# NEW ZEALAND NATIVE ORCHID JOURNAL



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**New Zealand Native Orchid Group** 

Chair: Gael Donaghy, GaelDonaghy@gmail.com.

Secretary & Treasurer: Pam Shearer, pam@insidetrack.co.nz.

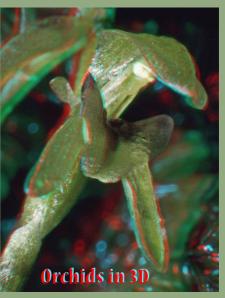
Membership secretary: Graeme Jane, gtjane@kinect.co.nz.

Webmaster: Bill Campbell, jccampbell@xtra.co.nz.

Editors: lan St George, istge@yahoo.co.nz, Cara-Lisa Schloots, caralisa95@gmail.com.

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### From the Chair: Gael Donaghy



Kia ora tatou

What an edition this is! It is packed with photos, observations, the results of careful study, historical and scientific detail, and stories about orchid hunting. There is

a lot to be learnt here, whether you are looking for possible places to go, methods for studying orchids, or just enjoy finding out more about our native orchids.

I am delighted to report that the website design is underway, with our first mock-ups being made available by the web designer for the website committee to give feedback on. I am very grateful to Bill Campbell for his work on this. Bill is an excellent example of a multi-talented orchid enthusiast (see his articles in this journal) who offers his services to help the work of the group.

I was pleased to hear that Eric Scanlen's family is preparing a website to showcase Eric's excellent 3D photos of NZ orchids. His son Dean and granddaughter Kate are working with the website committee to see how the two websites can be complementary. I remember the first time I saw one of Eric's photos in 3D - it was *Corybas acuminatus* and the long dorsal sepal miraculously popped out of the screen. These photos will be a valuable resource for orchid enthusiasts and researchers alike. And best wishes to Eric who recently had his 90<sup>th</sup> birthday!

One of the aims of NZNOG is to support orchid research, and in this journal we have a paper by Jennifer Alderton-Moss, Karin van der Walt, and Carlos Lehnebach who

are working on orchid propagation techniques in preparation for conserving our rarer entities. It is amazing how a process that occurs so naturally in the wild takes such detailed work to replicate in the laboratory. We are proud to have supported this work to the tune of \$5250 this year. But orchid research is not confined to the laboratory: we have the results of meticulous work in the field by our dedicated members Mark Moorhouse, Bill Campbell, Georgina Upson, and John Rugis, that adds significantly to our knowledge of native orchids. And lastly we have the historical research into the work of Townson by Ian. To understand taxonomy we must know what has gone before, and lan's work in this field is invaluable in helping to delineate and correct names of orchids.



### 2023 NZNOG AGM and Field Days

After emailing the committee, we have decided on Rangiora as our centre to explore the Canterbury Foothills. The dates are Friday 10 – Sun 12 November. We will meet at Rangiora RSA for a meal on the evening of 10<sup>th</sup> November, to plan our field trip for the 11<sup>th</sup> November. The AGM will be held late Saturday afternoon, and we will have another field trip on Sunday 12 November.

### **2023 Tagalong Tour**

At the conclusion of the events above, we propose to hold the tagalong to the West Coast, for the week Monday 13 November until Sunday 19 November. Graeme and Gael have looked for orchids here over many years, and know some good spots, but this edition of the journal provides even more ideas. We have not worked out where we will go yet, but will send out emails detailing possible itineraries, etc as the planning continues.

It is important you register your interest with Gael (gaeldonaghy@gmail.com or 027 570 3123), so she has your email and cell phone number so you can get updates.



### **Notes**

### Bulbophyllum pygmaeum in Fiordland

Alasdair Nicoll

Sometimes you have to travel a long way to see orchids, and sometimes it is worthwhile.

Recently I was on a DOC volunteer trip doing work in the Hollyford-Martins and Big Bay area. This was the first week in December 2022.

I have rarely seen *Bulbophyllum pygmaeum*. The last time was several years ago on windfall in the Bridal Veil Falls Scenic Reserve and growing on Kauri Trees on Te Hauturu-o-Toi / Little Barrier Island.

However, on a walk along the shores of Lake McKerrow not far from the hut I found it growing on the kōwhai trees dotted along the shore line, on the edge of the bush. One tree had an exceptional display of tree orchids with clumps of both *Earina mucronata* and *E. autumnalis* and *Dendrobium cunninghamii* (just coming into flower) as well as *B. pygmaeum*. Over a distance of about 300 m there were 5 kōwhai and a kahikatea with *B. pygmaeum* colonies and opposite there were more trees that I did not count. The colonies were growing right around the tree trunks.

It was not until five days later when we were out near Martins Bay Hut that I found *B. pygmaeum* growing on a rock and bingo it was flowering.

Since then I have found two sites near Waitawheta Hut in the Kaimai Ranges in late December. The plants were growing on kāmahi trees and flowering.







### Petalochilus rears its pretty head again

Ian St George

An interesting find (**Fig. 1**) reported on iNaturalist is a flower photographed by Dr. Alex Fergus ("fergus" on iNaturalist) on the Auckland islands on 12 January 2023. It has the features of *Petalochilus calyciformis* Rogers (petaloid labellum, staminoid structure in front of column) but appears to have been derived from *Caladenia* "red stem".

#### **Basic anatomy**

Flowers have four whorls: calyx, corolla, androecium and gynoecium.

The *calyx* is the outer whorl consisting of sepals; the *corolla* is the second whorl consisting of petals; the *androecium* is the third whorl consisting of stamens (a staminode is an often rudimentary, sterile or abortive stamen), the male part of the flower; and the *gynoecium* is the fourth whorl consisting of carpels, the female part of a flower.

The orchid flower has an outer whorl of three sepals, an inner whorl of three petals, and a central column of three male and three female reproductive parts.

In most orchids the sepals and petals are showy. Sepals protect the bud, and in many the top sepal forms a hood. In some orchids the lateral sepals are fused to form a synsepalum. One petal, the labellum, is usually quite different from the other two, and serves as a landing platform for pollinating insects.

Male and female sexual organs are fused into a column in the centre. Two of the stamens form the pollinia and anther cap while the third stamen (staminode) is usually absent. Two carpels form the two sides of the stigma and the third the rostellum.



#### **Peloric flowers**

Many orchid species have "peloric" forms, usually reversions to a more primitive flower – for example the frequently "unzipped" *Pterostylis* or the presence of a remnant of a staminode arising from the base of a *Thelymitra* column.

