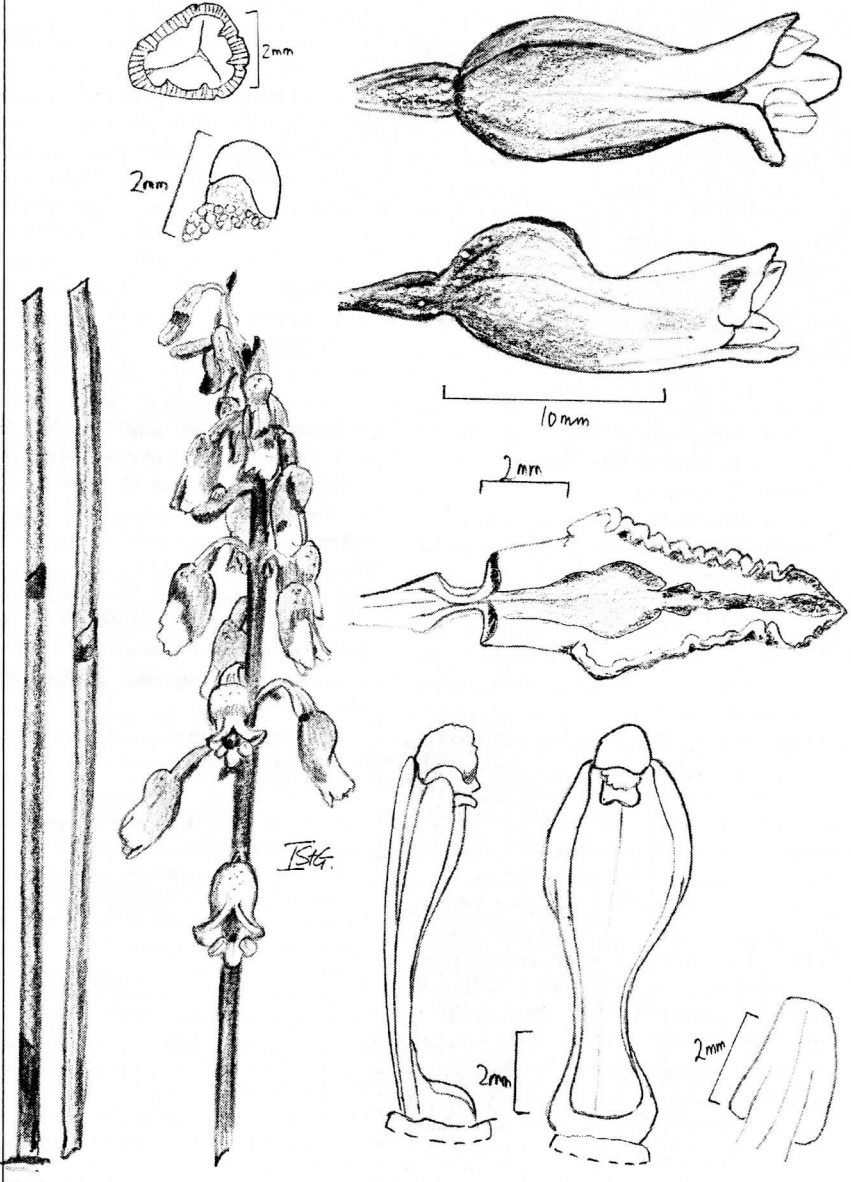


*Gastrodia aff. sesamoides*,  
Iwitahi, January 2001

The NZNOG Journal for March 2001: No. 78



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## From the editor

### Cunningham teaches Colenso about orchids

Allan Cunningham (of *Gastrodia cunninghamii*, etc) arrived in Australia in 1816 aged 25. He crossed the Tasman and spent the spring of 1826 at the Bay of Islands, and as a result of his collections, published in the *Companion to the Botanical Magazine* his “Florae Insularum Novae-zealandiae Precursor: or a specimen of the Botany of the Islands of New Zealand” in 1837. It listed (*inter alia*) the NZ orchids *Thelymitra Forsteri*, *Orthoceras strictum*, *Microtis Banksii*, *Acianthus rivularis*, *Pterostylis Banksii*, *Gastrodia sesamoides*, *Earina mucronata*, *Dendrobium cunninghamii* and *Bolbophyllum pygmaeum*. He visited again from April to September 1838, by then (at 47) as Colonial Botanist of New South Wales.

William Colenso had come to the Bay of Islands in December 1834 at the age of 33. When Cunningham arrived, Colenso was 37, already adept in Maori, and had a collection of plants. In an undated note Cunningham wrote to him, “... (I) may get more briskly to work among your remaining specimens”, but there is no other record of what the two did in New Zealand. Their brief (Cunningham was to die in May 1839) later correspondence has been preserved, and it is clear their relationship was critically important in Colenso’s botanical education. Indeed, Colenso addressed him posthumously as “My Botanical Master & friend A.C.”

Jeff Fox of Te Papa told me about a list of North Island orchids in Cunningham’s hand [Orchid list, 1839, in William Colenso. Correspondence, 1838-1840. 90-253-1. Alexander Turnbull Library, NLNZ]. It is dated September 1838, the month Cunningham returned to Australia. It is faded, rainspotted and fragile: it is not mentioned in any of their letters, but I would bet it was Cunningham’s parting gift to Colenso, and

that the latter took it with him as a working reference on his journeys.

It is reproduced in the following pages, as accurately as I can do from the faded original.

A number of observations may be pertinent. With the addition of *A. fornicatus*, *Cyrtostylis*, “*Pterostylis collina*” and *Sarcochilus* it is the same list that Cunningham published in 1837. Cunningham had to explain to Colenso what a perianth and a labellum were. Cunningham suspected our long-columned *Gastrodia* might not be *G. sesamoides*. Colenso’s promised new species— “*Pterostylis collina*” and “*Thelymitra grandiflora*” died with Cunningham, for Hooker named the former *P. puberula* and seems to have ignored the latter. Cunningham noted the different leaf types (reniform and heart-shaped) in *Cyrtostylis*. He gave an excellent description of the labellum of *Microtis unifolia*. His “Tigadoo” is Te Karu, and his “Tolago” Tolaga Bay.

There is a good deal of mention of orchids in the letters between the two friends following Cunningham’s return to Sydney. Cunningham’s first letter (December 1838) asked if Colenso had found *Gastrodia* and *Orthoceras*, and (famously) “... my little darling, the subaqueous acianthus of the cavern of the great falls of Keri Keri and Wangaroa”.

Colenso sent him specimens, and in January 1839 Cunningham responded,

I have looked the contents over very attentively, and I have to report to you thereon: viz. –

The *Thelymitra* is perfectly new, and is a very remarkable species, considering nothing of the size and colour of the flowers, their internal structures furnish ample material to the working Bot<sup>l</sup> for a well defined specific character, and let it be designated by the name you have proposed.

*Thelymitra grandiflora*: (..... Colenso in litt. 1838) perianthus erectiusculo, cuculli laciniis extrinis cuspidatis orso-denticulatis imberbibus: intermedia dorso nudo emarginata, tuberculata, margine incurvato incrassato, spica multiflora.

# Memorandum of Orchideous Plants at present known to be Indigenous to the Northern Island of New Zealand

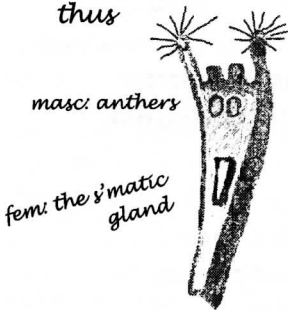
Sept 1838

A.C.

## § I Herbae Terrestres

1. Thelymitra Forsteri — specific characters  
 Perianth (flower) rather upright, spreading, with the  
 outer segments of the cucullus approximating, pencill<sup>d</sup>  
 anteriorly - the intermediate segment emarginated & naked  
 (not crested): its lobules rounded & waxy, their margins  
 incurvated. Spike of flowers consisting of many  
 that is from 5 to 7. A.C. Mss 1826.

The cucullus or Hood is formed on the summit of the column  
 in which the organs of reproduction (sexual) are inserted  
 and in all examples the Hood is divided into three lobes  
 thus (2 Horns and a centre) the 2 outer ones pencill<sup>d</sup>  
 with a brush



The 3 exterior Flower leaves are of a pale purple colour - the  
 interior 3 white.

2. Orthoceras strictum Br  
 flowers gaping chocolate  
 coloured





3. *Microtis Banksii* - with the exterior leaves of the flower ovate-lanceolate & rather spreading, the interior ones oblong linear & bluntish: the labellum or lip oblong-cuneated, lobed, the lower half dilated & retuse, the disk warted and the margins thickened with tuberculations. flowers of the spike for the most part distinct, the inferior ones distant from each other. A.C. in Bot. Mag. folio 3377
  
4. *Acianthus fornicatus*, flowers in racemes, the awns of the outer leaves of the flower  $\frac{1}{4}$ <sup>th</sup> the length of the flower itself; with the labellum or lip longitudinally papillose (pimpled) and the column supporting the sexual organs included within the flower. R. Br. Prodr.
  
5. *A. rivularis*; with a bibracted, one-flowered scape, four leaves of the flower equal, linear, very long & filiform. The labellum or lip heart-shaped, acuminate, veined & corrugated, with its margins delicately crenulated. A.C. Mss 1826 Wangaroa
  
6. *Cyrtostylis*, like *Acianthus* but having no awn-processes terminating the leaves of the perianth (flower). single, reniform, & heart-shaped leaved plants.  
*C. reniformis* R. Brown. (The N. Zealand sp. may prove a new species.)
  
7. *Pterostylis Banksii* stalk 1-flowered, leaves (cauline ones) broadly spear-shaped, keeled on the under side, and at their base sheathing the stalk, the lamina of the labellum oblong, blunt, somewhat hooked at the apex. The appendage of the labellum pencilled. A.C.

8 *Pterostylis collina*: n. sp. -

ffl Appendix apice diviso-penicillato.

Folia radicalia. Scapus bibraceatus,  
aphyllus.

With the radical leaves petioled, broadly-elliptical repand and entire, undulated and often-times heart-shaped at base: with a scape 2-bracted, surmounted by an upright flower, with a labellum equal to the column & included within the galea or hood of the flower.



Wings of the column

Its lamina membranous, gradually becoming narrow'd towards the apex, blunt: and the wings of the column furnished with a hoary tomentum at the points!

Hills at Paihia among fern. A.C.

9. *Gastrodia*: flower forming a tube, divided at the mouth into 5 lobes. Labellum included in the flower. Column long, hollow at the apex, thickened at the base in front, where the stigmatic gland, a female organ, exists.

A herb occasionally epiphytical on roots of trees. Its roots fleshy, branched & jointed. flower scape without leaves but furnished with alternate short sheaths.

Flowers in racemes, whitish or ochre-coloured.

G. sesamoides Brown? or a distinct species.



Vicinity of Wangaroa

1834

R<sup>d</sup>.C -

## § II Epiphytae

10. *Earina mucronata* Lindley. - The old *Epidendrum autumnale* of Forster. On trees near Paihia & with long linear mucronated leaves & racemes of small, very fragrant yellowish flowers.
11. *Dendrobium Cunninghamii* Lindley.  
 With very slender stems, pendulous, branched, having the sheaths at the base of the leaves horny & transversely corrugated. The leaves ovately linear, bluntish, flower stalks opposite to the leaves, 2-flowered, shorter than the leaves. Flowers with ovate acute leaves, labellum 3-lobed, the intermediate lobe subrotund, waved, furnished with 5 lamellae at the base, the lateral lobes very short & acute. Lindley in Bot. Register folio 1756  
 On trees upon the sea Coast - Wangaroa &c. 1834 Rich<sup>d</sup> C.
12. *Bolbophyllum pygmaeum*. rhizoma creeping, filiform, leaves solitary, sessile elliptical, coriaceous, pubescent. Lindley & Smith.

General remarks: other Orchideous Epiphytes are known to exist in New Zealand, and one having altogether the habit of *Sarcochilus* R. Brown, but without fructification, was ob<sup>d</sup>. by R.C. on the branches of *Alectryon*, (*Tetoki*) at Wangaroa, but flowers are necessary to determine the Genus of the plant. Mr. Brown, in the Appendix to the Voyages of Flinders observes that in the first Voy. of Cook, the naturalists who landed in the bays of Tigadoo & Tolago on the South of East Cape found

several species of orchideous Epiphytes, compounded under the Linnaean Genus Epidendrum, some of which remain yet to be further noticed; although collected in the year 1769. Gentlemen of the Church Miss<sup>ns</sup> visiting those parts of the East Coast are begged to notice & collect these lovely forms of New Zealand vegetation.

