The New Zealand Native Orchid Journal

No. 142
Nov. 2016

Orchid in 3D: Eric Scanlen

Bulbophyllum tuberculatum Colenso in 2D

The type locality: Ian St George
Bulbophyllum tuberculatum from Bethany

In 1883 William Colenso described a plant sent to him from Petane ("Bethany" in te reo) north of Napier by the local teacher Augustus Hamilton:

Bolbophyllum tuberculatum**, sp. nov.**

Plant epiphytal, forming irregular patches on upper forks of large trees (*Dacrydium cupressinum*); *roots* 2–3 inches long, stout; *leaves* linear-oblong, 8 lines long, 2 lines broad, acute, sub-apiculate, entire, glabrous, dark-green on upper surface, of a lighter-green below, and there minutely and closely dotted with round greyish dots, flat or slightly involute, thickish but not fleshy, having 8–10 parallel veins which are transversely netted, keeled; *stipe* stoutish, 1 line long; *bulbs* ovoid, 3–3½ lines long, turgid, ridged; *ovary* oblong, 2 lines long, glabrous, greenish-white, tuberculated in rows, tubercles blunt, reddish; *scape* 6–8 lines long, springing from rhizome below base of bulb, slender, turgid and sub-pyriform at base, reddish, muricated, bearing a short raceme of 2–3 flowers; *flowers* alternate, rather distant on short pedicels,½ line long, each having a bract at its base; *bracts* sessile rather more than half-clasping, deltoid-acuminate with a produced stout obtuse tip.

Hab. In forests near Petane, Hawke's Bay, 1883: *Mr. A. Hamilton*.

Obs.—A species very distinct from our long known and common *B. pygmæum*, Lindl.; apparently rare, though possibly confounded with that species. It is a much larger plant of similar appearance and habit. I regret that I have not yet seen new and perfect flowers.

Five years later he did receive flowers, again from Hamilton, this time from near Palmerston North, so extended his original description:

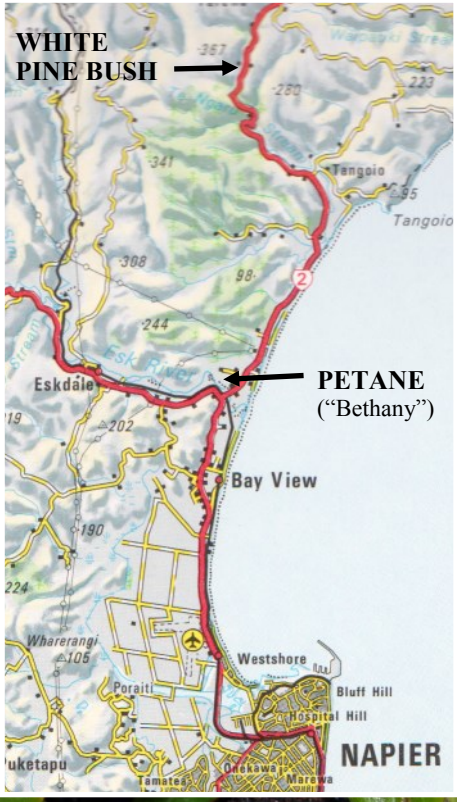
***B. tuberculatum*, Col.**

Bulb ovoid, dark-green, glossy, clothed with minute white shining leprous circular bullate scales. Peduncle sub 1in. long, slender, with 3 sheathing cauline bracts, equidistant, membranaceous, pale, striate, 3-flowered. Flowers small, usually 3 (sometimes by abortion only 2), rather distant, on short pedicels, each with a sheathing bracteole at its base. Perianth triangular, very oblique, gibbous at base (as in young *Dendrobium cunninghamii*), whitish, very membranous; sepals of nearly equal length, their tips and upper margins of a violet tinge, slightly open, when fully expanded 2 ½ lines broad; dorsal sepal narrow, ovate, 1-nerved; the lateral pair much broader, triangular-ovate, dimidiate, 3-nerved, sub-acute, connate in front under joint of labellum; petals white, ovate, obtuse, 1-nerved, ½ size (or less) of sepals; labellum exserted, sometimes the lamina is erect and falls back on the column, 1 line long, sub-ovate-oblong, tip sub-acute, thickish, smooth, margin entire, bright vermilion-red with a central yellow line running to base, base truncate with 2 small longitudinal ridges at posterior part, its margins thin incurved, claw slender very long (nearly as long as lamina), yellowish, the joint excessively mobile. Column minute, lateral appendages sub-triangular, hyaline, their tips retuse, with a minute glossy gland at base in front; anther pale-yellow, tip circular, slightly erose. Capsule oblong, turgid, 3 lines long, striate; striæ light-red. Leaves, &c., as already described, only some are larger 9–12 lines long and purple below; veins (in fresh state) not visible. Ovary and peduncle tuberculated as described. ("Trans. N.Z. Inst.," vol. xvi., p. 336.)

Hab. Epiphytal on trees, forming pretty large and closely-matted masses, woods near Palmerston, County of Manawatu; April, 1889: *Mr. A. Hamilton*. [2]

Augustus Hamilton was a schoolteacher at Petane 1878–1890, an active member of the Hawke's Bay Philosophical Society, and founder of its museum. He later became registrar at the University of Otago, published many important papers, wrote his work on the art and craftsmanship of the Maori, and then succeeded Hector as Director of the Colonial Museum in Wellington.

Mike Lusk found *Bulbophyllum tuberculatum* in White Pine bush at Tangoio about 6km up the road, and he regards that as the nearest likely bush in the general area. He found it on a fallen kahikatea limb. He wrote, "The nature of the bush there is such that it would be pretty hard to find any without serious climbing or on another fallen limb."



▼Mike Lusk's photograph of *Bulbophyllum tuberculatum* from White Pine Bush, near its type locality.

Original papers

New species of *Corybas* and *Gastrodia* for New Zealand

By Carlos A. Lehnebach, Museum of New Zealand, Te Papa Tongarewa, Wellington
Email: CarlosL@tepapa.govt.nz

In the last few months the New Zealand (NZ) orchid flora has gained seven species; five species of spider orchid (*Corybas*)[1] and two species of potato orchid (*Gastrodia*)[2]. These new species are the result of several years of research that included travelling across NZ, long hours measuring fresh and herbarium specimens, lab work and the examination of historical specimens of *Corybas* and *Gastrodia* stored in national and international institutions.

Our desire to sort out the taxonomic status of these orchids was mirrored by many members of the NZNOG, DoC staff and orchid fans from across NZ. Their assistance providing information on localities to visit, support in the field or collecting specimens for us has greatly contributed to these projects. A big Thanks to you all! Also I would like to thank the Group for the financial support I received from the NZ NOG towards the *Gastrodia* study and the summer research student involved in this project.

Species identification can be difficult in orchids and practically impossible in *Corybas* if all you have is a leaf. *Corybas trilobus* is perhaps one of the most widespread and morphologically variable species in the genus and the possibility of it including several undescribed entities has been suggested for years by many people. Some of these entities are easily recognisable by their size, and shape or the colour of their flowers. Tag-names have been given to these plants to facilitate communication among observers and to organise information on their distribution, habitat preferences and flowering period, among others. Interestingly, our genetic and statistical analyses have confirmed five of these tag-named entities were indeed different species. Well done to those who noticed these orchids were actually distinct.