One common reversion of the labellum leaves it petaloid – more like the simpler petals.

For instance *Calochilus* is derived from a *Thelymitra* ancestor. The bearded labellum of *Calochilus robert-sonii* occasionally reverts so the peloric flower resembles that of *Thelymitra*: a form originally described as *Calochilus imberbis* (**Fig.2**).



Years ago Jean Jenks found *Aporostylis bifolia* in the Catlins with petaloid labella and Pat Enright found a similar plant in the Remutaka recently (**Fig.3**).

Before the name *Petalochilus* was hijacked for our small *Caladenia* species in 2001, it had been coined in 1926 by RS Rogers for plants discovered by HB Matthews at Kaitaia.



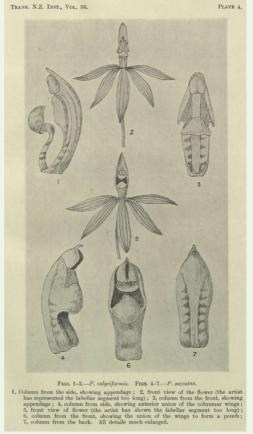
Rogers wrote that the "outstanding feature of the new genus is, of course, the ancestral form of the labellum" – the labellum was similar in shape to the other petals. Rogers described *Petalochilus calyciformis* whose column wings were separate and which had a linear cuplike appendage in front of the column; he also described *P. saccatus* whose column wings were fused to form a sac. He wrote,

Mr. Matthews has had these orchids under observation since the year 1912. He says that both species were plentiful, that they seeded freely, and showed practically no variations. On one occasion he collected about a hundred specimens of *P. calyciformis* and seventy of *P. saccatus*. In January, 1919, he wrote stating that he had recently visited Kaitaia, and found that in all three places where previously he had been accustomed to collect the cup-orchid, the tea-tree (*Leptospermum scoparium*), among which it grew, had been cleared for agricultural purposes. Thus, unless a fresh locality should be discovered, this interesting plant will be no longer available to students of botany.

#### He added,

"Superficially both species bear a striking resemblance to the diminutive orchid *Caladenia minor* Hook. f." but described *P. calyciformis* flowers as greenish and those of *P. saccatus* as pink.

Petalochilus Rog. was considered by Hatch in 1949 to be a local reversion from Caladenia rather than a new, albeit primitive species. Hatch quoted Nicholls who had "unconsciously demonstrated that Caladenia could give rise to such a form as Petalochilus". (Nicholls described "Two specimens of a singular form of Caladenia Menziesii... the labellum petaloid with undulate, incurved margins and papillate glands"). "The staminoid appendage which distinguishes Petalochilus is, however, absent in these Caladenia specimens," wrote Hatch. Kaitaia in 1912–17 and the Auckland islands in 2023: that would give fresh meaning to the term "disjunct distribution" if this were a true species. It isn't. It's an occasional freak.



**Foreword:** There are few groups who could boast only two editors over a space of forty years. It may even be a New Zealand record. Dorothy and Ian have done a stalwart work and kept our group well informed, intact and in touch with each other. I personally wish to publish a big thank you to both of them on behalf of all our members, and an equally big welcome to our third Editor-in-Chief to be (from November 2023), Cara-Lisa, who has bravely stepped up to fill their shoes. Thank you! May it go well with you!

### Corybas 'Remutaka' - a work in progress

#### Mark Moorhouse

Corybas 'Remutaka' is one of just two well recognised Corybas spp. that have remained unnamed for over 30 years. The other of course is Corybas 'whiskers' in the C. rivularis aggregate. There is little issue describing either, but issues do linger with what still falls under the former original description of C. trilobus and C. rivularis, and with that come issues of justification for separation. That is the cause for it being a work in progress.

C. 'Remutaka' may have been originally tagged for plants seen in the Remutaka Ranges, but I recall noting this taxon in several places in the Eastern Ranges of Nelson at least a decade before it was tagged and have hard copy photos of it in the Lee Valley taken in the 1970s before digital photography became the fashionable thing, to prove it [1].

My point. C. 'Remutaka' has proved to be far more widespread than its tag name suggests. Wellington based Dorothy Cooper sketched it in 1981 as C. triloba in her publication [1 fig 13A] but it was not until our editor lan St George published similar sketches in Journal No. 85 dated March 1996 [2] of the plant that he and Max Gibbs had observed and subsequently tagged in the 2001 Field Guide as Corybas 'Rimutakas' [3] and raised people's awareness of it, that I personally realised that its range was indeed far greater than just our local Nelson ranges.



It was great that someone else had both noticed it and perhaps more importantly given it an identity which we could use to communicate to others about it. By the 1990s the work in progress was doing just that, progressing. Journal 58's article pointed out that the hotly debated issue of *Corybas* 'flower above leaf or below leaf' had little to do with specific differences and a lot to do with light factors at the colony site. The plants in heavy shade could ill afford to have a flower shading the sunlight fuelled food factory inside the leaf and *Corybas* plants in shady spots consistently ensure the leaf has a long pedicel to optimise available light. At this point in time anything in regard to leaf vs. flower heights became rather irrelevant to establishing specific differences. We were learning and our work of understanding progressed.

So what is it that makes this unpublished taxon distinct, and how do we identify it?

It is so distinctive that just a glance is normally enough to be sure of its identity.



A small flower, no bigger than *C. hypogaeus* and in some respects somewhat similar particularly regarding habitat and leaf forms. The labellum wings are consistently a very dark blackish red and quite deep in profile, neatly ovate front on, maturing to the semi-ovate shape of a cathedral arch, the edges of which are decorated by a row of very fine, bead-like protuberances, often only clearly visible under a glass, and little or no fimbriation on the bib which frequently has a small central apiculus against the top of the ovary. The disc of the labellum has a narrow strip of something approaching a pale green. The dorsal sepal [hood] is narrow toward the base and narrowly spathulate [spoon shaped] as it passes over the tops of the labellum wings. This little hood culminates in a blunt to subacute tip which projects a little past the labellum and often bears a few reddish freckles. No! On checking, **usually** bears some red freckles and often a red midrib too.

All of the above features are consistent wherever it is to be found through both main islands of NZ. This consistency is what makes it so readily recognizable. There is some natural variation, all the same. For instance, in places the green colour on the disc is a little more extensive and in other places, the beading on the edge of the labellum wings can be perhaps better described as irregular and rough. But these are minor variations one should expect to see between populations. The leaves are consistent throughout.