The Generic character of *Sarcochilus* may be understood by the following definition.

Leaves of the Perianth (flower) 5, equal, spreading, the 2 exterior ones united to the claw of the labellum. Labellum spurless at the back as in Dendrobia forming a continuance of the claw of the column. Lamina of the Lab<sup>um</sup> slipper-shaped, the intermediate lobe of which is solid (not hollow) & fleshy: thus



*S. falcatus* has this appearance.



I have noted this cha<sup>l</sup>. amongst my Ms papers, for publication when I get home - - *Orthoceras strictum* R.Br. fine spec<sup>n</sup>. - *Acianthus rivularis* A.C. Ms edit. 1837 clearly my plant of Wangaroa: pray look for more of this rare child of mine, and pop them all in [?] acid dilut. - never mind colour - - *Dendrob. C* in Lindley: truly so. Knowing at length the plant pray get fine spec<sup>ns</sup> which will dry well in paper: and last *Microtis Banksii* A.C. in Bot. Mag. 3377. superb specimen.

Let me remind you of *Gastrodia sesamoides* ?/or new specimens of *Bolbophyllum* in flower, and *Sarcophilus* our New Holland Genus, of which I have three new natives.

Cunningham died in May, but it seems Colenso did not hear of his friend's death for some time, for he wrote again to Cunningham on 12 July 1839, expressing concern at the state of his health, "longing to see" his work (i.e. Colenso's new orchids) in print. Then the usual chat about plants: "I have a new *Orchis*/terrestrial/ a little gem", and later,

We have had an exceedingly dry Winter and the Orchideae are "coming out" beautifully - in my road home from the E. Coast, the hills were studded with these beautiful little harbingers of Spring - how truly God is to be seen in all his Works! In my opinion more of the Vision and power of the Creator is to be seen in minute than in larger objects - Strange, that tho the Orchideae in that neigh<sup>d</sup>. Were all in flower, here they are but just in bud! I have not yet seen *Gastrodia* but intend going next week to the Kauri forest where I hope to find him. - Per first oppor<sup>y</sup>. I'll remember you.

Colenso then asked for advice on what botanical texts he should get,

... that I may be able to classify any plants I may hereafter fall in with; as you are going such a long way from N.Z. I have Lindley's Introdn. & also his Natural System, 2<sup>nd</sup> Ed.; for should God be pleased to spare me a few years in N.Z. I trust to discover somewhat, in addn. to yr. valuable discoveries, in the Boty. of this land - for I am of opinion much remains to be done - in the interior &

Southern Districts. At present I know not when I find a new thing or not - co<sup>d</sup>. you give me a few hints from yr MSS. on the plants of N.Z.? before you leave the Colony - a list, or kind of descripn. of same? for my own private use.

Colenso was a good learner: he sent a number of orchids (along with the latin diagnoses for the two new species Cunningham was to have described) with his first letter to Sir William Hooker on 14 February 1840. He wrote,

In the Bottles you will find the following Orchidae: - In the large Bottle; Thelymitra Forsterii (A. Cunningham), perhaps a 2<sup>nd</sup> species (W.C.). Microtis Banksii (A. Cunningham), Pterostylis Banksii (A. Cunningham), Bolbophyllum pygmaeum (Lindley) and what I believe to be a species of Sarcophilus, found in Octr./39, on Myoporum laetum, by W.C. - (I very much lament my not having some ones of those modern Botanical works which would enable to speak positively. In this instance, as well as in several others, I can only make, at best, a shrewd guess). In Bottle numbered 2, Pterostylis collina, n.sp., take a short descript. as given by my friend A.C., on my finding it in Sept. 1838 during his residence in this place. "Appendix apice. diviso penicillato. Folia radicalia. Scapus bibraceatus aphyllus" W.C. - In No. 3 Earina mucronata, Lindley. In No.4, Orthoceras strictum, Brown - In No. 5, Acianthus fornicatus, A.C. In No. 6, Thelymitra grandiflora, n.sp., "Perianthus erectiusculo, cuculli laciniis extrinis cuspidatis erosodenticulatis imberbibus: intermedia dorso nudo emarginata, tuberculata, margine incurvato incrassato, spica multiflora" - W.C. in litt. 1838. A very remarkable species, nearly 3 feet high, of a most brilliant Indigo colour, etc, etc. A Cyrtostylis - it may be C. reniformis, Brown, or a new species. W.C. Another, just obtained, a perfect gem, and which I believe to be entirely new - have not time to examine it. In No. 7, an Orchis, perhaps a new sp. of Caladenia, W.C., a Thelymitra which I have ventured to consider a distinct sp. And have named it in my Herb. as T. straminea. W.C.

Five months later he wrote, "The valuable parcel of Books too, came to hand last week, all in good condition, for which I will not attempt to describe my thankfulness".

You can't say he hadn't tried.

## The orchids in Colenso's herbarium at WELT: the work of BG Hamlin

The late Bruce G Hamlin was Curator of Botany at what was the Dominion Museum, later the National Museum of New Zealand; he died in 1975, and was at the time working on William Colenso's herbarium at Te Papa in Wellington. He had meticulously catalogued the herbarium, listed the specimens Colenso sent to Kew, transcribed Colenso's comments on them in his letters to Hooker, mapped out Colenso's itineraries, and identified the localities where the plants were originally found.

Hamlin wrote a draft introduction —

"The collections of the Reverend William Colenso are possibly the most important in New Zealand systematic botany. Not only did he provide a large number of plants on which species were based, but he contributed a multiplicity of names to the flora. His extensive journeys took him to areas which had not previously been explored and certainly not collected. In some places, many years elapsed before another botanist followed him,

"Systematists, in nearly all groups of New Zealand plants, must consult Colenso's work, but until recently the herbarium held by the Dominion Museum was relatively inaccessible. The entire collection, including the cryptogams, has now been put into some sort of order and it is hoped to enlist the help of specialists to identify the specimens, where this has not already been done.

"A catalogue of the vascular plants has been prepared, but as this does not take into account the Bryophyta, Fungi and Lichens, this account is presented to place on record the known facts concerning the collection and the steps taken to make it available to botanists.

"*The Herbarium*: Writing to Cheeseman on December 25, 1882, Colenso stated 'Of specimens formerly sent to Sir Wm Hooker I rarely kept specimens (duplicates), and I have no proper Herbarium.' Again, on November 9, 1883, to Cheeseman, he wrote '... I do not col-

lect anything largely, unless, it may be, Hepaticae; I keep no regular Herbarium'.

"From this it appears that Colenso did not regard his collection as his herbarium. All his 'specimens' went to Kew; what was retained was regarded as superfluous material of no importance. Nevertheless, of the material sent to W.J.Hooker, upwards of 6500 numbers of which I have knowledge, approximately 2300 were retained, as duplicates.

"As to the condition of the collection, Colenso wrote to Cheeseman on August 11, 1880, stating 'In the summer I hope to have more spare time, and then purpose going through my ferns, &c, (now in more then 40 parcels & packages! just as collected & dried during the past years).' This comment would have applied almost exclusively to the above material as the evidence of the collection is that he collected practically nothing between 1865 and 1882. From then on, his industry seems to have reverted to that of his earlier years.

"The herbarium can, therefore, be divided conveniently into early and late periods. Specimens from the early period bear numbers which are references to the lists sent to Hooker in letters accompanying the consignments. These letters and lists have been preserved at Kew and a microfilm of the greater number has been made available. Although the lists present some problems, such as the numerous abbreviations and back-references, individual items have been transcribed and attached to the duplicate specimens in the Dominion Museum.

"When botanical activity revived in 1882, collections were begun in all groups, except Algae. Publication of his own finds begins with this renewal, but Colenso continued to send specimens to Kew, either to J.D.Hooker who had become Director or to other specialists."

### “My dear Sir William,”

Colenso’s correspondence with Kew lasted from February 1840 until at least January 1853. He began his first letter (to William Hooker), “An entire stranger wishing to advance the Science of Botany takes on himself the liberty of addressing you without an Introduction, & also to send you a few Specimens of Plants among which he hopes you will find at least a few, that may prove an acquisition to your Herbaria.”

Unfortunately, until 1846 Colenso began numbering every new list at “1”; only after July 1846 did he begin a long continuous series of numbers. Thus, with numbers below 400 several lists had to be checked.

Colenso’s herbarium at WELT has many important specimens: among the orchids alone there are 18 types (Table 1). There are also many unpublished manuscript names in the lists sent to Kew, and Hamlin points out that Colenso often wrote “W.C.” after the epithets, so he must have intended Hooker to accept these names. “On more than one occasion, Colenso expressed surprise and chagrin at the treatment his specimens and names received” (Bagnall & Petersen p238).

Hamlin clearly intended his work for publication. He used the orchid names of his time, and listed the orchid specimens under their identifications as determined by TF Cheeseman. I am grateful for permission from The Museum of New Zealand Te Papa Tongarewa, to examine his material and collate the orchid section separately. I have not examined the specimens to determine the accuracy of Cheeseman’s identifications.

### The lists

Hamlin used a key as shorthand for his list of herbarium specimens (Table 2); where “Ed.” appears it refers to Hamlin.

Colenso’s comments in his letters to Kew are reproduced in a script typeface. My comments are printed in smaller type (the explanations of placenames are based on Hamlin’s work).

**Table 1: Colenso’s orchids - type specimens at WELT**

*Dendrobium lessonii* Col.  
*Bulbophyllum ichthyostomum* Col.  
*Earina quadrilobata* Col.  
*Earina alba* Col.  
*Sarcophilus breviscapa* Col.  
*Thelymitra cornuta* Col.  
*Orthoceras caput-serpentis* Col.  
*Microtis longifolia* Col.  
*Pterostylis patens* Col.  
*Pterostylis auriculata* Col.  
*Pterostylis speciosa* Col.  
*Pterostylis subsimilis* Col.  
*Pterostylis rubella* Col.  
*Pterostylis tristis* Col.  
*Caladenia variegata* Col.  
*Caladenia macrophylla* Col.  
*Corysanthes orbiculata* Col.  
*Gastrodia leucopetala* Col.

**Table 2: Hamlin’s key**

- [ ] a label.
- [ : ] the handwriting by the person whose initials appear before the colon, e.g. [WC: William Colenso, [VDZ: Victor Zotov.
- [ / ] : (within square brackets) an addition to the label by the person whose initials appear before the colon, e.g. /TFC: TF Cheeseman.
- [ / / ] a label written directly on the sheet.
- [ = = ] a ticket which has been slotted and threaded onto a specimen, usually with a number.
- [ / Δ ] : written on a packet by a person whose initials appear.
- [ [rr] ] a packet within a packet.
- [ [ ] ] 23456 the WELT registration number.

*Dendrobium cunninghamii* Lindl.

- 1808 *Dendrobium saxosum*, W.C., *rocks at Turakirae. I had long passed this, believing it to be D. Cunninghami, but now I think it to be very distinct.* [= 1808 *D. saxosum* =] [TFC:] 22584. Listed in letter to Kew dated July – Sept 1848.
- [= *Dendrobium cunninghamii* =] 22577
- [TFC: Norsewood. Type of *D. Lessonii*, Col.] 22578, 22585-90
- [WC: stems of *Dendrobium Lessonii* 1 brown / 1 yellow] 24261
- [WC: *Dendrobium* – Smaller plant Leaves few – not striated, sessile, distant, blunt obscurely – 5 – 7? – nerved flower never axillary 1- or 2, peduncle long, bract long, subulata see Lindley – ? c. spn. in bottle from North] [TFC: Norsewood. Type of *D. Lessonii*, Col.] 24262
- No localities [TFC:] 22579-83

*Bulbophyllum tuberculatum* Col.

- [WC: *Bulbophyllum tuberculatum*, Col. May 1889] [TFC: Palmerston North, A. Hamilton] [VDZ: Only spn VDZ 28-4-37] 24263

*Bulbophyllum pygmaeum* Lindl.