Corybas confusus (*C.* round leaf), *C. obscurus* (*C.* darkie), *C. sanctigeorgianus* (*C.* trisept), *C. vitreus* (C. eastern-hills), and *C. walliae* (note wrong ending *-i* was used for this species in the article; *-ae* is correct) are now official names to be used for these orchids. It takes a while to get use to them and I still struggle using these new names myself! Based on my observations and records published in the NZNOG Journal we can say that *C. obscurus* and *C. sanctigeorgianus* are restricted to a single area of NZ. The first one has been found only in Nelson Lakes (South Island) while the second species grows only in the Hunua Ranges (North Island). The other three species are found in both the North and South Island.

In our study we included all those spider orchids previously placed under *Nematoceras* (aka the *Nematoceras* clade). Analyses of DNA sequences showed that species in this group are genetically very similar suggesting they have a recent origin (that means a few

million years old). This is quite interesting because variation in colour, shape, and size is very obvious among the species of this clade. They even grow in different habitats. I believe that after the ancestor of this orchid group established in NZ *something* must have triggered its diversification. Was it free habitat space for them to colonise? Or the creation of new partnerships with different pollinators or fungal mycorrhiza? Or has hybridisation promoted diversification? From our genetic results only the species pair *C. obscurus*-*C. walliae* share some genetic signal that could be interpreted as a sign of hybridisation. However, more research is needed to confirm this and we might be able to answer this and the other questions in a few more years. Meanwhile, further taxonomic work is needed to resolve the identity of *C. trilobus* s.s. and other entities such as *C.* pygmy, *C.* tri-Dodd, *C.* Pollok, and a few others. AFLP, a DNA fingerprinting technique, was very useful to detect species boundaries among *C. hypogaeus*, *C. obscurus* and *C. walliae* and I am planning to use this method again in future studies.

Next orchids in my "to do list" are *C. trilobus* s.s., *C.* Trotters and *C.* Rimutaka. I had the chance to study the material collected by William Colenso in the Wairarapa. This is currently on loan from Kew. The specimen was designated as lectotype of the species by Brian Molloy and also Mark Clements. Under the dissecting scope you can see that the labellum lamina is pale, almost translucent, with not many hairs and the lower margin is divided into narrow irregular segments. These features match with an entity I have studied from the Wairarapa and Whanganui area, perhaps also found elsewhere. How this form relates to dark flowered forms such as *C.* Trotters and *C.* Rimutaka is still unclear.

After those long hours measuring 290 orchid samples I have identified characteristics that can be used to discriminate among these new orchids. Leaf size (length and width) or the length of the lateral sepals and petals are some of the more obvious and useful characters. The shape and length of the dorsal sepal is also informative as well as flower colour. On the other hand, characters such as the length of the petiole or the shape and size of the floral bract are too variable and it is not advisable to use them in isolation to discriminate between species. For instance, petiole length in *C. obscurus* is extremely variable and it may range from 5mm to 40mm. This feature is clearly affected by the habitat where the plant is growing and competition for sun with nearby plants (moss/ferns).

Unlike *Corybas, Gastrodia* was by far easier to study. Plants and flowers are rather simple and therefore there are not as many characters to look at or to measure. This could be a relief, especially if you have spent a few months measuring *Corybas*. Bad thing is that finding taxonomically informative characters is difficult. Our statistical analyses confirmed NZ *Gastrodia* are overall very similar (not news here) but show some differences in the number and size of flowers. The most striking difference, however, was the length of the column. Both *Gastrodia cooperae* (*G.* long-column+black) and *G. molloyi* (*G.* long column) possess a long column, almost as long as that of *G. sesamoides*. This could be the reason why many herbarium specimens of *G. molloyi* that we came across were identified as *G. sesamoides*. The colour of the labellum tip also helps identifying these species. *Gastrodia cooperae* resembles *G. cunninghamii* in stature and flower colour, but it has a long column and the labellum tip is dark brown to black. *Gastrodia molloyi*, on the hand, also has a long column but the labellum tip is orange to yellow. The overall colour of the plant is also very distinct, a bit golden-brown.

Genetic analyses were also straightforward and they supported the recognition of these two new species. They also confirmed *Gastrodia* "City" is nested within *G. sesamoides* (therefore not a different species) and that *G. cunninghamii* and *G. cooperae* are genetically close to each other. They are probably

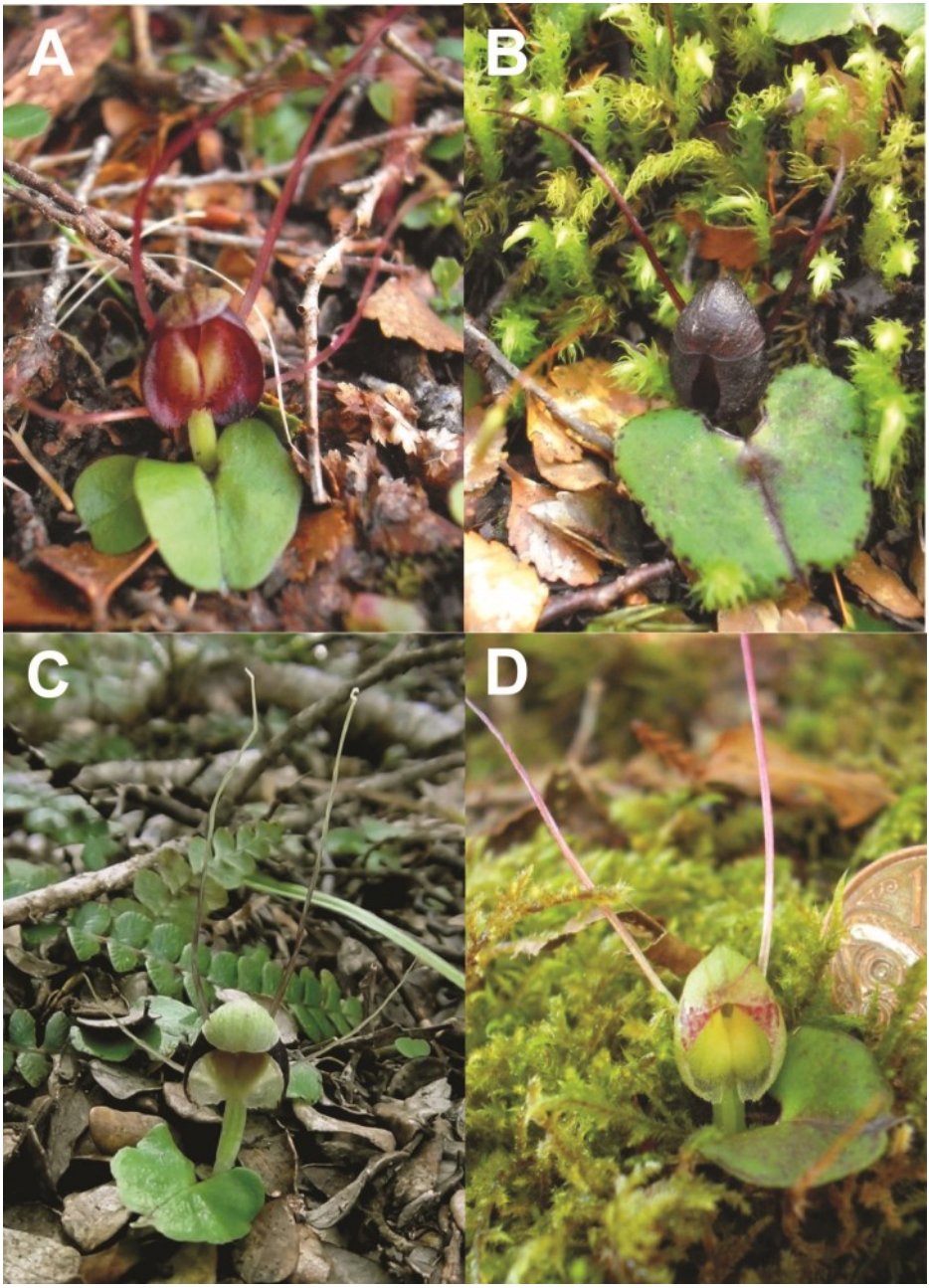


Figure 1: *Corybas*—four new species of *Corybas* endemic to New Zealand.
A: *C. confusus*; B: *C. obscurus*; C: *C. walliae*; C: *C. vitreus*. See *C. sanctigeorgianus* on p.16.

sister species. The next step for my research in *Gastrodia* is to produce a phylogeny for the genus and explore how NZ *Gastrodia* relate to other species from Australia and Asia. This will give us an idea of when and how many times *Gastrodia* reached NZ and from where.