Interestingly, it does have its own distinct pollinator as there are sites where it shares habitat and grows in close proximity to *C. vitreus*, has done so for decades, and yet there has never been any suggestion of any hybridisation in either colony or others nearby, yet all set seed. Clearly it is not using the same pollinator as *C. vitreus* and speculation suggests the reason may simply be that the gnat for *C. vitreus* is too large. *C.* 'Remutaka' is often less than 6mm

across, about half the size of an average *C. vitre-us* and the aperture leading to the stigma no greater than 1.5mm and often narrower. Hybrids are therefore few and very rare.

In general appearance the closest recognised named taxon is *C.* 'Trotters' as it is perceived to be in the lower North Island, especially when viewed in profile. From that angle they might be mistaken for each other. But closer examination of both reveals important differences. These are mainly in regard to the dorsal sepal. In *C.* 'Trotters' the spathulate part is broader, the distal outer surface suffused with some dark colour and more freckles and the surface is distinctly rough.



The tip projects somewhat but is never subacute. Also the labellum has a coarser look to it, partly because it is more succulent and partly because it has a denser sward of retrorse hairs. The general size is larger too and it prefers wetter sites as habitat. That provides us with at least five clear points of difference.

Between 1995 and 2001 I undertook a study of the local Nelson forms of the *Corybas trilobus* aggregate [what was then known as *Nematoceras triloba* agg.]. This involved locating and revisiting some 60 or so colonies of the aggregate, scattered all over Nelson / Marlborough, noting their differences and habitats carefully, then revisiting each of them again each year for the ensuing 5-6 years to study any annual variation. It was quite an undertaking but provided a useful data base which had been accumulated over



those years and I became a little more sure of various entities within the *C. triloba* aggregate, at least our local ones. The problem for all of us prior to this was that it seemed that almost every colony one visited, the flowers looked a bit different from the last, either the leaves did, or both flowers and leaves did and as Hooker had published an extremely vague description of *Corysanthes triloba* in 1853 it left us wondering if it really was just one of those extremely variable species and this remained the status quo during the studies I undertook and for at least the following decade.

I privately published my findings [4]. At the same time articles and tag names were regularly popping up in the NZNOG Journals. Much of it driven by others who were as sure as I was, that within the *C trilobus* aggregate were hiding several entities. Eric Scanlen tagged at least half a dozen, I tagged *C. vitreus* as *C.* 'Eastern Hills', the Journal editor and others a further two or three entities and this included the yet to be named *Corybas* 'Rimutakas' [Now *C.* 'Remutaka'].

My own studies were based entirely on observation and comparison. It used a simple method. If colonies only varied on a single or two points of difference then the likelihood was strong that this represented local and natural variation. If the colonies showed 5 or more differences then the likelihood was that we were looking at a fresh entity. Between that, where 3-4 differences occurred lay a grey zone that could suggest hybridisation or a closer alliance to the new entity. It was very easy to identify 5 differences between what we now know as C. vitreus, C. walliae, C. obscurus, C. confusus and C. 'Remutaka' and thanks to the work of Dr Carlos Lehnebach and his understudies all but one of these now bears an official published epithet and have the recognition they deserve [2].

The distribution of C. 'Remutaka' is widespread. It tends to be associated with beech forest, as does C. walliae, C. hypogaea, C. obscurus and to a lesser degree the round leafed C. confusus. Three of those more so to mountain beech. For that reason it is lacking almost entirely in our podocarp and kauri forests. But as with most rules there are one or two exceptions. It has a shy little flower that hides below the leaf and invariably faces the leaf pedicel from which it grows. That makes photography difficult. It is generally a montane species in the north but can be found nearer sea-level from Wellington to Southland and South Westland. The current field guide [5] offers no distribution map. The



one I have prepared may not fully represent its distribution either but is an indication of how widespread it is. *C*. 'Remutaka', is still very much a work in progress and there seems little doubt that one day it will have its own specific name too.

Plants fitting closely to the above description of Corybas 'Remutaka' have been recorded from as far North as the Hunua Ranges, to Fiordland's Hollyford Valley, and to Port Craig and the Catlins in the south as the map suggests. In two places the dorsal sepal projects minimally, but at those sites everything else is consistent. This provides us with three points where variability occurs to some degree. I feel this is consistent with what we should find within the bounds of natural variability by colonies isolated for decades from larger undisturbed areas where more regular consistency exists. To reiterate, these are: [a] some variability in dorsal shape, particularly length, [b] some variability in the decoration of the edge of the lower one third of the of the labellum, and [c] less or more green on labellum disc, all of these depending on site and isolation.



### References

- 1 Cooper, D. (1981). A Field Guide to New Zealand Native Orchids. Price Milburn.
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### Range extension for Corybas obscurus

#### Bill Campbell

In late November 2022 Mike Lusk and I embarked on an "orchid odyssey" [see ,pg. X] with the aim of seeing in flower as many South Island orchid species as possible at that time of the year. Our first stop was St Arnaud in the Nelson Lakes District and we spent a full day in that area, very ably guided by Mark Moorhouse.

One of the species we managed to see in flower on that day, after some searching, was *Corybas obscurus*, at or near the type locality. Mark's local knowledge proved invaluable and we observed a number of species in flower that I had not previously encountered. This is not entirely surprising, given that I had not previously been orchid hunting in the South Island.

From St Arnaud Mike and I headed for the West Coast, where we based ourselves in Greymouth for a couple of days so we could explore the pākihi areas near Charleston and some of the tracks in the Punakaiki area. The weather did its best to deter us but we still managed to find the majority of our target species in the area.



While walking the Pororari River Track near Punakaiki we were surprised to find one of the trilobate leaved *Corybas* species still in flower. Based on the flower colour, it could only be *C. confusus* or *C. obscurus*, although the latter had only been recorded from the Nelson Lakes region.

More flowering plants were observed the following day on the Fox Caves Track and these were also photographed. Based on the fact that the dorsal sepal didn't project beyond the labellum our initial ID was *C. obscurus*. However, given that its stated distribution was limited to the Nelson Lakes region, we weren't 100 percent confident that we had the species ID right. Of note is that all three sites are adjacent to a significant river system.

While attending the NZPCN conference in Queenstown in early December I had the opportunity to show the photos to Carlos Lehnebach to get another opinion. Although initially unsure, Carlos eventually concluded that the species was indeed *C. obscurus*.