- [WC: *Bulbophyllum ichthyostomum*, Col. One of our smaller N.Z. orchids/ Sent Kew] [WC: Hill's *Bulbophyllum* flg spns / sent Kew] 24264
- [TFC: Hawkes Bay, H.Hill Type of *B. ichthyostomum*, Col.] 22600

*Earina mucronata* Lindl.

- 1750 *Earina*, perhaps a n. sp. *Sepals, lanceolate, acuminate, ditto* (hills, Tararua range.) [= 1750 *Earina* =] [TFC:] 22611. Listed in letter to Kew dated July – Sept 1848.
- 1835 *Earina longicaulis*, W.C., n. sp., 3 feet long, few leaved, pendant on trees, woods, between Te Hautotara and Eparaima, inte-

*rior.* [= 1835 *Earina longicaulis* W C =] [TFC:] 24265. Listed in letter to Kew dated July – Sept 1848.

- [WC: Flowers of *Earina quadrilobata*] [WC: Labellum & Petal of *Earina quadrilobata*] [TFC: Norsewood. Type of *E. quadrilobata*, Col.] 24266
- TFC: Norsewood. Type of *E. quadrilobata*, Col.] 22612-3
- [WC: Dvk. 7/11/87 *Earina* (a description of flowers – Ed.)
- [TFC: Dannevirke] 22607
- [TFC: Dannevirke] 22606
- No localities [TFC:] 22608-10

*Earina suavis* Lindl.

- [WC: *Earina* to Kew] [TFC: type of *E. alba*, Col.] [VDZ: Only spn VDZ 26-4-37] 24267
- [TFC: Norsewood] 22602-3
- [TFC: Dannevirke] 22604
- No localities [TFC:] 22601, 22605

*Sarcophilus adversus* Hook.f.

- [WC: *Sarcophilus*, a curious air-plant, epiphytal orchid. (scarce) *S. breviscapa* Col. Described Trans. N.Z.I. vol. xiv] [TFC: Type of *S. breviscapa*, Col.] [VDZ: Only spn. VDZ 26-4-37] 24268
- [TFC: Matamau, Olsen] 22614
- [TFC: Norsewood] 22615

*Sprianthes australis* Lindl.

- [TFC: Upper Waikato Col.] 22618

*Thelymitra longifolia* Forst.

- 1073 *Thelymitra*, *d*\_\_\_\_, *d*\_\_\_\_ (Tangoio village, Hawke's Bay). [= *Thelymitra* 1073 =] [TFC:] 22575. Listed in letter to Kew dated Sept 1847.
- 1738 *Thelymitra montana*, W.C., *fine sp., clayey hills, Tararua.* [= 1738 =] 22565. Listed in letter to Kew dated July – Sept 1848.
- 1858 *Thelymitra*, *fine sp., Pukekura, nr. Eparaima.* [= 1858 =] 24269. Listed in letter to Kew dated July – Sept 1848.



- 1869 *Thelymitra*, growing with 1861 (barren plains, head of Wairarapa valley). Diffy. from *T. Forsteri*: *T. gracilis* W.C. [= 1869 *Thelymitra gracilis* W.C. =] 24270. Listed in letter to Kew dated July – Sept 1848.
- 1934 *Thelymitra*, scrap, alluvial banks of a river, nr. Eparaima. [= 1934 =] 24271. Listed in letter to Kew dated July – Sept 1848.
- 2396 *Thelymitra*, from near ditto (boggy ground, near mouth of Riv. Waikato, - i. e. its entrance into Taupo Lake): perhaps 2 sp. [= 2396 Thelm =] 22568. Listed in letter to Kew dated June 1850 – Jan 1851.
- 4353 *Small Thelymitra*, hills, ditto (wet spots, hills, above Tangoio). [= 4353 =] 24272. Listed in letter to Kew dated 3 Feb 1852.
- 4355 *Thelymitra*, hills, ditto (nr. Moeangiangi). [= 4355 some larger =] 24273. Listed in letter to Kew dated 3 Feb 1852.
- [ $\Delta$  WC: fl. of *Thelymitra*. Dry Parsonsia hill] [WC: (a long description of the flowers – Ed.)] [ $\Delta$  WC: *Thelymitra* Decr./86 /  $\Delta$ Decr.10/86] [TFC: ] 24274A
- [ $\Delta$  WC: *Thelymitra fimbriata* Col] [ $\Delta$  A. Hamilton: *Thelymitra*? Fortrose] 24274B
- [ $\Delta$  WC: No 200. *Thelymitra*, Hams ?sp. nov.] [WC: *Thelym. Ham. Tarawera* Dec/83 1 spn. only] 24275
- [WC: Sepals & petals of new *Thelymitra* (column in spirits.)] [TFC:] 22571
- [= A. Hamilton?: *Thelymitra longifolia* =] 22569
- [TFC: Norsewood] 22570, 22572
- [TFC: *Thelymitra longifolia* Forst. no locality] [TFC: *Thelymitra imberbis* Hk.f. no locality given] 22567
- No localities [TFC:] 22573-4, 22576

*Thelymitra venosa* R.Br. ?

- [TFC: Tongariro H.Hill] 22566

*Orthoceras strictum* R.Br.

- 4368 *Orthoceras*, open hills, above Tangoio: (numbered 4378 on the herbarium ticket) [= 4378 =] [TFC:] 22632. Listed in

letter to Kew dated 3 Feb 1852.

- [ $\Delta$  WC: Tongariro. Hill. 1889 *Orthoceras caput-serpentis* Col.] [TFC: Tongariro, H. Hill. Type of *O. caput-serpentis*, L.] [VDZ: Only spn VDZ 26-4-37] 24276
- [WC: *Orthoceras* from Winkelmann Feby. 1888] [TFC: Coll. C.P. Winkelmann] 22633
- [A.Hamilton?: *Orthoceras Solandri*] [TFC:] 22635
- No localities [TFC:] 22634, 22636

*Microtis porrifolia* R.Br.

- 3994 *Large Microtis*, ditto (plains, near R. Ngaruroro). [= 3994 =] [TFC:] 22625. Listed in letter to Kew dated 3 Feb 1852.
- [WC: *Microtis* Matamau, Feby 0/84. Small heath spec.] [TFC: Matamau] 22628
- [TFC: Norsewood. Type of *M. longifolia* Col.] 24277
- [TFC: Ruahine Range] 22629
- [TFC: Dannevirke] 22626-7, 22631
- No locality [TFC:] 22630

*Prasophyllum colensoi* Hook.f.

- 1848 *orchid*, grassy plains, Pukekura, nr. Te Waipukarau: perhaps 2 species? [= 1848 Orchid. =] [TFC:] 22645. Listed in letter to Kew dated June 1850 – Jan 1851.
- 1948 *Orchids*. - I have only 3 sps., I send two. Comp. with 1848. [= 1948 Orchid. =] [TFC:] 22644. Listed in letter to Kew dated June 1850 – Jan 1851.
- 2404 *Microtis*, large stout sp., Taupo plains. [= 2404 =] 22641. Listed in letter to Kew dated June 1850 – Jan 1851.
- 2409 *Microtis*? a robust sp., plains, base of Tongariro. - Comp. with 2404. [= 2409 /2410 *Gaultheria racemosa* =] 22642. Listed in letter to Kew dated June 1850 – Jan 1851.
- No localities [TFC:] 22639-40, 22643

*Pterostylis banksii* R.Br.

- 1818 *Pterostylis*, wood, Waimarara. [= 1818 =] [TFC:] 22653. Listed in letter to Kew dated June 1850 – Jan 1851.

- 2348 *Pterostylis intermedia*, n.sp., W.C. - from same locality (as 2347, i.e. between Castle Point and Cape Palliser). [= 2348 *Pterostylis intermedia* =] [TFC:] [VDZ: Only spn VDZ 26-4-37] 24279. Listed in letter to Kew dated June 1850 – Jan 1851.
- [TFC: Tongariro H.Hill Type of *P. speciosa*, Col.] [VDZ: Only spn VDZ 26-4-37] 24279
- [ $\Delta$  WC: Pt. Fortrose] “?? Are other 2 spns. Distinct” crossed out. [WC: Pt. longiauricula Col Fortrose 18889] [TFC: Fortrose, nr Invercargill. Type of *P. auriculata*, Col.] [VDZ: Only spn VDZ 26-4-37] 24280
- [= No 1 =] [WC: *Pterostylis* from Glenross Mar 11/84; diffg. From *Pt. emarginata*, in leaves below & not 2-nerved, but veined & in capsule narrow ovate & nearly 2 in long. 2 tubers put into sm. Pot] [ $\Delta$  WC: capsule of *Pterostylis* from Glenross belong. to the one long leafy spn. – Mar 11<sup>th</sup>/84] [TFC: Glenross. Type of *P. patens*, Col.] [VDZ: Only spn VDZ 26-4-37] 24281
- [WC: (Orchid) *Pterostylis subsimilis*, Col. (from Ruahine, flower cut open for dissection)] [TFC: Ruahine Range. Type of *P. subsimilis*, Col.] [VDZ: Only spn VDZ 26-4-37] 24282
- [TFC: Dannevirke] 22649-50
- No localities [TFC:] 22651-2

*Pterostylis graminea* Hook.f.

- 1742 *Pterostylis graminifolia*, W.C., - growing with 1738. (Tararua). [= 1742 *Pt. graminifolia* =] 22655. Listed in letter to Kew dated June 1850 – Jan 1851.
- 1960 *Pterostylis*, from ditto (head of Wairarapa valley) (perhaps same as 1742). [= 1960 =] 22656. Listed in letter to Kew dated June 1850 – Jan 1851.
- 4275 *Pterostylis*, wet spots on banks of R. Ngaruroro. [= 4275 *Pterostylis* =] [TFC:] 22654. Listed in letter to Kew dated 3 Feb 1852.
- No locality [TFC:] 22657

*Pterostylis micromega* Hook.f.

- [A.Hamilton: Kerioi. Jan. 1889 A.Hamilton] [TFC: Karioi, near Ruapehu A.Hamilton] 22648
- No locality [TFC:] 22647

*Pterostylis foliata* Hook.f.

- 1906 *Pterostylis latifolia*, W.C., hill sides, Cape Palliser. A truly elegant species when fresh. Flowers not unlike those of *P. concinna* (*Journal Bot. Tab cxxxvi*) leaves thickish, succulent when fresh. Unfort. my sps. are all damaged. [= 1906 *Pt. latifolia* /DP: Col.] [DP: North Island Hawkes Bay? W. Colenso] 3560-1, 3621 Herb D.Petrie (one sheet). Listed in letter to Kew dated June 1850 – Jan 1851.
- No locality [TFC:] 22564

*Pterostylis venosa* Col. ?

- 4154 *Pterostylis?* from open summit, top of Ruahine range. [= 4154 =] [TFC:] 22563. Listed in letter to Kew dated 3 Feb 1852.

*Pterostylis trullifolia* Hook.f.

- [ $\Delta$  WC: (Exd. Augt./84) *Pterostylis* – from ROWSON Whangaroa] 24380
- [TFC: Whangaroa. Rawson Type of *P. rubella*, Colenso] [VDZ: Only spn VDZ 26-4-37] 24283

*Pterostylis mutica* R.Br.

- [WC: Pt. tristis from Mr Hill, Decr.1885 – attached to tubers – t. planted] [TFC: Wai-pawa River, H.Hill Type of *P. tristis*, Col.] [VDZ Only spn VDZ 26-4-37] 24284

*Acianthus sinclairii* Hook.f.

- 2025 *Aciathus saxatilis*, W.C. on rocks, among moss, Turakirae; flowering in April & May; flowers much larger and leaves more membranaceous than in *A. folio-bracteis* [ $\Delta$  WC: 2025] (“*A. saxatilis*” on surface stuck to sheet, Ed.) 22622. Listed in

letter to Kew dated July – Sept 1848.

- [ $\Delta$  WC: 2026] 22623
- No locality [TFC:] 22624 (These three sheets from one folder – Ed.)
- No locality [TFC:] 22621

*Cyrtostylis oblonga* Hook.f.

- No locality [TFC:] 22620

*Caladenia minor* Hook.f.

- [= *Caladenia* from the North (Wangruru?) =] [TFC: Whangaruru?] 22637
- [TFC: Norsewood. Type of *C. variegata*, Col.] [VDZ: Only spn VDZ 26-4-37] 24285

*Caladenia bifolia* Hook.f.

