescribed taxon from Ruapehu appears identical.
Thelymitra brevifolia Jeanes. Muelleria 19: 19–79 (2004).
This is probably the identity of *T. cornuta* Colenso. Trans. & Proc. New Zealand Inst. 20: 206 (1888).
Thelymitra carnea R.Br. Prodr. Fl. Nov. Holland.: 314 (1810).
Thelymitra imberbis Hook. f. Fl. Nov.-Zel. 1: 244 (1853). A yellow form.
Thelymitra carnea var. imberbis Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 59 (1946).
Thelymitra colensoi Hook. f. Handb. N. Zeal. Fl. 271 (1864)
Thelymitra intermedia Berggr. Minneskr. Fisiog. Sällsk. Lund 8: 21 f (1877).
Thelymitra longifolia var. stenopetala Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 396, plate 80 F–H (1952).
Thelymitra longifolia var. intermedia Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 396, plate 80 J (1952).
Thelymitra concinna Colenso. Trans. & Proc. New Zealand Inst. 20: 207 (1888).
Here regarded as neither a colour form of T. hatchii, nor as synonym of T. pulchella.
Thelymitra cyanea (Lindl.) Benth. Fl. Austral. 6: 323 (1873).
Macdonaldia cyanea Lindl. Bot. Reg. 25 (1840).
Thelymitra uniflora Hook. f. Fl. Antarct.: 70 (1844).
Thelymitra venosa var. typica Hatch Trans. & Proc. Roy. Soc. New Zealand 79: 390, plate 77 A–C (1952).
Thelymitra venosa var. cedricsmithii Hatch Trans. & Proc. Roy. Soc. New Zealand 79: 390, plate 77 D–E (1952).
Thelymitra venosa var. cyanea Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 391, plate 77 F–H (1952).
Thelymitra venosa as meant by Cheeseman. Man. New Zealand Fl. 671 (1906), is not that of R.Br. (1810).
Thelymitra x **dentata**: a sterile hybrid of T. longifolia x T. pulchella.
Thelymitra dentata L.B.Moore. New Zealand J. Bot. 6: 478, f 2 (1969).
Thelymitra formosa Colenso. Trans. & Proc. New Zealand Inst. 16: 338 (1884).
Thelymitra circumsepta as meant by Hatch. NZNOG Journal 65: 8 (1997), is not that of Fitzg. (1878).
Thelymitra hatchii L.B.Moore. New Zealand J. Bot. 6: 477, f 2 (1969).
Thelymitra pachyphylla as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 394, plate 79 D–H (1952), is not that of Cheeseman (1906).
Thelymitra ixioides Swartz. Kongl. Vetensk. Acad. Nya Handl. 21: 253, t.3, fL. (1800).
Thelymitra ixioides var. typica Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 59 (1945).
This may not be the same as the Australian plant.
Thelymitra hiemalis D.L.Jones, M.A.Clem. Orchadian 12: 330 (1998) is probably a mutated T. ixioides.
Thelymitra longifolia J.R.Forst. & G.Forst. Char. Gen. Pl. 98 t.49 (1776).
Serapias regularis Banks & Sol. ex G.Forst. Fl. Ins. Austr. Prodr. 59 (1776).
Thelymitra forsteri Sw. Kongl. Vetensk. Acad. Nya Handl. 21: 228 (1800).
Thelymitra longifolia var. forsteri Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 396, plate 80 B–E (1952).
The name T. longifolia is here restricted to robust plants with wide, ridged, floppy leaves and entire column midlobes.
Thelymitra aff. longifolia is a range of somewhat similar plants with fragrant flowers in the Far North.
Tt. alba, purpureofusca, "fusca" and nemoralis all have notched column midlobes and are here treated as different species.
Thelymitra malvina M.A.Clem., D.L.Jones & Molloy. Austral. Orchid Res. 1: 141 (1989).
Thelymitra matthewsii Cheeseman. Trans. & Proc. New Zealand Inst. 43: 177 (1911).
Thelymitra nemoralis Colenso. Trans. & Proc. New Zealand Inst. 17: 249 (1885).
Thelymitra nervosa Colenso. Trans. & Proc. New Zealand Inst. 20: 207 (1888).
Thelymitra decora Cheeseman. Man. New Zealand Fl. 1151 (1906). Spotted and unspotted forms grow together.
Thelymitra pauciflora R.Br. Prodr. 314 (1810).
Thelymitra pauciflora sens. strict. is in NZ according to Jeanes (Muelleria 19: 19–79 [2004]); however, there are also a number of other forms in this group.
Thelymitra pulchella Hook. f. Fl. Nov.-Zel. 1: 244 (1853).
The name T. pulchella is here restricted to plants with bare or shallowly toothed (not fimbriate nor ciliate) column arms and toothed (not rolled) post-anther lobe. Thelymitra "sansfimbria" with plain blue flowers and T. pulchella sensu Cheeseman are included.
Thelymitra fimbriata Colenso. Trans. & Proc. New Zealand Inst. 22: 490 (1890).
Thelymitra pachyphylla Cheeseman. Man. New Zealand Fl. 1151 (1906).
Thelymitra caesia Petrie. Trans. & Proc. New Zealand Inst. 51: 107 (1919).
Thelymitra pulchella s.l. (aff. erosa)
The anatomy and distinguishing features of these need to be clarified. They appear to be consistently different from T. pulchella s.s.
Thelymitra purpureofusca Colenso. Trans. & Proc. New Zealand Inst. 17: 249 (1885).
Thelymitra sansilia Irwin ex Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 397, plate 81 B–E (1952).
Thelymitra tholiformis Molloy & Hatch. New Zealand J. Bot. 28: 111, f 6 (1990).
Thelymitra intermedia as meant by L.B.Moore. Fl. New Zealand Vol. 2: 129 (1970), is not that of Berggren (1878).
Thelymitra "Ahipara": an undescribed taxon from the Far North, similar to T. "darkie" and to the Australian T. holmesii.
Thelymitra "darkie": undescribed taxon from the Far North (see McCrae. NZNOG Journal 24: 11; 77: 22 [1987]).
Thelymitra "fusca": a tiny, brown-leaved, dark-stemmed beech forest plant.
Thelymitra "Mangawhai": undescribed Far North taxon (K.Matthews).
Thelymitra "rough leaf": undescribed taxon from the Far North (see McCrae. NZNOG Journal 24: 11; 77: 22 [1987]).
Thelymitra "sky": undescribed taxon from the Far North (see Scanlen. NZNOG 70: 30–35, f 6 [1998]).