These two finds on the West Coast represent a significant range extension for the species and highlight the fact that that our knowledge of orchid distribution is still quite limited in some instances. It is highly likely that the range of *C. obscurus* will be further extended as more people are out and about at the right time of the year to catch the species in flower.







### Gastrodia molloyi pollination

Georgina Upson

Gastrodia molloyi emerges from the soil rather resembling asparagus. The buds, initially erect, drop pendant upon opening. Flowers that appear to have been pollinated begin to close immediately while others remain open until pollinated or spent. Pollinated flowers begin to return to erect again while many non-pollinated flowers wither and fall off before regaining this position.



The flower morphology is well suited to insect pollination and preferential cross pollination. The labellum tip has a central raised callus which must force an insects thorax into contact with the anther cap and contained pollinia in order to effect both entry and exit. Directly inward of the pollinia lies a mobile flap which is pushed aside toward the column as the insect makes contact with the outer surface as it moves along the labellum. At the base of the labellum there is a hemispherical bowl with small projecting wings at the distal end which would offer a suitable foothold. Within the bowl is a generous coating of a fine crystalline substance referred to as "pseudo-pollen". A smaller quantity is sprinkled along the labellum to the tip. Carbohydrate? Opposing this lies the mounded stigma at the column base. In order to consume or collect the pseudo-pollen the thorax would make close contact with the stigma due to the position of the bowl wings. In reversing from the floral tube the insect's body contacts the inner surface of the flap dragging it outwards. This flap holds the viscidium and it is from this direction that ample viscid matter is smeared along the thorax subse-

quently adhering to the anther cap and pollinia removing all as the insect exits the flower. The insect is now primed for pollinating the following flowers it enters.

The pollen itself is formed into coarse cubelike packages held to each other with highly elastic threads into a loosely cohesive pollinia cell. These must be reasonably strong to withstand the rigorous treatment of transport between flowers and floral entry.

Two species of native bee have been observed pollinating *G. molloyi*. They emerge in the spring producing a small number of offspring in cellophane lined tunnels, with one egg laid in each fully provisioned individually sealed cell where they survive through the winter as prepupae until the following spring. Once the nest is completed the tunnel entrance is plugged.



The nests and collection of pollen and nectar is undertaken by the females while the males seek mates and feed or are fed. These bees are active for only a short period of time during the year, perhaps six to eight weeks.

All species of *Hylaeus* bees in New Zealand belong to the *subgenus Prosopisteron*. They are known as masked bees. They carry yellow or white markings on the head, the mask, and thorax. This gives a somewhat wasp-like impression. Their bodies are relatively naked giving them a black glossy appearance. These bees have no scopa, hairs that collect pollen, on their legs and therefore consume pollen into a crop. Nests are built in preformed tunnels in plant material such as hollow stems, old insect burrows or pith. The larval cells are created in a linear fashion.



Hylaeus relegatus appears to be the species engaging with *G. molloyi*. A group of males patrol the flowers continuously. A certain ownership appears to be exerted by deliberate collision with other insects to "bump" them in directions away from the colony. No males were seen sporting pollen, with little interaction aside from the occasional feeding from the labellum tip noticed. Females actively entered flowers and frequently moved between stems. In the same area *H. relegatus* was seen on Koromiko (*Veronica salicifolia*) flowers which have a similar musty floral odour at least to this author's olfactory senses.

Leioproctus has two sub genera here in New Zealand; Leioproctus and Nesocolletes. Sub genus Leioproctus contains 11 species. These bees appear quite furry being well endowed with body hairs. They possess scopa so gather pollen on the legs. Nests are tunneled into the soil in dry areas. The larval cells are formed in small side tunnels partly backfilled with soil. The bee that is the other pollinator belongs in sub genus Leioproctus many of which are somewhat cryptic and recently described. A little too cryptic for this author to unravel. A specimen could be sent to the bold or knowledgeable for positive results.

Only females were observed. They were working the flowers more thoroughly than *H. regulatus*, visiting more flowers per stem and spending longer in each flower. Vigorous labellum movement was observed as bees worked to pack their scopa.

Of note is that activity by any bees occurred only during periods when the plants were exposed to sunlight. This seems consistent with previous observation but needs further confirmation.





### The inbox





▲ *Aporostylis bifolia* flowering in early January on the Routeburn Track, among native sundew (*Drosera arcturi*) — *Taylor Davies-Colley, Fiordland* 



▲ Gastrodia cunninghamii — Cara-Lisa Schloots, Ruapehu



Thelymitra longifolia on the new Coronet Loop Track on Mahu Whenua. ▲
— Cara-Lisa Schloots, Otago

### **Notes**

### **Our local Wairarapa** *Microtis*

Ian St George

What with the rain persisting all summer the sheep cannot keep up with the grass growth so we hadn't sold any lambs by mid-January. Furthermore we had shut up one north-facing paddock that we usually graze, keeping it for autumn fodder if we needed it. This land on the eastern side of the Wairarapa plain is regarded as marginal and in the 25 years we have been here we have never cultivated or fertilised it; I doubt if it has ever been ploughed.

Wandering through it, chipping thistles in mid-January, I found, among the grasses, thousands of short *Microtis*: an occasional plant 30 cm tall, most 15—20 cm. Twenty to the square foot in places, 7—30 flowers quite widely spaced, the labellum almost an isosceles trapezoid typical of the New Zealand form of *M. parviflora*. *M. unifolia* is a much more robust plant, flowering in November to mid-December here.

M. parviflora in Australia appears, going from photographs and descriptions on the net, to be bigger, denser flowered and earlier. I think we may have that plant as well – northern New Zealand plants seem more robust than our small ones in the Wairarapa.

It's time we sorted these out.







### Thelymitra tholiformis — Persistence pays off

#### John Rugis

In December 2021, while exploring in remnant mixed kauri, tānekaha, kānuka bush on private land near where I live in Waimauku, I spotted a some "spent" orchids. They looked like a species of *Thelymitra* to me but had a relatively narrow leaf compared to *T. longifolia* which can be found elsewhere in the region.

Determined to identify the orchids, I returned to the site multiple times in 2022. In October, I was again able to locate the orchids, identifying multiple emergent plants. Just before mid-November, some flowers looked like they wanted to open, but unsettled stormy weather dominated the second half of the month, so no luck.

At last, on the tenth revisit, in early December 2022, with 90% of the flowers "finished", a single fully open flower appeared making identification possible. The domed yellow post-anther lobe with ragged margin and a narrow purple band and the globose tufts of white cilia are a unique characteristic of *Thelymitra tholiformis*.