- [TFC: Ruahine Mts, Olsen. Type of *C. macrophylla* Col.] [VDZ: Only spn VDZ 26-4-37] 24286
- No locality [TFC:] 22638

*Adenochilus gracilis* Hook.f.

- [TFC: Lake Waikare moana Colenso] 22619

*Corysanthes* sp. immature & sterile (these are *Corybas rivularis* group or *C. macranthus*, cf. 4279).

- 4278 *Small orchidaceous plant, side of mountain stream, heights above Kuripapango; scarce.* [ $\Delta$ : 4278] 24377. Listed in letter to Kew dated 3 Feb 1852.
- 4280 *ditto* (Orchid), *leaves only, wet shady spots near ditto* (side of mountain stream, heights above Kuripapango); *possibly same as 4278.* [ $\Delta$ : 4280] 24378. Listed in letter to Kew dated 3 Feb 1852.
- 4281 *ditto* (Orchid), *leaves only, among ferns, road to Maungarei; some hundreds seen but only 1 in fl., which I send: see 4515.* [ $\Delta$ : 4281] 24379. Listed in letter to Kew dated 3 Feb 1852.

*Corysanthes rotundifolia* Hook.f.

- 4279 *Orchid; from ditto* (side of mountain stream, heights above Kuripapango). [ $\Delta$ : 4279] 24376. Listed in letter to Kew dated 3

Feb 1852.

- [H.Suter: No.9. Black Birch Creek Valley. Nov. 89.] [ $\Delta$  H.Suter: Orchids of which I sent you the fruit] [[ $\Delta$  WC: Suter's orchis *Corysanthes* /Nov 17/90] [TFC: Hooker Valley, Mt Cook. Suter. Type of *C. orbiculatus*, Col.] [VDZ Only spn VDZ 26-4-37] 24287

*Corysanthes triloba* Hook f.

- 2347 *Acianthus? with preceding. /i.e. wet thickets, E. Coast, betn Castle Point & Cape Palliser.* [= 2347 =] [TFC:] 22616. Listed in letter to Kew dated June 1850 – Jan 1851.
- 6167 *Orchid; from wet mossy sides of a waterfall between Kahuraanake & Bare Island. A beautiful sight! to see so many there in one spot, flowering vigorously. If this sp. should prove to be ident. with 6158, it is curious that one should be in such a very contrary situation, high & dry.* - [ $\Delta$ : 6167] 24374. Listed in letter to Kew dated 31 Jan 1853.
- [= No 2 =] cloth tag as for WELT 24281, see *Pterostylis banksii* – Ed. [TFC:] 22617
- [ $\Delta$  CPW?: from the caves (Masons Run)] 24375

*Gastrodia cunninghamii* Hook.f.

- [WC: *Gastrodia leucopetala*: Col.] [WC: Column very small]
- [TFC: Dannevirke. Type of *G. leucopetala*, Col.] 24288
- [TFC: Dannevirke. Type of *G. leucopetala*, Col.] 24659
- [TFC: Norsewood. Type of *G. leucopetala*, Col.] 24258
- [WC: *Gastrodia* – {description left out....} Burdock Wd. nr. *Parsonia macrocarpa* Mar 31/84] This and reverse of label bears description – Ed. [TFC:] 24289
- [WC: Ruahine Hill or Olsen 1890] [TFC: Ruahine Mts. Olsen] 22661
- No locality [TFC:] 22660

**Table 3: Colenso's place names**

Bare Is. is off the east coast 25km south of Cape Kidnappers.

Castle Point: east coast, Wairarapa.

Eparaima – Ephraim – was a village in the interior, 17km from Porangahau, near Wallingford.

Kuripapango is on the Taihape – Napier road.

Moeangiangi stream reaches the coast 43km north of Napier.

Mt Kauranaki - 2119 ft. - is between the Maraetotara and Tukituki rivers.

Ngaruroro river rises in the Kaimanawas, flows to the west of the Kaiwakas, crosses Takapau Plains to pass between Napier and Hastings, reaching Hawke's Bay at Clive. Palliser Cape and Bay at south of North Island.

Tangoio was on the coast, 23km north of Napier

Tararua: Colenso's acquaintance with the Tararua range was limited to the road, which was already under construction at the time of his first visit, over the Rimutaka saddle.

Te Hautotara was east of Dannevirke, at the Mangatera-Manawatu junction.

Te Waipukurau: the site of modern Waipukurau.

Turakirae point, south coast.

Waimarara: a little stream in Palliser Bay.

## Aorangi SFP in November

The Aorangis were gleaming after a few days' rain, and Sunday 26 November had dawned clear and bright. I know about the dawn because I had to take my wife to the 5am plane to Sydney. By 7 I was in the southern Wairarapa wondering what time of the day *Thelymitra nervosa* would open.

Flowering that day were *Caladenia lyallii* (a new record for the area), huge *Corybas macranthus*, *Thelymitra colensoi*, *T. nervosa* (mauve with spots, with no spots, and white with dark blue spots—all with the same column, variably tuberculate at the back of the post-anther lobe), *Pterostylis banksii*, *P. irsoniana*, *P. graminea* (s.s. I think: at least it's the same as the Otago taxon), *P. patens* (new for the area, and I think its southernmost record), *P. cardiostigma*, *P. montana*, *P. australis*. Not flowering were *Microtis* sp., *Prasophyllum colensoi*, *Earina autumnalis*, *Orthoceras novae-zeelandiae*, *Corybas* "Trotters", a *C. rivularis* agg. member, and another *Corybas* aff. *trilobus* (the last 3 all in fruit).

At one site *P. patens* and *P. australis* were side-by-side, and there were definite intermediate forms. In another 50cm circle were several flowering plants of *P. patens*, *P. cardiostigma*, and *P. montana*. I looked for hybrids, but quickly reminded myself that would be unlikely. While the insect-pollinated *P. patens* leans forward, its mouth receptively agape, the last two bear erect flowers with small openings and are self-pollinators—upright and uptight, content to let their own pollen fall on their swollen stigmas. Not about to share it with others.

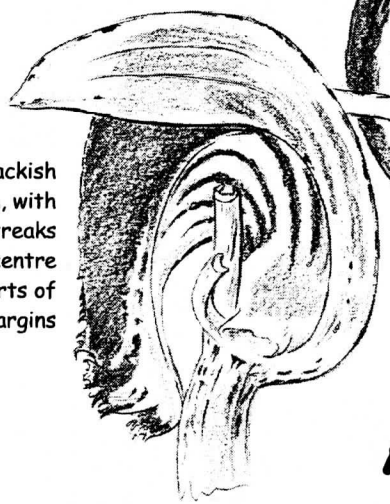
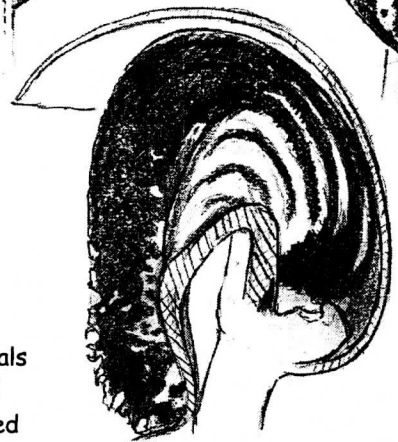
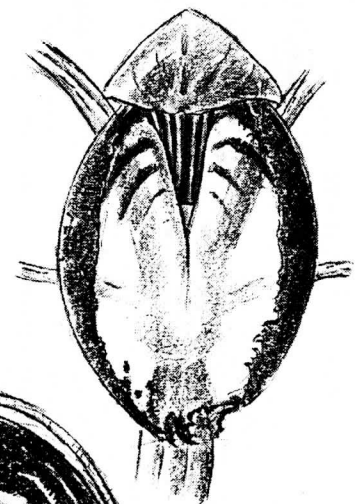
This really is a place of great abundance of orchids, perhaps the best *Pterostylis* site I have ever seen—in terms of numbers of species, as well as sheer numbers of plants.

To cap off a great day I joined Aalbert Rebergen, Tony Silbury, Olaf John and Pat Enright and visited the southern Wairarapa swamp that harbours at least one plant of *Pterostylis micromega* (see *Notes* in this issue).



Original papers  
More *Corybas trilobus* forms: Bruce Irwin

From behind, rear of labellum almost colourless

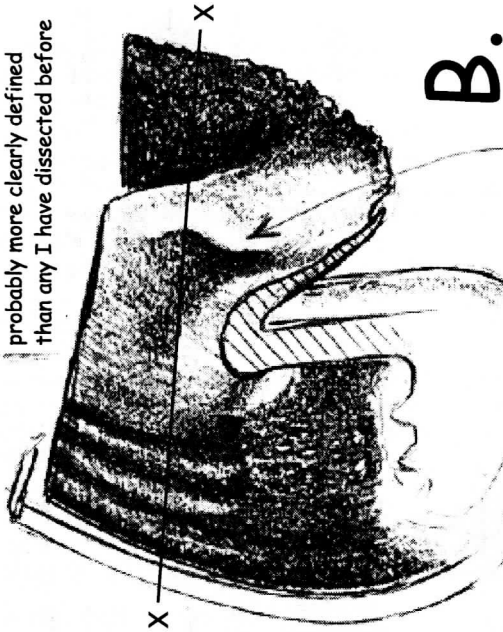


Deep blackish crimson, with clear streaks towards centre line, & parts of lower margins

A.

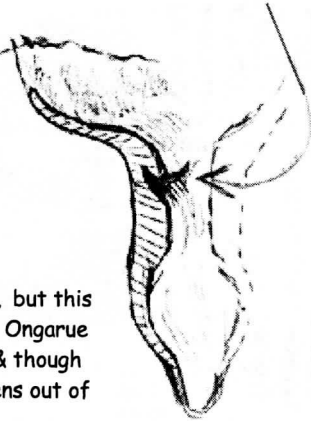
Tiny plant and flower of *C. aff. trilobus* from "Hidden Valley" near Oturare rest area; dorsal sepals seem variable but are normally somewhat tapered and project beyond lateral lobes of labellum. Amount of red striping also seems variable. Collected 28 October 2000

The pit in the labellum is probably more clearly defined than any I have dissected before



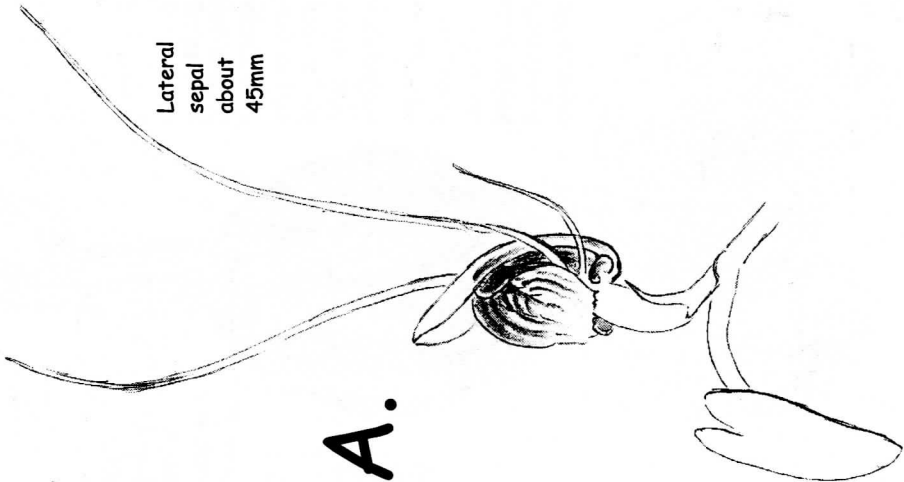
B.

One side of labellum, cut horizontally through pit, in line of X—X above



Very small dark *C. aff. trilobus* from same area as "A", but this form seems very different, very like "C", a dark form from Ongarue shown overleaf, but labellar margins are much less ragged & though there is a deep pit inside entrance, no drainage channel opens out of the "bib" near the apex.

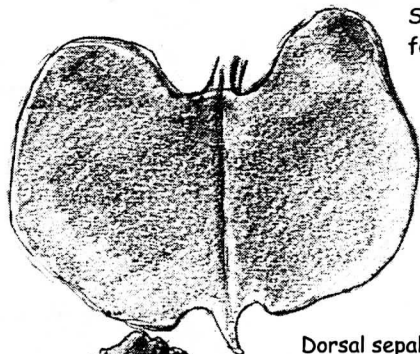
Lateral sepal about 4.5mm



A.