I hope you enjoy reading these two articles. I thank here Te Papa and the Department of Conservation who paid for the open access fee for the *Corybas* and *Gastrodia* article, respectively. This means anybody can read and download these articles from *Phytotaxa* as many times as wanted.

References

Lehnebach CA, Zeller, A.J., Frericks, J, Ritchie P. 2016. Five new species of Corybas (Diurideae, Orchidaceae) endemic to New Zealand and phylogeny of the *Nematoceras* clade. *Phytotaxa* 270: 1–24. DOI: http://dx.doi.org/10.11646/phytotaxa.270.1.1

Lehnebach CA, Rolfe JR, Gibbins J, Ritchie P. 2016**.** Two new species of *Gastrodia* (Gastrodieae, Orchidaceae) endemic to New Zealand. *Phytotaxa* 277: 237–254. DOI: http://dx.doi.org/10.11646/phytotaxa.277.3.2

Figure 2:
Gastrodia cooperae (was *G.* "long column black")

Figure 3:
Gastrodia molloyi (was *G.* "long column")

Where have you seen *Cryptostylis*? and where have you seen *Lissopimpla*?

Amy Martin of the School of Biological Sciences at the University of Auckland emailed, "I'm a Master's student, researching the evolution of sexual deception in *Cryptostylis* orchids - the only orchid presently known to provoke true (and costly) ejaculation in its pollinator, the Orchid Dupe Wasp (*Lissopimpla excelsa*). Part of my research involves mapping observations of *Cryptostylis* both with and without its pollinator. I am thus reaching out to the New Zealand Native Orchid Group to see whether anyone has records of these such observations, or perhaps if anyone has observed the pollinator (Orchid Dupe Wasp) in locations without *Cryptostylis*. You can contact me at my email address: amy.l.b.martin@gmail.com

Focus stacking x2–x5

By Pam Shearer

If, like me, your camera just can't give you the amount of focus you need when shooting at higher than x1 magnifications, focus stacking might be a step in the right direction.

Acianthus is the most common orchid in NZ — it grows in areas that are easy to photograph, but I've never been able to get pictures showing both the anther & labellum in good focus x2 and above. Fig. 1 is a good example of this. Compare this shot to a focus stacked picure 2 & you'll see what I mean. Fig. 1 was shot at f16 (the lens I used—MP-E 65 doesn't have a higher numbered f-stop) so depth of field is limited with this lens. At f16, the lens is soft—it's sharpest at around f4–6, but as you can imagine, depth of field is very limited.

At f5 or 6 you can shoot with a faster speed than f16, meaning movement is less of an issue. I don't use flash much as I usually seem to get a lot of reflections, also it's another piece of gear and I try to streamline my gear for ease of use and weight. (The Canon 5D has no inbuilt flash.)

The internet is littered with tutorials teaching focus stacking, so through a process of trial & error, I've put together a system that I enjoy using. I have a Canon 5D Mark 11 camera & use this with a Hejnar 50mm micrometer adjusting macro rail. My tripod is a Gitzo with Manfrotto 468MGRC5 hydrostatic ball head. I also use Sirui quick release plates for each lens—these fit the macro rail but can also be used without the rail. For macro I mostly use a Canon 100mm lens & an MP-E 65mm. Fig. 3 shows the gear I use. Once the stack is shot, I import the pictures to a raw converter (mostly Aperture —now not supported) and then use stacking software to compile the finished picture. I'm presently using Zerene. Once I'm happy with the picture after some basic editing in Zerene, I'll upload it to photoshop to make any adjustments. Mostly the pictures don't need much in the way of editing, sometimes a small amount of sharpening and occasionally white balance. If there's dust on the camera sensor (changing lenses in the field usually means the sensor accumulates quite a bit of dust) I clone it out—the higher the magnification, the larger the specks of dust! Cleaning the sensor isn't a task for the faint-hearted—definitely not recommended as it's easy to scratch—but I do give it a clean occasionally, when cloning out dust turns into a nightmare. Some camera shops offer sensor cleaning and also upgrade the camera firmware at the same time.

Although I don't use focus stacking for all the pictures I take, it certainly helps if I want to crop & maintain a good resolution. Pic 4 shows a focus stacked shot of a *Caladenia* sp. and pic 5 a 100% crop of the labellum.

My output from a day's photography is now considerably lower—but I'd much rather be able to choose which elements of a subject I want in focus, and shoot the stack accordingly.

Fig. 1 *Acianthus sinclairii* Albany Rsv 13072014 MP-E 65 x3 f16 No flash
Fig. 2 *Acianthus sinclairii* Kauri Glen Rsv 20072016 MP-E 65 x3 f5.6 No flash
Fig. 3 Camera set up I use presently
Fig. 4 *Caladenia* sp. Sharps Rsv 30112015 MP -E 65 x4 f5.6 No flash
Fig. 5 as above 100% crop

1

2

3

The New Zealand Native Orchid Journal

The main aim of the New Zealand Native Orchid Group is telling people about native orchids, so we permit others to copy material published here, provided the source and author are acknowledged. Authors should note this as a condition of acceptance of their work. The Journal is published quarterly from February, and deadline for copy is the first of the month beforehand. We like copy to be typed or sent on disk or by email.

Chair: David McConachie, 42 Titiro Moana Rd, Korokoro, Lower Hutt, pleione@orcon.net.nz.

Secretary: Pam Shearer, 7 Ring Terrace, St Marys Bay, Auckland. pam@insidetrack.co.nz.

Treasurer: Judith Tyler, 4 Byrd St, Levin, bandj.tyler@xtra.co.nz: subscription NZ$15 email, $30 post, $45 overseas.

Books and publications: Brian Tyler, 4 Byrd St, Levin, bandj.tyler@xtra.co.nz.

Webmaster: Michael Pratt, www.nativeorchids.co.nz, Michael@nativeorchids.co.nz. The website posts journals six months after original publication.

Editor: Ian St George, 32 Hawkestone St, Thorndon, Wellington 6011 istge@yahoo.co.nz.

4

5

Editorial: Ian St George

I have to confess to a slightly embarrassing level of pride that Carlos Lehnebach chose the name *Corybas sanctigeorgianus*. It is the orchid Eric Scanlen found in 1962 and tagged *Corybas* "trisept" long ago.

I walked with Eric to the type locality on the Wairoa Loop track, Otau valley in the Hunua ranges, on 13 September.

On the way we saw some surprisingly late *Ptrerostylis alobula* and *P. trullifolia*, still flowering in shady spots; *Acianthus sinclairii* in early fruit, *Pterostylis banksii* 30cm tall, still not showing buds. Orchids are scarce: Eric suggests it is because the fractured greywacke bedrock drains surface water away too fast in the summer .