On this site the *T. tholiformis* coverage is approximately 50 meters by 4 to 10 meters in extent, on a downward sloping ridge line facing north, just below the highest point. There are mostly single plants anywhere from one to three meters apart, with one small cluster of nine plants being an exception. This site is noteworthy in that the current conservation status (2018) of *T. tholiformis* is listed as At Risk - Naturally Uncommon.





I now fully appreciate how aptly this species was described as "shy flowering" in the 2005 edition of the Field guide to the New Zealand orchids. *T. tholiformis* flowering is indeed very short lived to non-existent with self-pollination being the norm.

In this case, persistence paid off.





### The inbox





▲ A slightly unusual *Thelymitra hatchii*, with separate growths projecting from the column base. **Have you seen something similar? Send it in!** — Don Pittham & Beryce Vincenzi, Arthur's Pass



▲ Prasophyllum colensoi — Cara-Lisa Schloots, Otago



This beautiful white flowered *Earina mucronata* was found on the ▲ Tirohapi Track — *Mike Lusk, Charleston* 

### The inbox





▲ Earina autumnalis flowering in March at the Brook Waimārama Sanctuary — Rebecca Bowater, Nelson





Thelymitra cyanea on the Old Blyth Track on Mt Ruapehu. ▲
— Cara-Lisa Schloots, Otago

## The Type locality

### Townsonia deflexa at Mount Rochfort, near Westport

William Lewis Townson 1855–1926 was a pharmacist in New Zealand for 40 years. His most useful botanical fieldwork was in the South Island, but he studied the flora of each area he moved to, sending specimens and observations to Kirk and Cheeseman.

He was modest and gentle by nature, an active church worker, a club chess player and a collector of birds, plants and Māori crafts. Plants named for him include Townsonia, Aciphylla townsonii, Dracophyllum townsonii and Euphrasia townsonii. His obituary is available at https://paperspast.natlib.govt.nz/periodicals/TPRSNZ1928-58.2.8.1.22.

Cheeseman praised Townson's collecting work around Westport and described his new genus Townsonia and species Townsonia deflexa in the Manual of the NZ Flora (1906). The type specimen is in the Auckland Museum herbarium and JN Fitch's lithograph of Matilda Smith's

drawings appeared in Cheeseman's Illustrations of the NZ Flora

(1914).

Townson's "On the vegetation of the Westport District" was published in the Transactions 1906. https:// paperspast.natlib.govt.nz/periodicals/TPRSNZ1906-39.2.8.1.35. It has some delightfully lyrical passages – if rather purple in parts,

"... thousands of miles had to be walked, over hill country and plain, in fair weather and foul, and numerous difficulties had to be surmounted. But in looking back upon these years of wandering, when all my senses were on the alert, and my thews and sinews were strung to stand the strain of the longest day's tramp—when the book of nature was no more a sealed book for me, and the trees, plants, and birds became my familiar friends—they were undoubtedly the happiest years of my life."

"... there is a fascination, a bracing-up and exhilaration in the higher altitudes unknown to the flats."

"... the river bends and turns in a succession of noisy rapids and still pools, at the head of the falls gliding with an unrippled and glassy sweep over the gently inclined shingle-bed, until. reaching the constricted channel where the unyielding granite rocks contract its bed, it frets and froths in a turmoil of broken water. Lovely vistas through overarching tree-tops; sunny reaches of blue water rippling over glittering shingle-beds; frowning precipices and crags, moss and fern clad from base to summit, captivate the eve at every turn of the road."



WL Townson



TF Cheeseman

To every noun an adjective! He described the plants on Mount Rochfort ("one of my favourite hunting-grounds"), east of Westport, including,

"Up at the trig. station... on these upland bogs.... In the low forest under the shade of Fagus cliffortioides, Dacrydium biforme, Elœocarpus hookerianus, and Panax lineare grows another rarity—viz., Drimys traversii.... From 1,500 ft. to 2,500 ft. is its altitudinal range.... I had the good fortune to discover in the same situation a little orchis which forms a new ge-

nus, and which Mr. Cheeseman has honoured me by naming *Townsonia*.

"I must take this opportunity of thanking him for the compliment which he has paid me in thus associating my name with the science of botany in New Zealand, and giving me such liberal rewards for my work, which has always proved to be to me a labour of love. This delicate little plant Townsonia deflexa is only found at about the same elevation as the Drimys just described, growing in the shelter of the manuka and Olearia colensoi, on the bosses of moss and prostrate tree -trunks. It blooms in November and December, but is easily overlooked, as it is very slender, averages from 4 in. to 5 in. in height, and its colour much the same as the cushions of moss on which it grows. When fully matured the flowers show a purplish tint. I have also found it growing on Mount Frederic, and across the Buller on Mount Buckland, at the same elevation."

These were his public thanks: he had already written to Cheeseman privately in November 1902, so probably found it in late 1901. His list of orchids for the region is interesting. ▶

Dear M. Cheeseman, Jown letter of Wear Mr. Cheeseman, Jown letter of Och 2st + accompanying list- Came Oakly to hand, and I need hardly vay that I appareiale very much the honour which yow have done me in naming the attle Orchis, "Townsonia". For a neotokyte it is distinction which was quite unlooked for, and I must assure yow that I look apon it as very generous treatment, and I feel Stimulated to werease my yforts, and Thank yow very fronts, and Thank yow very hearfily.

#### Orchideæ.

Dendrobium cunninghamii, Lindl. Common; sea-level to 2,000 ft.

Bulbophyllum pygmæum, Lindl. Not uncommon throughout.

Earina mucronata, Lindl. Abundant.

Earina suaveolens. Lindl. Abundant.

Sarcochilus adversus, Hook. f. Rather a rare plant, growing mostly on Aristotelia racemosa in Buller Valley.

Thelymitra longifolia, Forst. Abundant from sea-level to 3,000 ft.

" pachyphylla, Cheesem., n. sp. An abundant species on both lowland and mountain pakihis; sea-level to between 2,000 ft. and 3,000 ft.

" uniflora, Hook.f. Abundant from sea-level to 3,000 ft.

*Orthoceras strictum*, R. Br. On stony elevations on the pakihis, at sea-level; not common.

Microtis porrifolia, R. Br. Common from sea-level to 2,000 ft.

Prasophyllum colensoi, Hook. f. Abundant from sea-level to 4,000 ft.