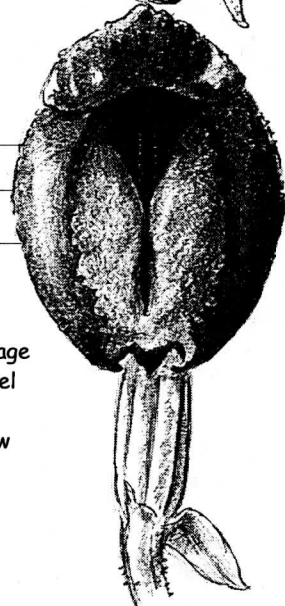
**C.** Tiny, almost black *C. aff. trilobus* from Ongarue, 14 October 2000.

Surface of leaf clear uniform green—  
faint touches of purple ribs of petiole



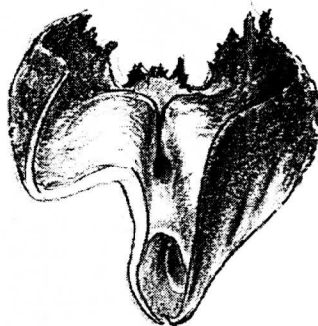
Dorsal sepal dull olive green streaked black/purple, streaks merging towards apex so little green shows in frontal view.

X  
Y  
Z

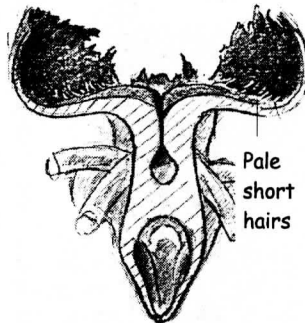


Ragged stubble (nondirectional) on swollen boss, which is darkish bottle/olive green flushed reddish twds margins. Outer surfaces matt black.

Drainage channel just a narrow slit.



X: Cut above floor of entrance to column cavity; note, entrance to drainage channel NOT seen when this drawing made, merely a very narrow split. It showed up only when side-lit with a torch.



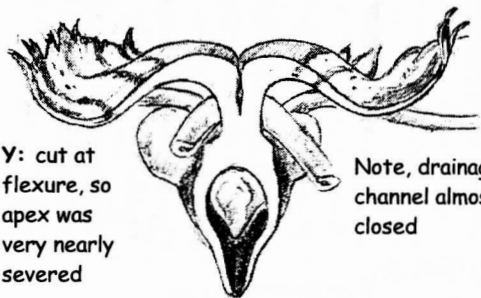
Pale short hairs

Y: apex of labellum cut through flexure. Drainage channel at least on this flower could function as such.

Z: cut below floor of entrance

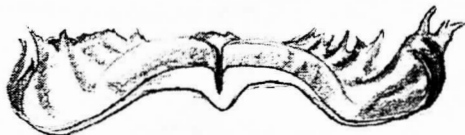


Slightly larger *C. aff. trilobus* than the virtually black flowered form (C) from same riverbank at Ongarue 14 October 2000. This one with considerable green and red striping. Drainage channel could not really function as such.

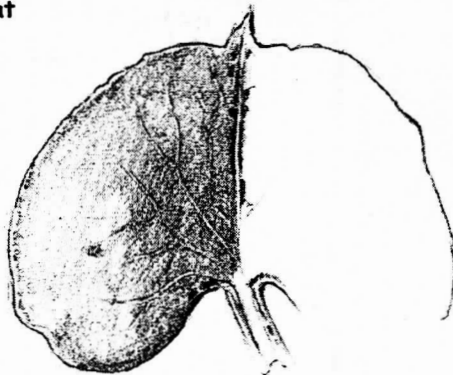


Y: cut at flexure, so apex was very nearly severed

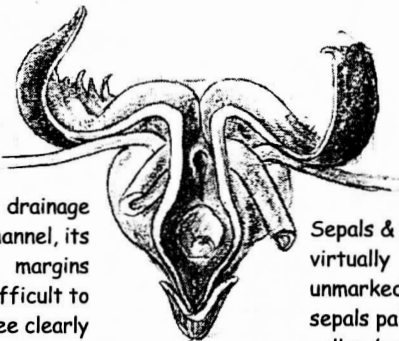
Note, drainage channel almost closed



Z: Cut below flexure of labellum; lobes virtually pressed together.



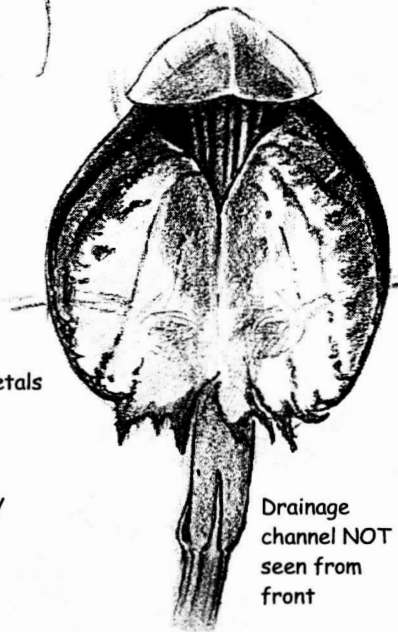
D.



X: drainage channel, its margins difficult to see clearly

Cropped dorsal

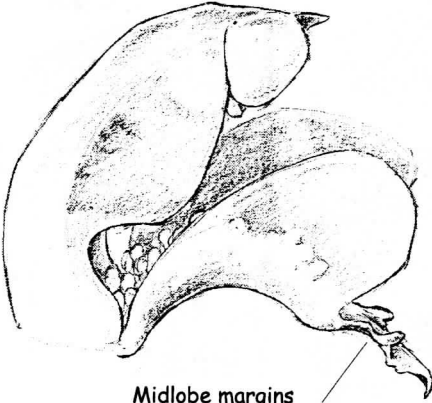
Sepals & petals virtually unmarked; sepals pale yellow/grey



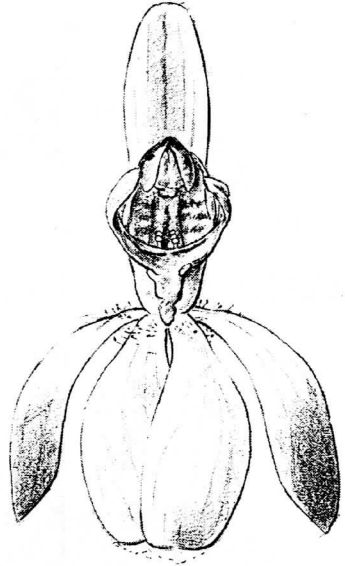
Drainage channel NOT seen from front



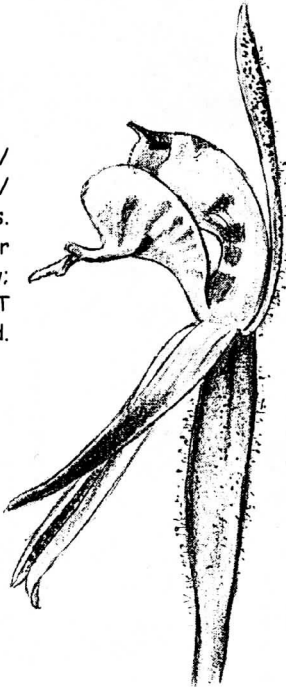
# E. *Caladenia pusilla*?? Shenstone Block, Te Pahi



Midlobe margins  
sinuate; 2 major blips



Labellum creamy/  
white with purplish/  
crimson bars.  
Midlobe rather  
short and narrow;  
pale yellow and NOT  
recurved.



Column much the same colour as the  
labellum, though faintly green towards  
centre line; dull crimson anther cap.

Hairs pale, but with dark glandular tips.  
Reverse of lateral sepals covered with  
dark glands (sessile?) appearing much  
the same as dorsal.

Petals rather less densely dotted than  
sepals.

Sepals & petals a strong streak of  
purple/crimson along c/l of outer  
surfaces

## Field observations on *Caladenia lyallii* in Nelson Lakes

by Mark Moorhouse, Nelson.

In NOG *Newsletter* #6 [June 1983 p3] in reference to differences in *Caladenia lyallii* I wrote, "Some schools of thought propound varietal differences between these normal flowers usually found from snowline areas and those of montane scrublands". In that article I also mentioned a third hybrid group. A lot of careful study since then has not convinced me that there are any less divisions hiding under the *C. lyallii* blanket.

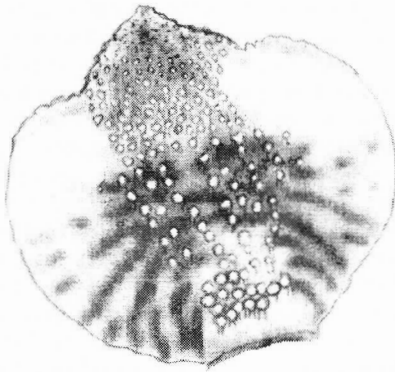
On the North face of Mt. Robert, Nelson Lakes Nat. Park (700 - 1000 m.a.s.l.) is an area of approx. 1 sq km of mid-age manuka/kanuka with fringes of regenerating beech. There appear to be three varieties of *Caladenia* akin to *C. lyallii* here.

1. The first aligns with Ian St George's *C. aff. alpina* [J76 p39] and is close to, if not the same as *Caladenia alpina* from Australia. The flowering season this year Nov 20th - c. Dec 10th. *C. aff. alpina* is a robust plant. Height to 25cm. Leaf is straplike, averages 6cm long and maxes out at 1cm wide (av. 6mm). Stem bracts two on hirsute stem. The higher bract sheathes puffily and is rarely the sheath for a second flower. The lower bract is always situated on the bottom 1/4 - 1/3 of the stem. Petals and sepals are of the broader type [as in plate 10, p 18 of Johns & Molloy *Native Orchids of New Zealand*] and are sometimes flushed with pale pink on outer side. Sepals frequently have a distended central vein which is hirsute and coloured green or red. Inflorescence 25 mm wide. Petals slightly narrower than sepals with three obvious veins but several minor ones. Column 7-8mm high barred/blotched rather irregularly in a finer pattern than the other two groups. The column wings are slightly deeper also. All have a more or less circular stigmatic surface. The labellum tends to develop further after the flower opens. In

freshly opened flowers the labellum disc has at its base 1 - 3 heavy calli, an unruly cluster of smaller calli appear in front of this, then four more or less orderly rows which extend to the midlobe region. On either side in this area are smaller non-yellow-tipped nodules/calli. The appearance at first glance is six rows where the mid-lobe turns sharply down. As the flower ages these develop into fully fledged calli. I have witnessed such development in cut flowers over a period of 9 days. So by maturity there can be as many as six rows on the disc (at least half way). In the field on Mt Robert, I have never seen more than five rows but such development may cease when the flower is pollinated and it all becomes unnecessary for the reproductive process to succeed. Only careful observation of unfertilised flowers will prove this. [Subsequent exploration of Nelson's Mt Arthur Range has produced plants with 6 rows of calli including a two flowered plant with a 6-row labellum on the bottom flower and a 4 row labellum on the upper flower. The upper 4 row flower had been pollinated while the lower one had not. The labellum in Mt Arthur plants is slightly more relaxed leaning more toward the true *C. alpina*]. The labellum wings are a little taller than in the other two groups arching slightly higher toward the base, and are incurving in the Nelson Lakes district. In early flowering plants I also noted that commonly there was a small plain tooth between the wing and the first fringe calli on the midlobe. But on subsequent visits to the area I noted that by the end of the flowering season there were very few exhibiting the tooth feature to be found. Development again? or perhaps the late flowering ones of this robust *C. aff. alpina* group really represented a small hybrid

group somewhere between *C. aff. alpina* and group 2 which I suspect are *C. aff. lyallii*. The labellum is heavily barred in wine red transversely from wing edge to wing edge. [Two differences noted at Mt Arthur were the general lack of tooth in front of wing but a semi-crenulated front edge to the wing instead. Also the red barring on the wings is frequently broken in the middle of the disc where the calli stand.]

2. *C. aff. lyallii* (or in light of observations stated here perhaps *C. lyallii*)



*Caladenia aff. alpina* labellum,  
Mt Arthur. See also Plate 1.