But then (and Eric led us to the spot with unerring accuracy) there beside us was our quarry. Carpets of *Corybas* leaves, with flowers as small as 6mm across under a tall leafstem in shady places, up to 12mm and above a short leafstem in strong light. A characteristic is the long, slightly apiculate dorsal. The colony stuttered downhill for 150 metres.

It is a signal honour to have an orchid named for oneself, but I am just the editor of your journal, the organ of the Group. When Carlos wrote that I had "greatly contributed to the knowledge of NZ orchids and promoted their study and conservation," I take it as a recognition of the Group, the journal and their work.

Thank you.

Editor's pennyworth: stack shot of *Corybas* aff. *rivularis* in the Rimutaka, using a Nikon D5500 with an AF-S Micro-Nikkor 105mm 1:2.8G ED macro lens, mounted on a similar (but home adapted with a 10mm/cm thread so a single revolution advances the camera 1mm) stage to that used by Pam Shearer.

Notes

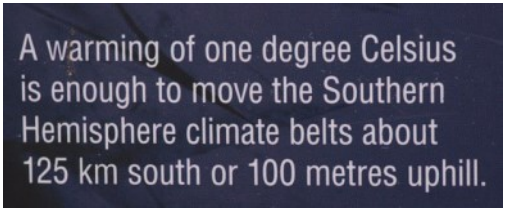
W.A. Orchid Spectacular Conference & Show
Rendezvous Hotel, West Coast H/W, Scarborough, Western Australia: 5th & 6th August 2017

Dear Orchid Aficionado,
YES!! We are compiling an email database for the forthcoming **W.A. Orchid Spectacular Conference & Show** in Perth, Western Australia, so, if you are really interested we would very much like to hear from you by your completing the '**Expressions of Interest**' page on the Conference web site, http://www.waorchids.iinet.net.au/WAOS_2017.htm

Caladenia atradenia is, for some reason, never easy to photograph, but these shots taken 6 December 2014 at Iwitahi by Manee Poffley, are excellent.

Dean Nelson, Senior Ranger, Biodiversity - Kaitiaki Matua, Kanorau Koiora, Department of Conservation emailed, "Recently I spent two weeks on Anchor Island in Dusky Sound working on the kakapo recovery programme. While there, I took a photo (sorry not brilliant focus) of what I take to be spurred helmet orchid (*Corybas cheesemanii*). I see from your site that its distribution is considered to be well north of Fiordland so I thought you might be interested in the record…. The date was 22 June. I kept an eye out for more but these were the only two I saw."

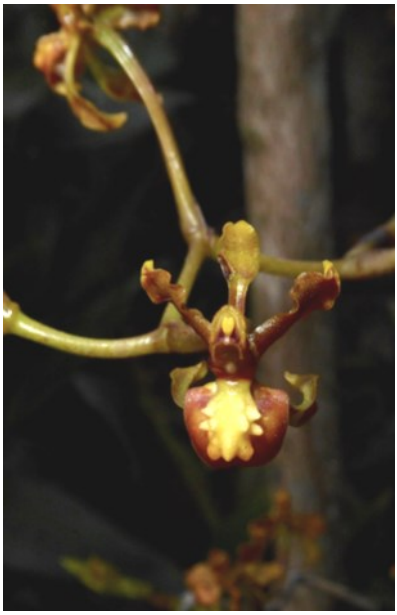
This is its southernmost record. How often do we say that these days? are we better at seeing them, or is there a real creep south with global warming? Mike Lusk photographed the sign at right at the Melbourne Botanic Garden—Ed.



Lynne Pomare found plants with white buds at the foot of a bank amongst kanuka litter near Karori, Wellington, in early July.

Cara-Lisa Schloots was in Peru in June and she photographed some (unidentified) orchids on the slopes of Huayna Picchu...

On the slopes, flower stalk about 1/2 m long, terrestrial ▼



Epidendrum sp. on the summit: there were hundreds of these ranging from peach to pink to orange, terrestrial and epiphytic ▼

On the lower slopes, small plant with a bulb forming habit, epiphytic ►

On the lower slopes of Huayna Picchu, about 2m tall stem with flowers from 1m up. Soft and fleshy, like a large version of a seasonal New Zealand terrestrial orchid. About 20 flowers 4cm in size when open ►

The NZ orchids

the editor's 2016 list

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

Acianthus sinclairii Hook.f. Fl. Nov.-Zel. 1: 245 (1853).
Acianthus fornicatus var. sinclairii (Hook.f.) 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(11): 499 (2002).

Bulbophyllum tuberculatum Colenso. Trans. & Proc. New Zealand Inst. 16: 336 (1884).
Adelopetalum tuberculatum (Colenso) D.L.Jones, M.A.Clem. & Molloy. Orchadian 13(11): 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 Hook.f. var. exigua Cheeseman. Man. New Zealand Fl. 688 (1906).
Caladenia exigua Cheeseman. Trans. & Proc. New Zealand Inst. 45: 96 (1913).
Caladenia carnea R.Br. var. alata (R.Br.) Domin. Bibliotheca Botanica Heft 85: 549 (1915).
Caladenia carnea R.Br. var. exigua (Cheeseman) Rupp. Proc. Linn. Soc. New South Wales 69: 75 (1944).
Caladenia holmesii Rupp. Victoria Naturalist 70: 179 (1954).
Caladenia catenata (Sm.) Druce var. exigua (Cheeseman) W.M.Curtis. Stud. Fl. Tasman., 4A: 133 (1979).
Petalochilus alatus (R.Br.) D.L.Jones & M.A.Clem. Orchadian 13(9): 406 (2001).

Caladenia atradenia D.L.Jones, Molloy & M.A.Clem. Orchadian 12(5): 221 (1997).
Stegostyla atradenia (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones & M.A.Clem. Orchadian 13(9): 414 (2001).
Caladenia iridescens as meant by Hatch. NZNOG Newsletter 16: 1 (1985), is not that of R.S.Rogers (1920).
Caladenia carnea R.Br. 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(5): 227 (1997).
Caladenia carnea R.Br. var. bartlettii Hatch. Trans. & Proc. Roy. Soc. New Zealand 77: 402 (1949).
Petalochilus bartlettii (Hatch) D.L.Jones & M.A.Clem. Orchadian 13(9): 406 (2001).

Caladenia chlorostyla D.L.Jones, Molloy & M.A.Clem. Orchadian 12(5): 223 fl (1997).
Petalochilus chlorostylus (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones & M.A.Clem. Orchadian 13(9): 406 (2001).
Caladenia catenata as meant by Cooper. Field guide to the NZ native orchids 17 (1984), is not that of Druce (1917).
Arethusa catenata and Caladenia alba are names used for Australian plants 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 treated as aberrant floral (peloric) mutations, probably of this species.
A similar taxon has red hairs and later flowering. There is also a larger late flowering plant with (usually) 2–3 fls.

Caladenia fuscata (Rchb.f.) M.A.Clem. & D.L.Jones, Austral. Orchid Res. 1: 25 (1989).
Petalochilus fuscatus (Rchb.f.) D.L.Jones & M.A.Clem., Orchadian 13: 410 (2001).
Caladenia carnea var. fuscata Rchb.f., Beitr. Syst. Pflanzenk.: 63 (1871).
HB Matthews's Caladenia "nitida-rosea" (see Scanlen E. Matthews & son on orchids. NZNOG Historical Series 2006; 14: 12) may be this or the Tasmanian C. atrochila (E. Scanlen, pers. com.)