" rufum, R. Br. Not uncommon on sides of roads, and on dry elevations on the pakihis.

Pterostylis banksii, R. Br. Abundant; ascending to an elevation of 2,000 ft.

" *graminea*, Hook. f. Less abundant than the preceding. Grows on pakihis under shelter of low bushes, and on margins of the patches of Fagus forest.

" venosa, Col. Mount Rochfort and Mount Frederic, amongst mountain-flax, at an elevation of from 2,000–3,500 ft.

" *puberula*, Hook. f. On margin of pakihi forest, and amongst *Pteris aquilina* on elevated ground on "Waite's pakihi"; not common.

Acianthus sinclairii, Hook. f. In forest around Cape Foulwind, but not common.

Calochilus paludosus, R. Br. Not uncommon on the pakihis from sea-level to 2,000 ft.

*Lyperanthus antarcticus*, Hook. f. On coastal mountains from an elevation of 2,000–4,000 ft. or more; fairly abundant.

Caladenia minor, Hook. f. Not uncommon from sea-level to 2,000 ft.

bifolia, Hook. f. Mount Rochfort, Mount Frederic; from 2,000–3,000 ft.

Chiloglottis cornuta, Hook. f. Not uncommon from sea-level to 2,000 ft.

Adenochilus gracilis, Hook. f. Mount Owen, in Fagus forest; altitude, 1,000 ft.

**Townsonia deflexa**, Cheesem. Mount Rochfort, Mount Frederic, and the Paparoas, at an elevation of from 1,500–2,500 ft., growing in low forests on mossy surface of logs and rocks; not uncommon.

Corysanthes cheesemanii, Hook. f. Amongst Fagus roots in pakihi forest on "Waite's pakihi"; far from common.

- " oblonga, Hook. f. Abundant in shady woods.
- " rivularis, Hook, f. In damp forests; not uncommon.
- " rotundifolia, Hook. f. Not uncommon on the rock-faces where the tributaries of the Buller run through narrow gorges.
- " triloba, Hook. f. On the sea-slopes near to Cape Foulwind, under shelter of tree-ferns and nikau palms.
- " macrantha, Hook. f. Abundant between Mokihinui and Karamea on the road by the beach and in Fox's River.

**Gastrodia cunninghamii,** Hook. f. Not uncommon from sea-level to 1,000 ft.

This would be an interesting area for the Group to re-explore—Ed.

Townson's route up Mt
Rochfort began at Fairdown
and he found *Townsonia*between 1500 and 2500
feet altitude (460–760m). *ilat*Those levels are marked on
the Denniston road here 2



### 19. TOWNSONIA, n. gen.

A small slender terrestrial herb. Root of creeping fleshy caudicles thickened here and there into small tubers. Radical leaves 1-3 from the caudicles, rarely at the base of the floweringstem, petiolate, ovate-orbicular. Cauline leaf or empty bract solitary half-way up the stem, sessile, ovate, acute, often much reduced in size. Flowers 1 or 2, small; perianth horizontal or deflexed. Upper sepal much incurved, broad, concave, almost galeate; lateral placed in front of the lip, lanceolate, margins involute. Petals minute, erect. Lip clawed on to the base of the column: lamina erect, undivided, broadly ovate-rhomboid, subcordate at the base, entire, margins involute and clasping the column towards the base; disc smooth, without calli or ridges, or with an obscure thickening on each side near the base. Column rather shorter than the lip, erect, broadly and equally winged from the base; wings not continued upwards behind the anther. Stigma prominent, placed just under the small rostellum. Anther terminal, erect, 2-celled; pollinia free, granular.

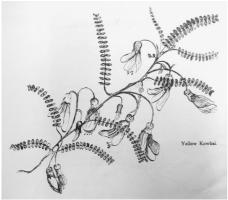
A very curious little plant. It is clearly allied to Adenochilus, of which it has the habit, but differs in the smooth undivided lip, minute petals, and in the column-wings not being produced upwards behind the anther. The smooth undivided lip also separates it from Chiloglottis, Caladenia, Burnettia, and other allied genera. Believing it to form the type of a new genus, I have much pleasure in dedicating it to its discoverer, Mr. W. Townson, of Westport, towhom I am much indebted for specimens and information respecting the botany of the north-western portion of the South Island.

1. **T.** deflexa, Cheesem.—Very slender, 3-6 in. high. Radical leaves on slender petioles  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long; blade  $\frac{1}{4}$ - $\frac{1}{2}$  in., broadly oblong or orbicular-ovate, obtuse or apiculate, rounded or subcordate at the base, thin and membranous, veins reticulated. Cauline leaf ovate, acute, often very small and scale-like. Flowers small,  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, greenish.

South Island: Ne'son-Vicinity of Westport, Townson! November-December.

Lucy Moore (Flora 1970) thought Townsonia deflexa and the Tasmanian T. viridis identical and placed them in Acianthus viridis but gave no reasons for sinking Cheeseman's genus nor for identifying the two species. Jones & Clements (Catalogue 1989) followed suit. Jones (Checklist of Tasmanian Orchidaceae 1998) reinstated Townsonia viridis and New Zealand's T. deflexa was again separated off.

Townson was a sketcher and bush poet: in 1927 his little booklet "A N.Z. nature lover's chaplet / poems by W. Townson", was published pothumously. The National Library in Wellington has a copy.





### To the Tui

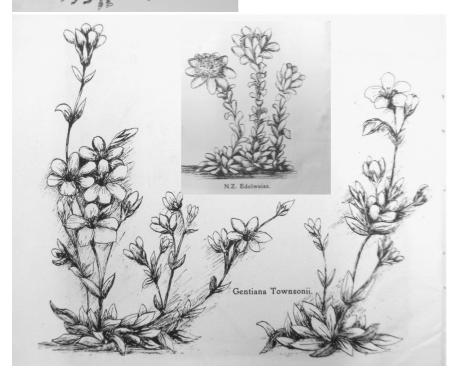
When the kowhai is blooming in early spring And its blossoms in gay yellow clusters swing Then come the Tui's golden days Spent in sipping the nectar and chanting its praise.

With his glossy coat and choker pure white He's courageous, and bold, and swift in flight, And looks truly a very smart fellow With a voice melodious, sweet and mellow.

When the rata's aflame with its flowers red, And glows like a torch from base to head, The Tui finds a honeyed banquet there And calls to his fellows the feast to share.