Townsonia Cheeseman. Man. New Zealand Fl. 692 (1906).

Townsonia deflexa Cheeseman. Man. New Zealand Fl. 692 (1906).
Townsonia viridis as meant by Schltr. Repert. Spec. Nov. Regni Veg. 9: 250 (1911), is not Acianthus viridis of Hook. f. (1860).
Acianthus viridis as meant by L.B.Moore. Fl. New Zealand Vol. 2: 107 (1970), is not that of Hook. f. (1860).

Waireia D.L.Jones, M.A.Clem. & Molloy. Orchadian 12: 282 (1997)

Waireia stenopetala (Hook. f.) D.L.Jones, M.A. Clem. & Molloy. Orchadian 12: 282 (1997).
Thelymitra stenopetala Hook. f. Fl. Antarct.: 69 (1844).
Lyperanthus antarcticus Hook. f. Fl. Antarct.: 544 (1847).

Hybrids

Proved: Thelymitra xdentata = T. longifolia x T. pulchella

Probable:
Corybas hatchii x C. vitreus
Corybas macranthus x C. "Trotters"
Corybas orbiculatus x C. macranthus
Corybas papa x C. iridescens
Corybas trilobus s.l. x C. "whiskers"
Corybas trilobus s.l. x C. iridescens
Corybas trilobus s.l. x C. macranthus
Pterostylis agathicola x P. aff. graminea
Pterostylis australis x P. oliveri
Pterostylis banksii x P. irsoniana
Thelymitra "Ahipara" x T. "darkie"
Thelymitra "Comet"

Outside back cover: "peterzika" posted this photograph of an extraordinary clump of *Drymoanthus adversus* from the Chathams to *iNaturalist*: taken 10 December ►►