Caladenia lyallii Hook.f. Fl. Nov.-Zel. 1: 247 (1853).
Stegostyla lyallii (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13(9): 413 (2001).
There seem to be a number of taxa currently included in the S. lyallii group, including a small form from Nelson Lakes, tagnamed C. "Bacon creek". Plants matching the Australian Caladenia alpina appear little different from C. lyallii.

Caladenia minor Hook.f. Fl. Nov.-Zel. 1: 247, t.56b (1853).
Caladenia carnea var. pygmaea (R.S.Rogers) Rupp. Proc. Linn. Soc. New South Wales 69: 74 (1944).
Caladenia carnea R.Br. var. minor (Hook.f.) Hatch. Trans. & Proc. Roy. Soc. New Zealand 77: 401 (1949).
Caladenia catenata var. minor (Hook.f.) W.M.Curtis. Stud. Fl. Tasman., 4A: 106 (1979).
Petalochilus minor (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13(9): 410 (2001).
The identity of Caladenia minor is not clear, but it may be a taxon within C. chlorostyla.

Caladenia nothofageti D.L.Jones, Molloy & M.A.Clem. Orchadian 12(5): 226, f.1 (1997).
Petalochilus nothofageti (D.L.Jones, Molloy & M.A.Clem.) Jones & M.A.Clem. Orchadian 13(9): 410 (2001).

Caladenia pusilla W.M.Curtis. Stud. Fl. Tasman., 4A: 133 (1980).
A tiny pink flowered entity with broad oval sepals and petals, an incurved dorsal sepal and a triangular labellar midlobe; grows near Wellington, Taranaki and in Northland.

Caladenia variegata Colenso. Trans. & Proc. New Zealand Inst. 17: 248 (1885).
Petalochilus variegatus (Colenso) D.L.Jones & M.A.Clem. Orchadian 13(9): 410 (2001).
Some flowers have a clear two rows of calli on the labellum, others have extra calli scattered to either side of the two rows.

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

Calochilus herbaceus Lindl. Gen. & Spec. 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 campestris as meant by Fitzg. Austral. Orchids 1(4): 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.: 323 (1810).

Chiloglottis cornuta Hook.f. Bot. Antarct. Voy., Vol. 1, Fl. Antarct.: 69 (1844).
Caladenia cornuta (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Simpliglottis cornuta (Hook.f.) Szlach. Polish Bot. J. 46(1): 13 (2001).
The NZ form of Chiloglottis cornuta may differ from the Australian; the colour and pattern of labellar calli vary.

Chiloglottis formicifera Fitzg. Austral. Orchids 1(3): (1877).
Myrmechila formicifera (Fitzg.) D.L.Jones & M.A.Clem. Orchadian 15(1): 37 (2005).
Only one record of this vagrant 100 years ago.

Chiloglottis trapeziformis Fitzg. Austral. Orchids 1(3): (1877).
Myrmechila trapeziformis (Fitzg.) D.L.Jones & M.A.Clem. Orchadian 15(1): 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(1): 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 (1805).

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(10): 449 (2002).
Corysanthes acuminata (M.A.Clem. & Hatch) Szlach. Richardiana 3(2): 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(10): 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 (1): 9 (2016). The species tagged *C.* "roundleaf".
A form on the Chathams identified as C. aff. sulcatus may fall within C. confusus.

Corybas cryptanthus Hatch. Trans. Roy. Soc. New Zealand 83: 577 (1956).
Molloybas cryptanthus (Hatch) D.L.Jones & M.A.Clem. Orchadian 13(10): 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 hatchii Lehnebach. N.Z. Native Orchid Journal 139: 4 (2016).
Corybas macranthus (Hook.f.) Rchb.f. var. longipetalus Hatch. Trans. & Proc. Roy. Soc. New Zealand 76: 580, t.60(1) (1947).
Nematoceras longipetalum (Hatch) Molloy, D.L.Jones & M.A.Clem. Orchadian 13(10): 449 (2002).
Corybas longipetalus (Hatch) Hatch. NZNOG Journal 47: 6 (1993), is not that of Schltr. (1923).
Corybas "Waiouru" tagname.

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(10): 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(10): 449 (2002).
Corysanthes iridescens (Irwin & Molloy) Szlach. Richardiana 3 (2): 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 entities in the C. macranthus group. Probable hybrids with insect-pollinated members of the C. trilobus group have been reported.

Corybas oblongus (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Singularybas oblongus (Hook.f.) Molloy, D.L.Jones & M.A.Clem. Orchadian 13(10): 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).
There are two or three taxa included in this complex. One appears to be identical with HB Matthews's Corysanthes "aestivalis" (see Scanlen E. Matthews & son on orchids. NZNOG Historical Series 2006; 14: 12). A white flowered form (Nelson lakes and subantarctic islands) is more clearly separate.

Corybas obscurus Lehnebach Phytotaxa 270 (1): 11 (2016). The species tagged *C.* "darkie".

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(10): 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 (1): 5 [1996]).

Corybas papa Molloy & Irwin. New Zealand J. Bot. 34(1): 5, f.1 (1996).
Nematoceras papa (Molloy & Irwin) Molloy, D.L.Jones & M.A.Clem. Orchadian 13(10): 449 (2002).
Corysanthes papa (Molloy & Irwin) Szlach. Richardiana 3(2): 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(10): 449 (2002).

Corybas rivularis (A.Cunn.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Nematoceras rivulare (A.Cunn.) Hook.f. Fl. Nov.-Zel. 1: 251 (1853).
Acianthus rivularis A.Cunn. Companion Bot. Mag. 2: 376 (1837).
Corysanthes rivularis (A.Cunn.) Hook.f. Handb. N. Zeal. Fl. 266 (1864).
Nematoceras panduratum (Cheeseman) Molloy, D.L.Jones & M.A.Clem. Orchadian 13(10): 449 (2002).
Corysanthes rotundifolia var. pandurata Cheeseman. Man. New Zealand Fl. 366 (1925), is not Nematoceras rotundifolia of Hook.f.
Corysanthes rotundifolia as meant by Cheeseman. Man. New Zealand Fl. 695 (1906), is not Nematoceras rotundifolia of Hook.f. (1853).
Corybas orbiculatus as meant by L.B.Moore. Fl. New Zealand Vol. 2: 118 (1970) and others (1970–1996), is not Corysanthes orbiculatus of Colenso (1891).
The Corybas rivularis complex includes taxa with the tagnames 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 (Cheeseman) D.L.Jones & M.A.Clem. Orchadian 13(10): 443 (2002).
Corybas unguiculatus as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 75: 367 (1945), is not Corysanthes unguiculatus of R.Br. (1810).

Corybas sanctigeorgianus Lehnebach Phytotaxa 270 (1): 12 (2016). The species tagged *C.* "trisep".

Corybas trilobus (Hook.f.) Rchb.f. Beitr. Syst. Pflanzenk. 67 (1871).
Nematoceras trilobum 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 are still of speculative taxonomic status; they include the tiny May to July flowering forms with the tagname C. "pygmy"; C. "Rimutaka", C. "Craigielea", C. "tribrive", C. "tridodd", C. "Trotters" and others.

Corybas vitreus Lehnebach Phytotaxa 270 (1): 12 (2016). The species tagged *C.* "eastern hills".

Corybas walliae Lehnebach Phytotaxa 270 (1): 13 (2016). The species tagged *C.* "triwhite".