When on the topmost bough he sways, He pours forth his tuneful Hymn of Praise; The darts off to chase some luckless sparrow, With a clash of wings, returns swift as an arrow.

He chuckles and bells, he warbles and sings Till his music clear through the forest rings, The flutes softly a crooning song of love To his mate in her nest on the ridge above.









### The secret life of orchid seed germination

Jennifer Alderton-Moss Jennifer.Alderton-Moss@wcc.govt.nz

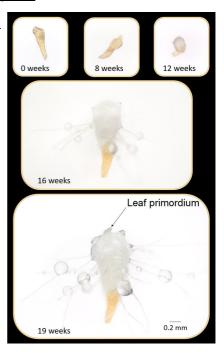
Karin van der Walt Karin.vanderWalt@wcc.govt.nz

Carlos Lehnebach Carlos Lehnebach Carlos Lehnebach

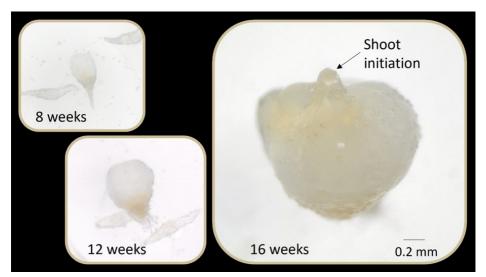
Fungi are taking over the Lions Ōtari native plant conservation laboratory – they are in the drawers, in the incubators, in the fridge, in the freezer, in cryovials suspended in ultra-cold liquid nitrogen. This might seem unusual for a plant conservation outfit, but as it turns out it is absolutely essential to the task we have taken on: conserving some of New Zealand's most threatened orchids.

As part of a three-year project, run in conjunction with Te Papa Tongarewa and funded by Te Tahua Taiao Ngā Taonga (Lottery Environment and Heritage), we have set out to improve the conservation outcomes of five threatened species: Corybas dienemus, Drymoanthus flavus, Gastrodia cooperae, Pterostylis irwinii and P. micromega.

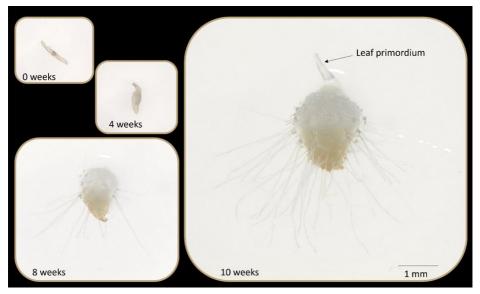
One of our aims is to understand the mycorrhizal associations of these species and be able to germinate their seeds. Orchid seedlings will then be used for living collections and to support wild populations. To this end, we have first employed "surrogate" species common species belonging to the same genera as our target species to trial fungal isolation and symbiotic germination methods. This has largely been a success! In the following series of images, we will present the germination progress of four of our surrogate species: Corybas hatchii, Gastrodia sesamoides, Pterostylis banksii and Pterostylis trullifolia.



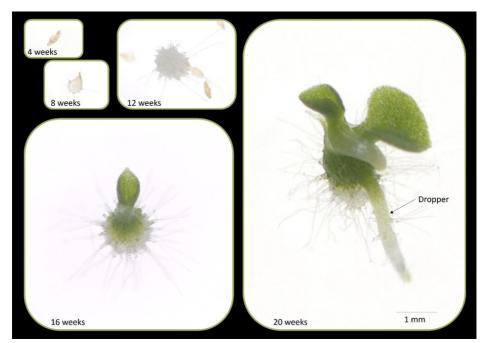
Germination of *Corybas hatchii* seeds grown with a *Sebacina* fungus isolated from an adult plant of the same species. After 19 weeks, the first signs of what will become a leaf (leaf primordium) can be observed. These protocorms will be moved into the light to encourage development of green photosynthetic tissue. This is especially exciting given how little attention has been paid to germination of *Corybas* both in New Zealand and overseas!



Germination of *Gastrodia sesamoides* with a *Resinicium* fungus isolated from a plant in the source population. After 16 weeks we are observing what we believe to be shoot initiation. Some *Gastrodia* are known to switch fungal partners throughout the course of their life, so whether this *Resinicium* fungus continues to support development is still unknown.



Germination of *Pterostylis banksii* assisted by a *Ceratobasidium* fungus isolated from adult plants from a wild population. We are yet to see greening of these, but leaf primordia (future leaves) are developing after just ten weeks!



Germination of *Pterostylis trullifolia* grown with a *Ceratobasidium* fungus isolated from a plant at the source population. After 20 weeks the seedling has developed green leaves, many rhizoids and potentially a dropper (an offshoot of the tuber from which a replacement tuber will grow).

It might be easy to see twenty-week-old orchids and assume this has been a smooth twenty-week process, but for these species, our work began months before the seeds made it into a Petri dish. Planning, finding suitable populations, hand-pollinating, collecting the seeds at the right time, and isolating the right fungi are all precursors to germination and before we could even think about the development of orchids, we had to undergo our own scientific development. Our skills in orchid propagation have been growing since 2019 and the credit of developing both us and the facilities available to us is widely shared among our funders and supporters. We are incredibly excited and proud to be seeing these results as these are the first steps towards effective conservation of our threatened orchids. We hope we will have more to share soon!

### **South Island Orchid Odyssey**

Bill Campbell

Mike Lusk and I embarked on a nine day South Island orchid odyssey in late November 2022, which for me was a bucket list trip

aimed at seeing as many South Island orchid species in flower as possible, over a relatively short time period. I had never been orchid hunting in the South Island, so there was a considerable degree of anticipation involved as the countdown to the start of the trip ticked by.

The orchid hunting began in earnest once we had settled into our accommodation at St Arnaud and continued fairly much unabated until we reached our final destination of Queens-

town. Key areas targeted were the Nelson Lakes District, the West Coast, Arthur's Pass and the Catlins. The weather wasn't the greatest, particularly during the mid-part of the trip but we were able to get out every day to do some fossicking about.

I had compiled a list of 15 target species, all but three of which I had not previously encountered. Some of these were long shots, given that we were visiting outside their usual flowering period. I am pleased to say, however, that, thanks in particular to local knowledge provided by Mark Moorhouse, Rowan Hindmarsh-Walls and Carlos Lehnebach, we did manage to track down 11 of the 15 target species and all were at various stages of flowering. Mark also acted as a local guide on the first full day of outings in the Nelson Lakes District.