This group is comparatively smaller than *C. aff. alpina* (max. 12cm). Sepals and petals are always of the narrower type, [cf. Max Gibb's left flower of pl 6 #20 in Ian St George & Doug McCrae's *New Zealand Orchids: Natural History and Cultivation*] with the dorsal sepal virtually white having only sparse coloured hairs at the base. As with *C. aff. alpina*, the labellum is extremely 'shy' presenting absolutely no red barring to the casual observer. (This is one of the minor differences which makes these two groups "aff.s"). Only after prising open or everting the dorsal sepal can any internal detail be seen. On the disc I found no variation from the standard four rows,

though occasionally the outer rows were partial or vestigial. This was on c. 100 plants checked over several visits. Labellum wings have an even curving arc from front to back and are transversely barred with a few irregular wine red bars. Sometimes there appears to be a gap between the front bar and the others. The column is approximately 1mm taller than the labellum and carries 3 - 4 uneven red bars. Column 6 -7mm high. Two bracts appear on the hirsute stem, the highest undertopping the ovary by c. 1 cm. The lower bract is consistently mid-stem. Leaf quite narrow to linear. Flower time this year c. Dec 01 - post 16th (a few days overlap with *C. aff. alpina*). See Plates 2, 3.

3. *C. "Robert"* (the mooted hybrid in NOG Newsletter #6). A rather diminutive version of group 2 with a more lax labellum, two rows of calli and quite narrow flower segments almost apiculate and rather reminiscent of *Adenochilus gracilis*. Stems have a single bract. Only three plants of this type located, all flowering in midDecember. See Plate 4.

My conclusions are that *C. aff. alpina* may prove to be either a robust 2n diploid or 4n tetraploid version of *C. lyallii* or indeed *C. alpina* (ex Australia). Because of the differing flowering season I tend to favour the latter option. Chromosome testing will no doubt help. *C. "Mt Robert"* may also prove to be *C. lyallii* s.s. and it appears similar plants occur quite freely at Iwitahi albeit much larger with less apiculate petals.

The North face of Mt Robert is currently highly suited to supporting various orchid families. Some further studies of the *Pterostylis* growing there and in the upper Motupiko Valley may well prove interesting to those passing by. On Mt Robert there are *P. irsoniana*, *P. australis*, *P. montana* and *P. graminea* in the 1% I have scoured and others I can't 'fit' into what I recognize as spp divisions. They

seem affiliated to either *P. graminea* or *P. montana* and some with rather 'stretched' features reminiscent of *P. irwinii* or *P. cardiostigma*. At Kikiwa is an interesting conglomerate of *P. banksii*, *P. patens*, *P. areolata*, *P. australis*, *P. montana* and *P. irsoniana* and many shades between.

**Postscript:** new light ex Mt Arthur trip: I brought the two flower head home to study and found that the four row flower had been pollinated. It has now folded, whilst the 6 rower had not been fertilized and is still open and has since developed at the front of the disc parts of 2 more vestigial rows outside the six it had when I found it (a fair forest of them!). The petals are now browning on the edges and of course it still isn't fertilized. This helps confirm my

suspicion that calli development ceases at pollination. In that vein of reasoning, I wonder if you were out in the field collecting specimens for a herbarium, would you choose nice fresh plants or older crusty ones to study? Of course you would choose the fresh perfect ones! Did this happen with the type specimens for *C. lyallii*, resulting in a bunch of 2 rowers being collected and a few 4 rowers? Were the plants examined to see if they had been pollinated or not? If an active group of pollinating insects is present in numbers, wouldn't it be reasonable to expect very few, if any, 4 row (for *C. lyallii*) or 6 row (for *C. alpina*) plants to develop in that colony? And conversely, more rows present where pollinators are less frequent. Food for thought isn't it!

## Fire and threatened species management in a Waikato wetland

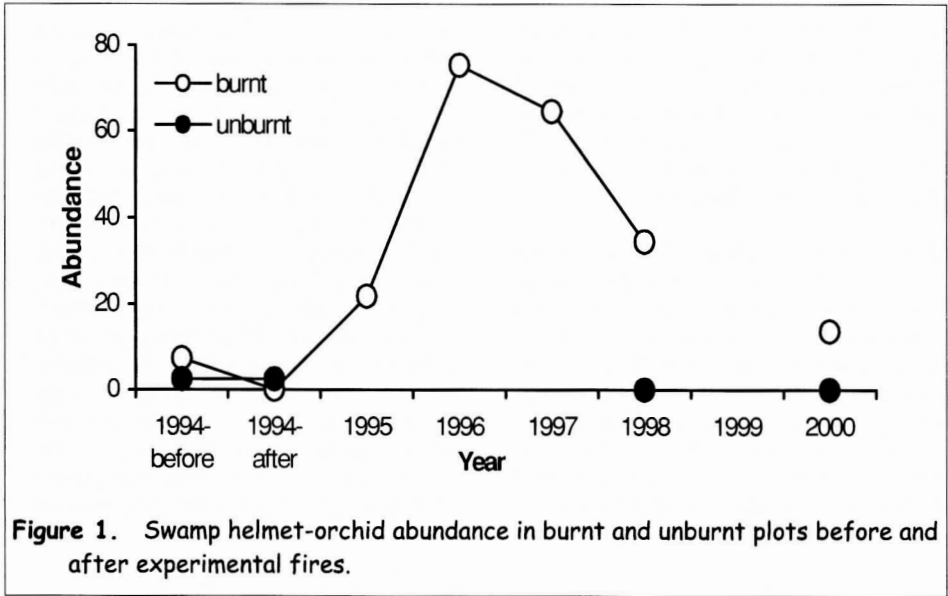
by David A. Norton, School of Forestry, University of Canterbury;  
and Peter J. de Lange, Science & Research Unit, Department of Conservation

New Zealand has 511 threatened or uncommon vascular plant species, accounting for some 22% of the native flora. Understanding the factors threatening these species is a key focus of threatened plant research. Research by Assoc. Prof. David Norton from the School of Forestry in collaboration with Department of Conservation threatened-plant scientist Peter de Lange, focused on the role of fire in sustaining the critically endangered swamp helmet-orchid (*Corybas carsei*: **Plates 16-18**) in a large Waikato wetland.

Historically, fire has been seen as a threat to natural plant communities and fire suppression has been actively pursued in most parts of the world. More recently natural fire has been recognised as playing a

key role in determining the composition of many plant communities. As a result, fire is now commonly used as a conservation management tool in areas where natural fire patterns have been modified by human activities. Although natural fires are not as common in New Zealand as in Australia or North America, they have still played an important role in determining the composition of many plant communities including wetlands like the one that we studied.

The study area, the Whangamarino wetland complex 50 km north of Hamilton, is a 4871 ha wetland management reserve composed of four peat bogs. The vegetation is dominated by tall sedges (*Baumea*, *Schoenus*, *Tetraria*), with wire-rush



**Figure 2.** Flowering swamp helmet-orchid growing in open wetland vegetation.

(*Empodisma minus*), the woody shrub *Epacris pauciflora* and tangle-fern (*Gleichenia dicarpa*) also common. In 1994 we implemented a series of controlled burns. We measured the abundance of all plant species, including the swamp helmet-orchid, before the fires, then at between two and six month intervals after fire until late 1998 and again in early 2000 in both burnt and unburnt plots.

Immediately after fire no plant species remained in the burn plots, but two months later many of the rhizomatous species were resprouting. By the end of the first summer, plots were dominated by the sundews (*Drosera binata*, *D. spatulata*) and other plants were appearing. By the second summer the rhizomatous species had virtually returned to their pre-fire dominance while many of the obligate seeding species (e.g., manuka, *Epacris pauciflora* and wire-rush) were also present in the plots, though for the duration of the study these species never recovered their former dominance. By the end of the experiment several species absent from the plots prior to the burns had also established themselves (e.g., *Schoenus carsei* and *Lycopodiella serpentina*).

Swamp helmet-orchid was present in all plots (burnt and unburnt) prior to the fire and along with all other plants, were killed by the experimental fires. They remained absent from the burn plots for the rest of 1994. In 1995 swamp helmet-orchid reappeared in the burn plots at a higher density than before the fire, with density peaking in 1996 two years after the fire (Fig. 1). A revisit to the study site in July 2000 (six years after the fire) showed that the density of swamp helmet-orchid plants had continued to decline, although there were still more plants present than prior to the fire. In contrast, swamp helmet-orchid was lost from the unburnt control plots between the fire and the final measurement four years later, and was still absent after

six years. Fire also provided optimal conditions for swamp helmet-orchid flowering. Swamp helmet-orchid had only been observed to flower once previously, yet it flowered vigorously after fire.

The results clearly show that fire has enhanced the habitat of swamp helmet-orchid with a ten-fold increase in plant numbers two years after the burns. Six years after fire, the number of plants in the burn plots is still twice the number prior to the burn, suggesting that the benefits of burning last several years. The main effect of fire was to provide the open habitat that swamp helmet-orchid favours. Optimum swamp helmet-orchid habitat appears to be a relatively low cover of tall plants over a dense ground cover of bryophytes and small herbaceous vascular plants (Fig. 2). With time after fire, light levels at the ground surface decline and the bryophytes are lost along with swamp helmet-orchid. Eventually, in the absence of fire, the open vegetation favoured by swamp helmet-orchid is replaced by dense wire-rush dominated vegetation. The loss of swamp helmet-orchid from other sites and its decline at the study site are thought to be due to this process and our results strongly suggest that the maintenance of swamp helmet-orchid habitat requires regular fire.

Swamp helmet-orchid was not the only threatened or uncommon plant species that responded to the experimental fires. For example, the orchids *Prasophyllum* aff. *patens* and *Pterostylis paludosa*, fern-ally *Lycopodiella serpentina*, and sedge *Schoenus carsei* were all absent prior to the fire but present afterwards. In fact, *Lycopodiella serpentina* had been considered locally extinct at this site prior to our research.

Our results have highlighted the importance of fire in peat bog systems. Without fire, community composition becomes more simple and a number of species are lost, including some nationally

threatened species. It seems likely that recent fire suppression policies have played a role in the decline of threatened species such as swamp helmet-orchid. While fire is likely to be an important tool in the future conservation management of these bogs, if not used properly the use of fire could lead to a suite of other problems. For example, too frequent an occurrence of fires is likely to lead to changes in community composition including invasion of exotic

weedy species. The results of this study suggest that some fire is good for maintaining habitat heterogeneity within these wetlands and in allowing threatened species to persist. Certainly for the critically endangered swamp helmet-orchid, fire could be used to temporarily reverse vegetation succession, thereby creating "windows of opportunity" for colonisation by this species.

## Plates

### **First page, anticlockwise from top (refer Mark Moorhouse's paper):**

- 1: *Caladenia* aff. *alpina*, Mt Robert.
- 2: *Caladenia* aff. *lyallii*.
- 3: *Caladenia* aff. *lyallii*, Mt Robert.
- 4: *Caladenia* "Mt Robert".

### **Second page, clockwise from top left:**

- 5: Pierre-Adolphe Lesson's 1827 watercolour of *Orthoceras Novae-zeelandiae*.
- 6: *Caladenia* aff. *variegata* labellum. Two simple rows of calli with no stray calli.
- 7: *Caladenia* aff. *variegata* hybrid? two crowded rows of calli, two vestigial strays to R. Note the hooked down apiculus to the anther à la *C. "speckles"*.
- 8: *Caladenia* "speckles" at Scott Point. Note, hooked anther apiculus, 2 marginal calli (not one) and speckled dorsal sepal.  
(eric 1-3)

### **Third page (clockwise from top left)**

- 9: *Caladenia* aff. *lyallii*(?) white form with 6 rows of calli, no in-rolled column wings.
- 10: *Caladenia* aff. *lyallii*(?) with red bars, 4 rows of calli and in-rolled column wings.
- 11: *Caladenia* aff. *bartlettii*. Rounded sepals bald column but the wrong mid-lobe.
- 12: *Caladenia* aff. *bartlettii*. Recurved lateral sepals, midlobe edges turned down not up.
- 13: *Caladenia lyallii* Iwitahi Reserve. 2 rows of disc calli plus the odd stray. No marginal calli. No in-rolled column wings. White labellum (no red bars) but sepal hairs have red glands.