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 (Hook.f.) 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 (Hook.f.) var. rotundifolia (Hook.f.) Cheeseman. Man. New Zealand Fl. 685 (1906).
Acianthus reniformis (R.Br.) Schltr. Engl. Bot. Jahrb. 34: 39 (1906).
Acianthus reniformis var. reniformis (Hook.f.) Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 59 (1946).
Cyrtostylis reniformis as used by many authors until now is not that of R.Br. Prodr. Fl. Nov. Holland.: 322 (1810).

Danhatchia Garay & Christenson. Orchadian 11(10): 469, f.471 (1995)

Danhatchia australis (Hatch) Garay & Christenson. Orchadian 11(10): 470 (1995).
Yoania australis Hatch. Trans. Roy. Soc. New Zealand, Bot. 2: 185 (1963).

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(5): 214 (1997).

Drymoanthus Nicholls. Victorian 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).

Drymoanthus flavus St George & Molloy. New Zealand J. Bot. 32: 416, f.1 (1994).

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

Earina aestivalis Cheeseman. Trans. & Proc. New Zealand Inst. 51: 93 (1919).

Earina autumnalis (G.Forst.) Hook.f. Fl. Nov.-Zel. 1: 239 (1853).
Epidendrum autumnale G.Forst. Prodr. 60 (1786).
Earina suaveolens Lindl. Bot. Reg. 29 (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 (3): 242 (2016). The species tagged G. "long column black".

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 (3): 244 (2016). The species tagged G. "long column".

Gastrodia sesamoides as meant by Cheeseman. Man. New Zealand Fl. 697 (1906), may not be that of R.Br. (1810).

Genoplesium R.Br. Prodr. Fl. Nov. Holland.: 319 (1810).

Genoplesium nudum (Hook.f.) D.L.Jones & M.A.Clem. Lindleyana 4(3): 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(10): 461 (2002).

Genoplesium pumilum (Hook.f.) D.L.Jones & M.A.Clem. Lindleyana 4(3): 144 (1989).
Prasophyllum pumilum Hook.f. Fl. Nov.-Zel. 1: 242 (1853).
Corunastylis pumila (Hook.f.) D.L.Jones & M.A.Clem. Orchadian 13(10): 461 (2002).

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

Microtis arenaria Lindl. Gen. Sp. Orchid. Pl. t.306 (1840).
Microtis biloba Nicholls. Victoria 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 (which in turn has been included in M. unifolia by others).

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 longifolia Col. Trans. & Proc. New Zealand Inst. 17: 247 (1885).
Microtis porrifolia (Sw.) R.Br. ex Spreng. var. parviflora (R.Br.) Rodway. Tasman. Fl. 159 (1903).
Microtis aemula Schltr. Bot. Jahrb. Syst. 39: 37 (1906).
Microtis bipulvinaris Nicholls. Victoria Naturalist 66: 92–94, f.A–F (1949).
Microtis holmesii Nicholls. Victoria Naturalist 66: 93, f.G–I (1949).

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. ex Spreng. Syst. Veg. (ed. 16) [Sprengel] 3: 713 (1826).
Microtis banksii A.Cunn. Bot. Mag. 62: sub l.3377 (1835).
Microtis frutetorum Schltdl. Linnaea 20: 568 (1847).
Microtis viridis F.Muell. Fragm. (Mueller) 5: 97 (1866).
Microtis longifolia Colenso. Trans. & Proc. New Zealand Inst. 17: 247 (1885). This is an autumn flowering form and may be distinct.
Microtis pulchella as meant by Lindl. Gen. Sp. Orchid. Pl. 395 (1840), is not that of R.Br. (1810).

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

Orthoceras novae-zeelandiae (A.Rich.) M.A.Clem., D.L.Jones & Molloy. Austral. Orchid Res., 1: 100 (1989).
Diuris novae-zeelandiae 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: 273 (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).

Paracaleana D.F. Blaxell. Contributions from the NSW National Herbarium 4: 275–283 (1972).

Paracaleana minor (R.Br.) Blaxell. Contr. New South Wales Natl. Herb. 4: 281 (1972).
Caleana minor R.Br. Prodr. Fl. Nov. Holland.: 329 (1810).
Caleya minor (R.Br.) Sweet. Hort. Brit. (Sweet) 385 (1827).
Caleya sullivanii F.Muell. Australas. Chem. Druggist 4: 44 (1882).
Caleana nublingii Nicholls. Victoria Naturalist 48: 15 (1931).
Paracaleana sullivanii (F.Muell.) Blaxell. Contr. New South Wales Natl. Herb. 4:281 (1972).
Sullivania minor (R.Br.) D.L.Jones & M.A.Clem. Orchadian 15: 36 (2005).

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).
Prasophyllum rogersii as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 76: 290 (1946), is not that of R.S.Rogers & Rees (1921).
Probably a number of taxa, including Irwin's P. "A" and P. "B" (NZNOG Journal 79: 9–10 [2001]).

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. (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 Rupp (1928).

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

Pterostylis agathicola D.L.Jones, Molloy & M.A.Clem. Orchadian 12(6): 266 (1997).
Pterostylis graminea (Hook.f.) var. rubricaulis H.B.Matthews ex Cheeseman. Man. New Zealand Fl. 351 (1925).
Pterostylis montana (Hatch) var. rubricaulis (Cheeseman) Hatch. Trans. & Proc. Roy. 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 as meant by Cheeseman. Man. New Zealand Fl. (1906), is not that of Hook.f.
Pterostylis trullifolia Hook.f. 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 alveata Garnet. Victoria Naturalist 59: 91 (1939).
Diplodium alveatum (Garnet) D.L.Jones & M.A.Clem. Austral. Orchid Res. 4: 70 (2002).

Pterostylis brumalis L.B.Moore. New Zealand J. Bot. 6: 485, f.3 (1969).
Pterostylis trullifolia Hook.f. var. rubella Hatch. Trans. & Proc. Roy. 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 trullifolia Hook.f. Fl. Nov.-Zel. 1: 249 (1853).
Pterostylis rubella Colenso. Trans. & Proc. New Zealand Inst. 18: 271 (1886).
Pterostylis trullifolia Hook.f. 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).

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 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(6): 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. Roy. Soc. South Australia 38: 360–361, f.18(2) (1914).
Pterostylis gracilis Nicholls. Victoria Naturalist 43: 324–326 (1927).

Pterostylis graminea Hook.f. Fl. Nov.-Zel. 1: 248 (1853).
There are several taxa in the P. graminea complex, including tagname P. "sphagnum".

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

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

Pterostylis irwinii D.L.Jones, Molloy & M.A.Clem. Orchadian 12(6): 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 Lindl. var. micromega Hatch. Trans. Roy. Soc. New Zealand 80: 326 (1953).

Pterostylis montana Hatch. Trans. & Proc. Roy. Soc. New Zealand 77: 239, t.22 (1949).

Pterostylis montana group: includes as many as 14 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(6): 271 (1997).
Pterostylis furcata Lindl. var. linearis Hatch. Trans. & Proc. Roy. Soc. NZ 77: 243, plate 29, 2 (1949).

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

Pterostylis porrecta D.L.Jones, Molloy & M.A.Clem. Orchadian 12(6): 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. Roy. 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).
Dubious. Was identified as P. banksii by Cheeseman.

Pterostylis subsimilis Colenso. Trans. & Proc. New Zealand Inst. 28: 611 (1896).
Was identified as P. banksii by Cheeseman

Pterostylis tanypoda D.L.Jones, Molloy & M.A.Clem. Orchadian 12(6): 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(2): 177 (1994).
Plumatichilos tasmanicum (D.L.Jones) Szlach. Polish Bot. J. 46 (1): 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).
Jones suggests there is a second unnamed NZ entity.