The four species we weren't able to locate were Corybas orbic- ulatus, Corybas sulcatus, Thelymitra formosa and Waireia sten-

opetala. The first two were searched for in the general vicinity of known locations but were not able to be located and it was too early in the season for the latter two to be readily recognised.

The first day out got us off to a flying start, with five of the target species observed, thanks to Mark's excellent local knowledge and also Mike's eagle eyes. These species were *Corybas obscurus, Pterostylis australis, Pterostylis irsoniana* (one plant previously seen by me in the North Island but not in flower), *Pterostylis irwinii*, and *Pterostylis tristis*.

From Nelson Lakes we journeyed down to the West Coast and it was there that we surprisingly encountered more *Corybas obscurus*, along with *Corybas* "whiskers" at the same locations. A couple of plants of *Calochilus paludosus*, very close to being in full flower, were observed at one of the pākihi sites. Other more commonly observed species were also recorded and Mike may be able to provide site lists if anyone is interested.





We were conscious as we started heading away from the West Coast towards Arthur's Pass that we had not been able to find *Pterostylis cernua*, despite looking for it in likely locations. A number of roadside verges were searched without success as we headed east and I was beginning to think that this species was going to elude us. Fortunately, a final stop to look for it at Okuku Scenic Reserve came up trumps, with Mike finding several flowering plants tucked away in the bush just back from the road.



On arrival at Arthur's Pass we immediately found Pterostylis oliveri, not quite in full flower

unfortunately. We were a week or two early to see this species at its best. One species that was very conspicuous at Arthur's Pass was *Caladenia lyallii* and there appeared to be flowers everywhere we looked at some sites.

Mark had given us details of a site near the summit of Porters Pass where we could expect to find *Pterostylis tanypoda* and *Pterostylis tristis*. Unfortunately, we got our bearings a bit wrong on the way east and spent a lot of time searching without success, while being buffeted by strong winds and occasional showers. Upon our return the following day we located the site with ease and soon found several colonies of *P. tanypoda*, along with a few plants of *P. tristis*.



The target list was continuing to dwindle but one species we were keen to see before we left its territory was Pterostylis areolata. Fortunately, we chose the right track to stop at and Mike uncovered four plants huddled together on a hillside under a shrubby bush. It was a good find and one we were able to share with a couple of pass-

ing tourists from the UK.

With the above species under our belts it was off on a long drive to the Catlins to track down *C. orbiculatus* and *Pterostylis auriculata*. As mentioned earlier, despite a couple of hours searching in the foredunes of a beach where it is known to be present we were not able to locate a single plant of *C. orbiculatus*. We had to keep our wits about us while searching, as the territory we were in was also that of Pakeke / New Zealand Sea Lions, some of which we had already seen on the beach. Their tracks were all through the dunes, so we were very conscious of the fact we could encounter one, close up and very personal, at any time.



Time was running out on us and there was still one species to be found to complete our quest. We had been told that *Pterostylis auriculata* "is everywhere in the Catlins" but our

initial searching suggested otherwise. We were finding plenty of *Pterostylis* in flower but concluded these were *P. banksii*, albeit in a slightly different form to what we were used to seeing in the North Island. Eventually, we did manage to stumble across some *P. auriculata* in flower, got our photos and the odyssey was almost at an end. All that remained was the journey across to Queenstown, with no target species left to tick off. All in all, it was a very satisfying experience, although not something I'd undertake in quite the same way again.



### The inbox



At first glance a typical *Pterostylis irsoniana*, but take a closer look at the labellum and see that it is lacking the usual emarginate knob at the tip — *Mark Moorhouse*. *Nelson* 





▲ *Drymoanthus adversus* on kahikatea —

Pat Enright, Western Lake



Pterostylis porrecta appears to be expanding its range in the ▲
Porirua Scenic Reserve and at Waiorongomai. Pat notes that it seems to like being near mataī trees — Pat Enright, Wellington

### **Editorial**

### A few orchid extracts from William Townson's letters to Cheeseman

Among William Townson's letters from Westport to TF Cheeseman (Auckland Museum) are a number with interesting observations on orchids.

**20 June 1901**, "I send some specimens of a Corysanthes found today in a mossy bit of bush on the skirt of the Pakahi (*sic*). I found one purple flower amongst them, & I will continue the search." *Corybas cheesemanii—Ed / ISt.* 

14 July 1901, "I have spent two afternoons hunting up 420 for you & the specimens in the bottle of spirit are all I could find. I have a fine lot drying, and I have not been lucky in my search of late. It is very scarce & seems to be nearly over. Out of about 100 specimens the flowers of 98 were pale green and two purple. They grow amongst the Birch roots in the fairly heavy bush on the edge of the pakahi & I have found them nowhere else as yet. *Corybas cheesemanii—Ed / ISt.* 

I send specimens of another variety growing in the same bush on mossy logs, with green flowers and the undersurface of the leaf purplish. They are just coming into flower. An early flowering Corybas, perhaps C. vitreus—Ed / ISt.

And another variety still, has not shown flower as yet. You say truly that they need a lot of hunting especially where they are as scarce as they are here.

13 August 1901, "No.426 I collected at Cape Foulwind last Thursday in the bush, and I cannot understand the difference in the form of the leaf in the seeded specimens and those which are in flower, but still they do not look like different species. The flower is green, and they were growing on the shady side of a little gully some under the lea of rotten logs and some on the more open ground." He reported in his paper in the Trans., "Corysanthes triloba, Hook.f. On the sea-slopes near to Cape Foulwind, under shelter of tree-ferns and nikau palms." The shovel-shaped leaf of the flowering plant cf. the kidney shaped leaf of the nonflowering plant was recently emphasised (120 years later) by Mark Moorhouse—Ed / ISt.

"I have one specimen of an Orchis which is an epiphyte with glossy ovate coriaceous leaves with slender racemes of small flowers growing from the stem underneath the leaves. *Drymo-anthus adversus no doubt—Ed / ISt.* 

**6 December 1901**, "Pterostylis puberula is far from common here & I have only seen it in two localities." *Interesting that P. puberula was in the vicinity of Westport—Ed / ISt.* 

**22 December 1901**, "I am sending... assorted lot of plants.... <u>88</u> & <u>89</u> were named Caladenia minor, but in 88 I find a consistent difference. There are no purple bars on lobes: stem is always green and pubescence is different." *Caladenia nothofageti? This was a well informed and astute observer who noted a difference in the colours and the hairs—Ed / ISt.* 