### **Fourth page (clockwise from top left)**

- 14: *Orthoceras strictum* Papawiri Hill. Note long floral bract and pointed labellum.
- 15: *Caladenia bartlettii* painted from life by Jean Bartlett in 1959.
- 16: *Corybas carsei* with transparent lateral tepals clinging to the side of the labellum.
- 17: *Corybas carsei* showing key-hole slot in papillae-covered dorsal sepal.
- 18: *Corybas carsei* with tapered stripes and rear facing auricles à la *C. fordhamii*



## A photographic comparison between *Gastrodia* aff. *sesamoides* and *Gastrodia* "city"

By Max Gibbs, Hamilton.

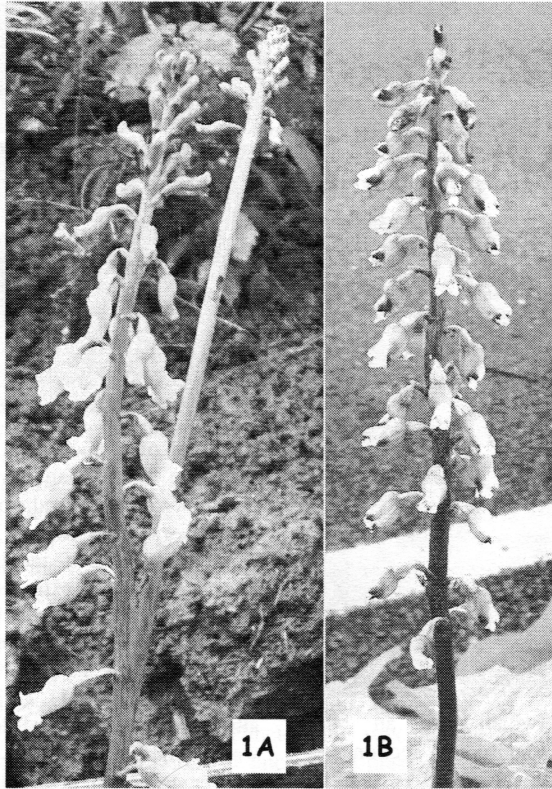
**1A:** *G.* aff. *sesamoides* flowers collected from Iwitahi photographed 30 Dec. 2000.

**1B:** *G.* "city" flowers collected from Tristram St Hamilton, photographed 23 Dec. 2000.

Since 1994 I have been watching an odd looking orchid common to Hamilton city roundabouts. It is a form of *Gastrodia*, which, on discussion with Peter de Lange and Eric Scanlen, has been called *Gastrodia* 'city' for distinction from *Gastrodia* aff. *sesamoides* found at Iwitahi.

This summer I took a flowering stem to Iwitahi for Bruce Irwin to examine, and I have tried out a close-up option on my digital camera to photograph the two orchids. From the results I recommend we should look closer at these two as there are some obvious differences which suggest they are not the same.

On first seeing the two orchids together (**Photos 1A,1B**), I thought they 'looked' different. This may result from habitat and climate but the difference is quite noticeable. The plant from Iwitahi appears to have a conical arrangement of widely separated flowers typical of nearly every photo of *Gastrodia* aff. *sesamoides* from Iwitahi. The conical shape is caused by the developing buds bending down to touch the stem before bending up again as the flower opens (**Photo**



**1A**). The plant from Hamilton has the flowers closer together and more even in length –like a bottle brush (**Photo 1B**). This appears to be because the developing buds cannot bend down against the stem owing to the closeness of the flower below.

Apart from the striking colour of the Hamilton city flower with its dark sepal tips, it typically does not open as wide as the flowers from Iwitahi (**Photo 2A**), and has inwards rolled edges to the sepals at the split, and to the petals (**Photo 2B**).

When I dissected the flowers I saw a noticeable difference in the shape of the tubular part of the flower and the alignment of the labellum. The flowers from



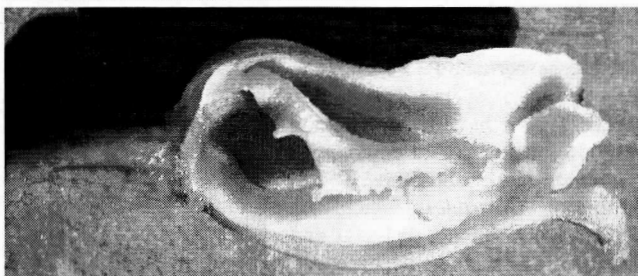
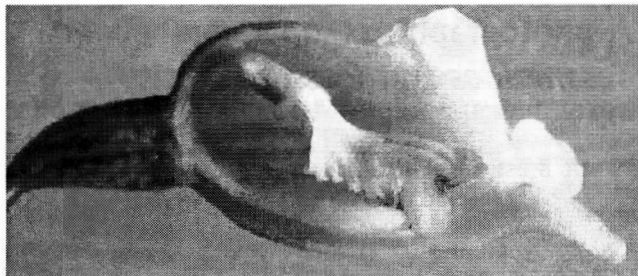


2A↑ 2B↓ 3A↗ 3B→



Iwitahi had an oval longitudinal section and a distinctly bent labellum (**Photo 3A**) whereas the Hamilton city flowers had a kidney shaped longitudinal section and a smooth curvature to the labellum (**Photo 3B**).

After I removed the labellum I found the rostellum or anther flap on the column of the Iwitahi flowers



consisted of a thick rigid flat plate (**Photo 4A**) whereas the rostellum of the Hamilton flowers consisted of a thin tissue membrane with curved pointed ends bent towards the base of the flower (**Photo 4B**).

A more striking feature of the Iwitahi flower was the presence of two extra longitudinal ridges of calli on the labellum (**Photo 4A**) which were not present on the labellum of the Hamilton flowers (**Photo 4B**).

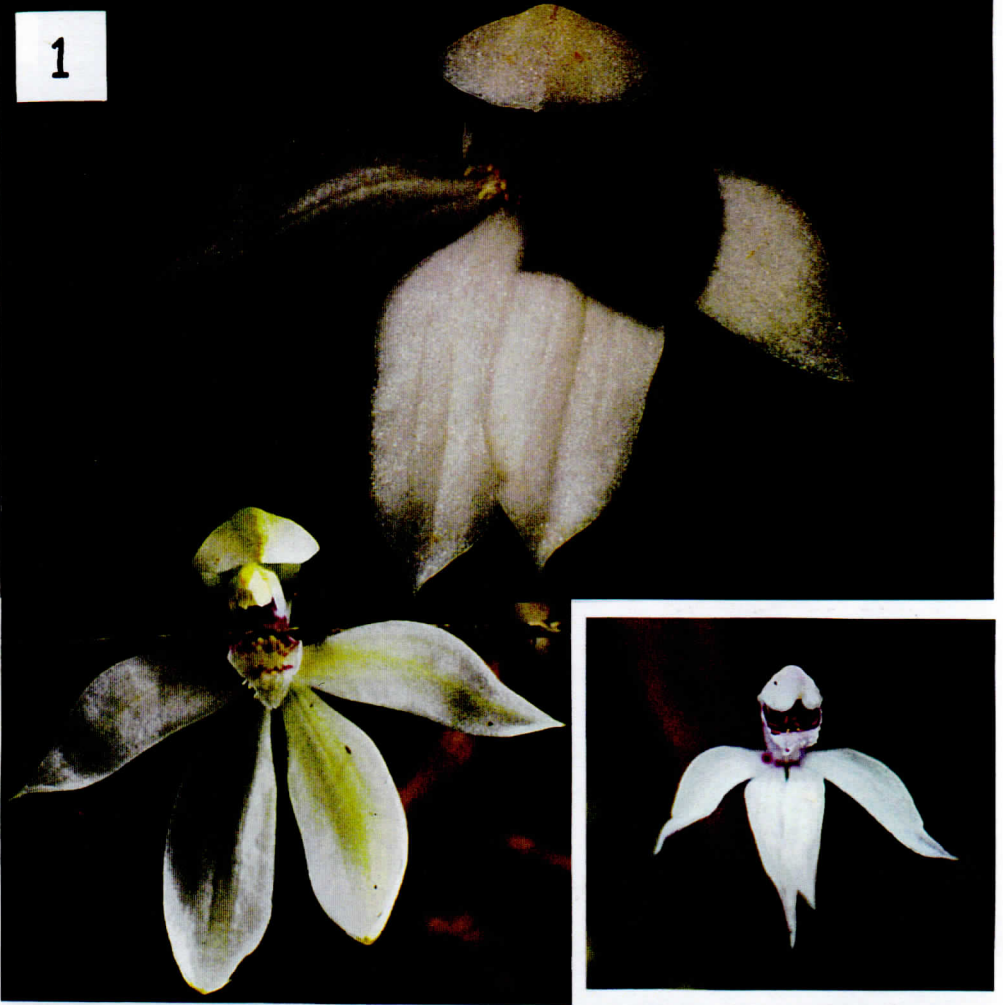
I have listed 10 differences between the two orchids for discussion (**Table 1**). Quite probably most of these could be attributed to habitat and degree of exposure of the plants. E.g. warmer and drier in the city causing earlier flowering and shorter stems than at Iwitahi.

The descriptions in articles by Peter de Lange [1] and E. K. Cameron [2] in the *NZNOG Journal*, and the descriptions of *Gastrodia sesamoides* by Lucy Moore and Elizabeth Edgar [3], and Hodgson and Payne [4], are clearly reasonably broad and cover most of the differences seen in Table 1.

But apart from the distinctive colour of *Gastrodia* 'city', there are two quite striking differences which lead me to the conclusion that more work is required on these two orchids

- there are striking differences in the shape and size of the rostellum,
- there are three longitudinal ridges of calli in the Iwitahi specimen but only one longitudinal ridge of calli in the Hamilton specimen.

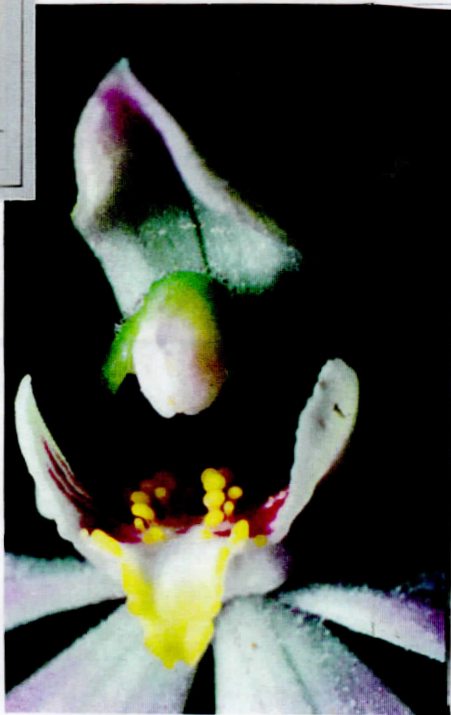
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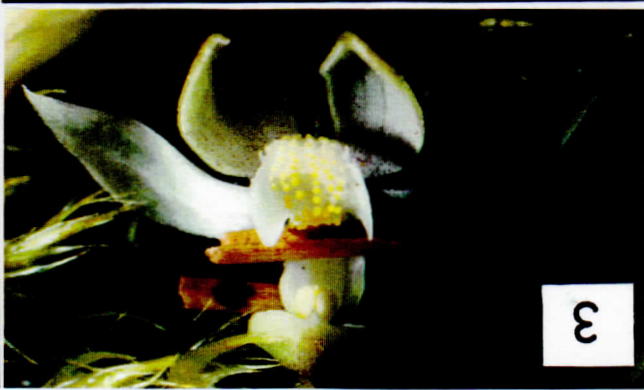
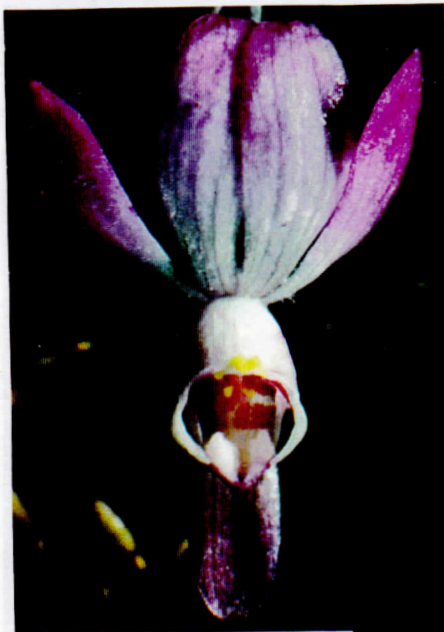