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).

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).
Hymenochilus venosa **(**Colenso) D.L.Jones, M.A.Clem. & Molloy. Austral. Orchid Res. 4: 74 (2002).

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

Spiranthes novae-zelandiae Hook.f. Fl. Nov.-Zel. 1: 243 (1853).
Spiranthes australis as meant by Hook.f. Handb. N. Zeal. Fl. 272 (1864), is not that of Lindl. (1824).
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 alticola D.Jones has been applied to Kew specimens from New Zealand (wrongly we think).
The names Neottia sinensis and Spiranthes sinensis var. australis (R.Br.) H.Hara & Kitam. Acta Phytotox. Geobot. 36 (1–3): 93 (1985) have been used for Spiranthes australis in Australia.

Spiranthes "Motutangi": tagname for endangered Far North taxon.

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

Taeniophyllum norfolkianum D.L.Jones, B.Gray & M.A.Clem. in Jones et al., 15: 157 (2006)

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 brevifolia Jeanes. Muelleria 19: 19–79 (2004).

Thelymitra carnea R.Br. Prodr. Fl. Nov. Holland.: 314 (1810).
Thelymitra imberbis Hook.f. Fl. Nov.-Zel. 1: 244 (1853). A colour form only.
Thelymitra carnea R.Br. var. imberbis (Hook.f.) 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. Sallsk. Lund 8: 21 f (1878) may be a synonym.
Thelymitra longifolia J.R.Forst. & G.Forst. var. stenopetala Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 396, plate 80 F–H (1952).
Thelymitra longifolia J.R.Forst. & G.Forst. var. intermedia Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 396, plate 80 J (1952).

Thelymitra cyanea (Lindl.) Benth. Fl. Austral. 6: 323 (1873).
Macdonaldia cyanea Lindl. Bot. Reg. 25 (1840).
Thelymitra uniflora Hook.f. Bot. Antarct. Voy., Vol. 1, Fl. Antarct.: 70 (1844).
Thelymitra venosa as meant by Cheeseman. Man. New Zealand Fl. 671 (1906), is not that of R.Br. (1810).
Thelymitra venosa R.Br. var. typica Hatch Trans. & Proc. Roy. Soc. New Zealand 79: 390, plate 77 A–C (1952).
Thelymitra venosa R.Br. var. cedricsmithii Hatch Trans. & Proc. Roy. Soc. New Zealand 79: 390, plate 77 D–E (1952).
Thelymitra venosa R.Br. var. cyanea Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 391, plate 77 F–H (1952).

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 concinna Colenso. Trans. & Proc. New Zealand Inst. 20: 207 (1888) appears to be the pink-ciliated form of T. hatchii, and if so has precedence.

Thelymitra ixioides Swartz. Kongl. Vetansk. Acad. Nya Handl. 21: 253, t.3, f.L (1800).
Thelymitra ixioides var. typica (Hook.f.) Rupp & Hatch. Proc. Linn. Soc. New South Wales 70: 59 (1945).
This may not be the same as the Australian plant.

Thelymitra longifolia J.R.Forst. & G.Forst. Char. Gen. Pl. 98 t.49 (1776).
Serapias regularis Banks & Sol. ex G.Forst. Prodr. 59 (1776).
Thelymitra forsteri Sw. Kongl. Vetensk. Acad. Nya Handl. 21: 228 (1800).
Thelymitra nemoralis Colenso. Trans. & Proc. New Zealand Inst. 17: 249 (1885).
Thelymitra alba Colenso. Trans. & Proc. New Zealand Inst. 18: 272 (1886).
Thelymitra cornuta Colenso. Trans. & Proc. New Zealand Inst. 20: 206 (1888).
Thelymitra longifolia J.R.Forst. & G.Forst. var. alba (Colenso) Cheeseman. Man. New Zealand Fl. 339 (1925).
Thelymitra longifolia J.R.Forst. & G.Forst. var. forsteri Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 396, plate 80 B–E (1952).
Thelymitra aristata as meant by Hatch. Trans. & Proc. Roy. Soc. New Zealand 79: 395, plate 79 M–N, plate 80 A (1952), is not that of Lindl. (1840), and has been tagnamed T. "tholinigra" by Scanlen.

Thelymitra longifolia group: some undescribed taxa that appear to be insect-pollinated.

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 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).
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).
T. pulchella is a very variable species, yet all of these appear to have features that are relatively stable in some populations.

Thelymitra purpureofusca Colenso. Trans. & Proc. New Zealand Inst. 17: 249 (1885).

Thelymitra sanscilia 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 Berggr. (1878).

Thelymitra "Ahipara": an unnamed taxon from the Far North, may be identical with T. "darkie".

Thelymitra "Comet": a large, late-flowering Thelymitra from the Kaweka range. Appears to be sterile, so probably a hybrid.

Thelymitra "darkie": undescribed taxon from the Far North (see McCrae. NZNOG Journal 24: 11; 77: 22 [1987]). May be identical with T. "Ahipara".

Thelymitra "rough leaf": undescribed taxon from the Far North (see McCrae. NZNOG Journal 24: 11; 77: 22 [1987]).

Thelymitra "sansfimbria": plain blue flowers from Far North (see Scanlen. NZNOJ 98: 36 & 102: 39, 45).

Thelymitra "sky": undescribed taxon from the Far North (see Scanlen. NZNOG 70: 30–35, f.6 [1998]).

Thelymitra "tholinigra": (see Scanlen. NZNOJ 85: 10, 15).

Thelymitra "Whakapapa": undescribed taxon from Ruapehu, that may correspond to T. purpureofusca, or may be distinct.

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(6): 282 (1997)

Waireia stenopetala (Hook.f.) D.L.Jones, M.A.Clem. & Molloy. Orchadian 12(6): 282 (1997).
Thelymitra stenopetala (Hook.f.) Bot. Antarct. Voy., Vol. 1, Fl. Antarct.: 69 (1844).
Lyperanthus antarcticus Hook.f. Bot. Antarct. Voy., Vol. 1, Fl. Antarct.: 544 (1847).

The Column: Eric Scanlen
Corybas "Mangahuia" & *C.* "sphagnum" (Irwin)

Bruce Irwin discovered *Corybas* "Mangahuia" **Fig. 1,** on a wet, grown-over shingle bank of the Mangahuia Stream, in late October, 1992 and compared it with similar *C.* "Sphagnum" **Fig. 2,** which he had discovered—plus others—the day before, at the Rangataua Wetland, according to his account in J44:11. Both taxa belong to the "*C. rivularis* aggregate" but for some reason, there have been no illustrations of *C.* "Mangahuia" in any of the 141 Journals to date, and *C.* "Sphagnum" has only one pic of the Kahurangi National Park form so the Column thought it was time to put matters right.

Fig. 1 is *C.* "Mangahuia" on 10 November 1996, north side of SH47 and east side of Mangahuia Stream. Bruce introduced the field party to the spot that day, then did so again on 16 Oct. 1997, when the orchid was still there as in **Fig. 3**, the side view. Notice the distinctive dark little apiculus to that long, acute, and pale green dorsal sepal, adorned with a few purple spots.

Bruce, Mr. Corybas, may have been somewhat overwhelmed by his several new *Corybas* finds in Oct. 1992, by Mangahuia Stream and in the Rangataua Wetland, including the round-leaved hybrid which featured in the mix-up with *C.* "round leaf" (Ducker) in J141. Bruce was never too sure, at that time, if his *C.* "Sphagnum" or his *C.* "Mangahuia" were distinct, and his doubts re these and others, were echoed by Ian St George in J98:6, Feb. 2006. Bruce had seen similarities with, **Fig. 4** *C. hatchii* ("Waiouru"), **Fig. 5** *C. iridescens*, and **Fig. 6** *C.* "viridis" ("whiskers"). However, *C.* "Sphagnum" does feature in Bruce's drawings, digitised by Brian Tyler and Ian, but *C.* "Mangahuia" does not. Yet these two differ from those other taxa, as can be seen in the included table and the illustrations. Bruce had decided, after 17 years of consideration, that the two taxa were distinct, when he wrote, in J113:12, Aug. 2009, "What is to become of them? They do exist and should be acknowledged by botanists." His statement would have been more convincing had he not included in the list, *N.* "ratty", his own early tag for his *N.* "whiskers" which was also in the list.

Note that Gordon Sylvester introduced the Column to a form of *C.* "Sphagnum", **Fig. 7,** along Blue Creek in Kahurangi National Park, on 26 Nov. 2002. Its photo in J87:7, is the only illustration in the 141 Journals, of *C.* "Sphagnum". Note that the whole flower and ovary stand above the leaf, but it is otherwise difficult to tell apart from the Rangataua form. The distance separating the two *C.* "Sphagnums" plus the cooler Nelson climate, could account for the differences in flowering times and minor morphological details.

Should you be sharp enough to pick up the Column's articles in J74:14, *C.* "Mangahuia's" pic is said to be Fig 4 by p18, but that Fig. 4 is a solitary, freak, maroon, C. "viridis" (whiskers) **Fig. 8** herein, from a big colony of normal green specimens as in **Fig. 6** herein. The J74 Fig. 4 was an illustration for the following write-up re finds in the far north. Don't ask how it got a misleading double identity.

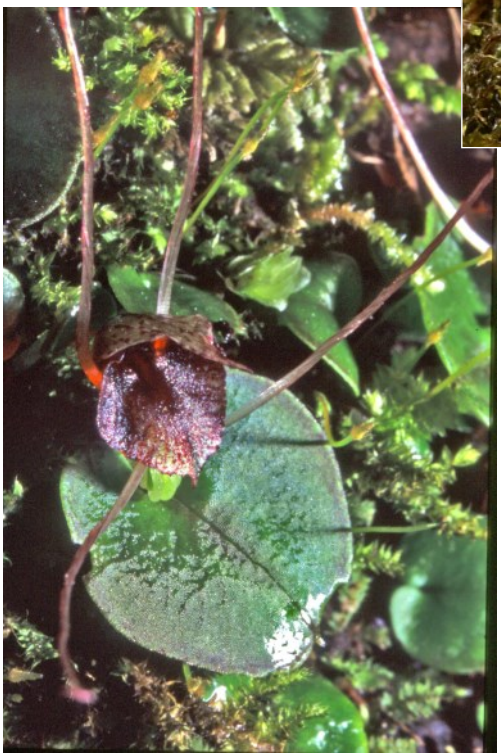
Of concern, three other "*C. rivularis*" taxa could be involved. Bruce's *C.* "Waiouru"(?) from the Whakapapa Intake, *C.* "Veil" from the Bridal Veil Falls, Te Mata and *C.* "Kaitarakihi" from the Manukau Harbour shore. All have likenesses, although less so with *C.* "Waiouru" (*C. hatchii*). The Column did voice his scepticism to Bruce—to no avail—on 16 Oct. 1997 when shown that colony. Those three taxa are different enough from the five or six above so will be left for a future Journal article.

↑ **Fig.1**: *Corybas* "Mangahuia" 10 Nov. 1996 on a wet and grown-over shingle bank by the Mangahuia Stream, east bank some 100m D/S of SH47 bridge.

↓ **Fig.2**: *Corybas* "Sphagnum" 25 Nov. 1995 at Rangataua Wetland where it was common. Note the flower almost level with the leaf.

↑ **Fig.3**: *C.* "Mangahuia" 16 Oct. 1997 at the same place as in Fig. 1. Note the sepals and petals spreading in an erect plane where they cross over, fore & aft, on this specimen.

↑ **Fig.4:** *C. hatchii* (*C.* "Waiouru" or *Nematoceras longipetala*) by Ian St George showing typical outstretched, almost equal lateral tepals but note the lack of a downturned dorsal sepal which Dan Hatch's father drew for Dan's 1947 NZ forms of *Corybas*, perhaps from a wilted specimen? The species has been depicted in many forms but Ian's comes closest to type.



← **Fig. 5:** *C. iridescens* for comparison from Makatote Viaduct, 5 Oct. 2001. The very dark labellum is typical as is the darkly iridescent dorsal sepal.

↑ **Fig. 6:** *C.* "viridis" (whiskers) 19 Sept. 1998 a typical specimen from a large colony by Waitakere Stream found by Allan Ducker.

Fig. 7 (top right): *C.* "Sphagnum" from Blue Creek, Kahurangi NP, 26 Nov. 2002 amid a large colony in Sphagnum moss. Note the ovary plus flower above the leaf.

Fig. 8: *C.* "viridis" the solitary dark oddity, amongst the colony of typical green specimens at Waitakere Stream, 19 Sep. 1998. J74:14 has this as *C.* "Mangahuia" but J74:18 has it correctly captioned. →

Acknowledgements
Especial mention of the late Bruce Irwin who was tireless in his pursuit of *Corybas* and other species and anxious to introduce them to anyone interested. Thanks too to the other members mentioned in the script for their valued assistance.

Corybas taxon table

	Corybas taxon	Dorsal sepal top	Labellum	Lateral tepals. All are long, sepals the longer	mms flower above leaf	Flowering time
Fig. 1 +Fig3	Mangahuia	Straight, acute, wiry apiculus, off white purple flecked,	Clear + purple striped wings, purple centre	Spreading, in planes parallel to crossing fore and aft, clear, purple patches top half	0 to +2	Mid Oct. to mid Nov.
Fig. 2	**Sphagnum Rangataua**	Acute, turned up to slight turn down, white, purple flecks	Purple centre, wings & bib, clear + striped purple	Sepals erect to spreading, petals curving divergent. Clear, a few purple flecks and lines	0 to +2	October November
Fig. 4	***hatchii***	Slight turn up, white, few purple flecks	Pale green, purple centre & wings	Almost parallel, leaning forward between 30º & 60º, clear. Petals only slightly < sepals	+3 to +5	Late Aug. + September
Fig. 5	***iridescens***	Slight turn up, deep purple, iridescent details	Dark purple, bib may be speckled white	X form usually leaning forward, clear + purple lines	0 to +5	July to October
Fig. 6	**viridis**	Acuminate, tip, up or down, pale green, purple flecked	Pale green centre, clear bib, purple wings,	X form to sepals outstretched, clear + few purple lines	+10 to +20	Mid Sept. Nth. to mid Nov. Nelson
Fig. 7	**Sphagnum Blue Creek**	Acute, slight turn up, off white, purple flecks in streaks	Purple centre, wings & bib clear + purple blotches	Sepals erect to spreading, petals curving divergent. Clear, a few purple flecks and lines	+9 to+12	November December
Fig. 8	**viridis odd dark**	Acuminate, tip up, pale green purple flecked	Purple centre, striped upper wings Pale bib + specks	X form, colourless	+15	September

Contents: No. 142

November 2016 ISSN 1177-4401