2



*Nouvelle-Zélande*  
*Découvert par Cook*  
*Janvier 1827*

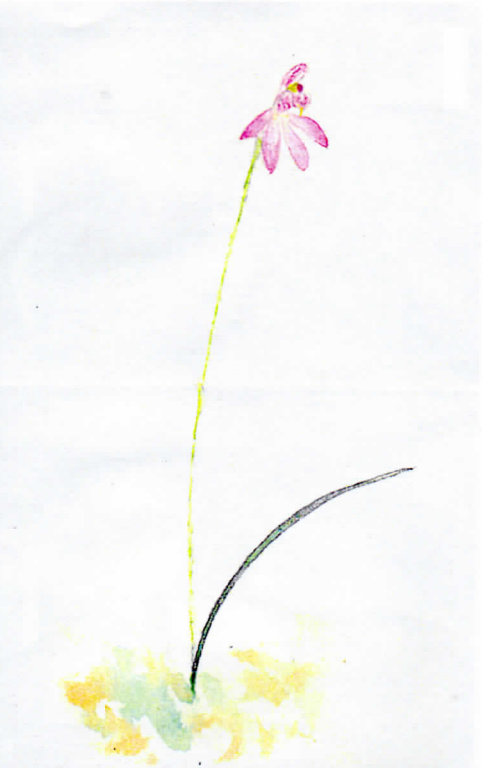




3



4



**Table 1: Comparisons**

	<i>Gastrodia</i> aff. <i>sesamoides</i> (Iwitahi)	<i>Gastrodia</i> "city" (Hamilton)
<b>Flowering time</b>	Late December - February	Late September – December
<b>Flower stems</b>	0.5 -1.2m tall	0.2 – 0.5m tall
<b>Flowers per stem</b>	Typically 20+ widely spaced of reducing length towards the buds at the tip	Typically 20+ closely spaced of more even length overall.
<b>Flower markings</b>	pale cream to mustard	pale cream, dark tips to the sepals
<b>Flowers open..</b>	fully, with wide-spread petals	partially, petals and sepals tend to form a tube
<b>Flower shape</b>	tube gibbous with smooth curved upper surface giving oval cross section	tube gibbous with re-entrant curved upper surface becoming parallel with dorsal sepal
<b>Column</b>	Midlength – shorter than labellum, smooth curved	Midlength – shorter than labellum, distinct bend at base
<b>Rostellum (anther flap)</b>	Thick rigid plate, straight with squared ends	Thin tissue membrane, curved ends pointed and bent towards stigma
<b>Labellum</b>	like a hearth brush with undulate margins; profile shape shows distinct bend in the "handle" of the brush	like a hearth brush with undulate margins; smooth curve along full length of the labellum.
<b>Labellum - calli</b>	Central longitudinal ridge of globular calli from the lip, dividing at the midpoint of the labellum. Two further darker ridges of calli (one either side if the central ridge) extending from the lip to the point of the labellum. Marginal thickening at base where labellum attaches to gibbous part of tube	Central longitudinal ridge of smooth calli from the lip, dividing at the midpoint of the labellum. Marginal thickening at base where labellum attaches to gibbous part of tube

Both these differences are clearly seen in the photos but are not mentioned by de Lange or Cameron. Unfortunately, Cameron [2] did not include a photograph of the *Gastrodia* specimens found in Auckland, and de Lange [1] used a photograph of *Gastrodia* aff. *sesamoides* from Iwitahi rather than from the Hamilton roundabouts to illustrate his article. While the latter was not intended to mislead, it left us without an illustration of the orchids found in Hamilton and Auckland.

The taxonomic descriptions of *Gastrodia sesamoides* [3,4], however, leave me wondering whether *Gastrodia* 'city' might

actually be true *Gastrodia sesamoides* as it fits exactly — even to the dark sepal tips as illustrated by Margaret Hodgson [4]. The extra two rows of sub-median longitudinal calli are not noted in either description and hence the name *Gastrodia* aff. *sesamoides* for the Iwitahi specimen may be entirely appropriate.

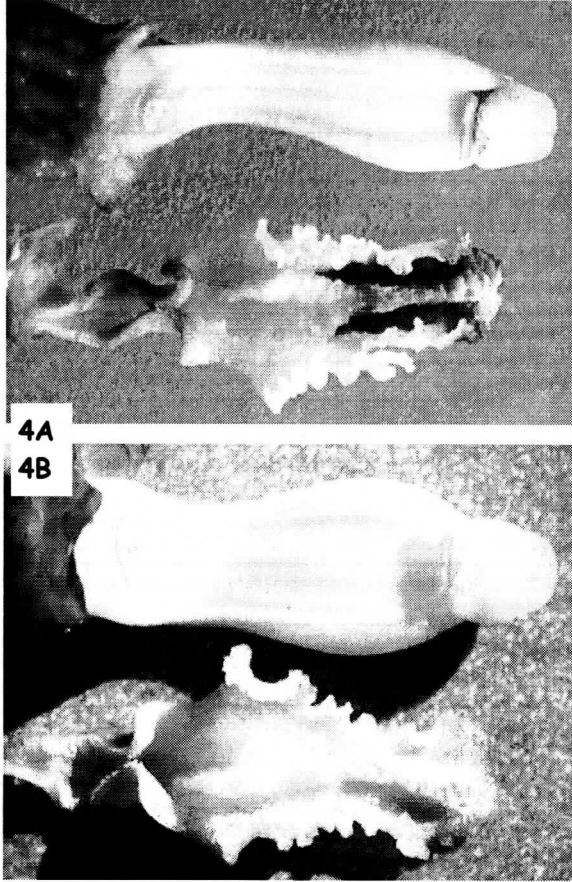
I wonder whether the presence of a *Gastrodia* fitting the Australian description of *Gastrodia sesamoides* and found in major cities indicates we are seeing seed deposited from tourists' clothing rather than an inoculum brought in with pine bark mulch from the central volcanic plateau. If

the latter were the source of *Gastrodia* 'city' we should be able to find this distinctive orchid in or about those forests. It should also be present in the Hamilton gardens as the same bark is used there. This is something that needs to be investigated next spring.

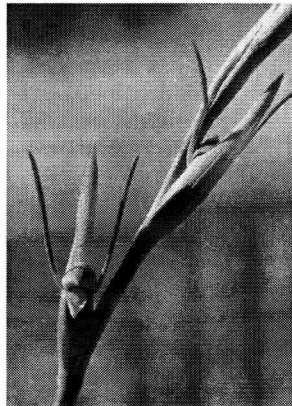
In order to answer the question of habitat effects, I intend to cultivate both varieties of *Gastrodia* in labelled adjacent plots in Hamilton to observe their flowering next summer.

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2. Cameron, E.K. 1996; *Gastrodia* aff. *sesamoides* in Auckland city (2). *N.Z. native Orchid Group Journal* 60: 4-9.
3. Moore, L.B., Edgar, E. 1970: *Flora of New Zealand, Volume II: Indigenous tracheophyta, monocotyledones except gramineae*. Government printer, Wellington, New Zealand. pages 156-159.
4. Hodgson, M., Paine, R. 1989: *The A & R field guide to Australian orchids*. Angus & Robertson Publishers, North Ryde, NSW, Australia. page



#### An observation on *Orthoceras*:



the differences between *O. strictum* and *O. novae-zeelandiae* are said to be the long floral bract and pointed labellum (labellar midlobe) of the former (see Eric Scanlen's photo **Plate 14** in this issue), compared with the shorter bract and oval labellum of the latter (see Johns & Molloy pp52-3).

And see **Plate 5**, the original watercolour of *Orthoceras* (*Diuris*) *novae-zeelandiae* in the museum at Rochefort, France, painted by Pierre-Adolphe Lesson, inscribed "New Zealand; Cook Strait, January 1827"; note the labellum-tip and bract.

I found one with a pointed labellum and tall bract on the bank of an eastern Wairarapa roadside, flowering Christmas Day 2000 (photo at left). Note the sides of the labellar midlobe curling up to make it look more pointed than it is; pointed labellar midlobes can also curl under giving a rounded look in photographs from in front. I put the stem in water and by 27 January there were 6 flowers; the heights of the bracts above the highest point of the dorsal sepal of each (from the lowermost to the uppermost flower) were 16, 8, 6, 7, -6 (ie below) and 2mm.—*Ed.*



# The column: Eric Scanlen

## Further *Caladenia minor* imbroglío

### Part 1: What's new?

#### The nitty gritty

1. *Caladenia minor*, 1853 = *C. chlorostyla*, 1997 hence the former takes precedence. Pink ones may occur in Nelson & Taranaki but the tepals are generally greenish-white with a red barred lip.
2. *C. nothofugeti* has twin flowers in Nelson; is it an albino *C. minor*?
3. *C. variegata* has a simple form, *C. aff. variegata*, lacking the scattered calli of Colenso's type. At Iwitahi, these two seem to flower turn-about; depending on conditions?
4. *C. aff. fuscata* occurs in several sites at Te Pahi. It is 1 to 3 flowered but similar to the single flowered Australian *C. fuscata*. H.B. Matthews tagged it *C. "nitidrosea"* in 1928.
5. *C. bartlettii* (1949) = Australia's *C. pusilla*, (1979) hence *C. bartlettii* would take precedence. A form with inverted mid-lobe has been seen at Te Pahi and at Paranui in the far north.
6. *C. "speckles"*, *C. "papillosa"* and *C. aff. fuscata* have intermediate forms at Te Pahi. *C. aff. fuscata* will have to suffice for all 3 taxa in the meantime.
7. *C. lyallii* does occur at Iwitahi, at least in a white form. Several other related taxa are present. A large one from the South Island has been tagged *C. aff. alpina*.
8. Verification of the conclusions reached here, will be sought from type specimens and field surveys. Readers' contributions have been most valuable, do please keep them coming. This update could not have been written without them.

Since "The *Caladenia minor* imbroglío" went to press [J72 p22] there have been highly mixed reactions and nagging doubts

by the Column on some marginal species. His aim was for reliable names on his *Caladenia* slides, not to arouse taxonomists by dabbling in their field. So the hunt was on to see more plants and to clarify the information already gleaned from the literature and from archive slides. Some notable advances have since been made, few were as expected, and the Column apologises to others for any inconvenience in the name changes proposed below.

***Caladenia variegata***. Colenso's description neatly fitted a taxon [J72 Fig3] in the Iwitahi Orchid Reserve and at the Puffer Track, Kaitoke but in the Dec. '98 & '00 transplants to the Reserve, none of the plants shifted by Bruce Irwin and the Column (**Plate 6**) had any stray calli on the labellum disc although the plants appeared otherwise identical. On 4 Dec 99 at Iwitahi, Bruce and the Column observed most plants *with* stray calli but some without. [J74 p19]. Ian St George (pers. comm.) had also spotted this anomaly and agrees with the tag *C. aff. variegata* for the Plate 6 taxon until its status is settled. Possibly *C. aff. variegata* is the original taxon and *C. variegata*, with its stray calli, may be a stable and viable mutant so the names may seem reversed? But the rules say that Colenso's *C. variegata* is the stray-calli taxon as described. Apparently the two taxa favour different conditions for flowering hence can appear separately and almost exclusively, much to the Column's chagrin when trying to show Bruce the stray calli — when they were absent. There may be hybrids between the two forms. For instance **Plate 7** is one of the plants shifted from near Low Level Road into Block J1 of the new Reserve on 9 Dec 00. Notice it has extra calli in the two rows but only two incipient stray calli on the right. Note also that the anther apiculus is



hooked down, as in *C. "speckles"* [J74 Fig9] and the column is hairy, as in *C. aff. fuscata*. *C. aff. variegata* (with green column) and *C. aff. fuscata* (red column) were otherwise difficult to separate in the key despite being different sizes and pinks, and 700km apart.

*Caladenia minor* Hook. f., being synonymous with *C. chlorostyla* D.L. Jones, Molloy & M.A. Clem., dawned on the Column only late in the first "Imbroglío" study. Dr Brian Molloy sent for the type specimen from Kew and later reported (pers. comm.) that all the species on the type sheet, except one, were *C. alata* R. Br. 1810, included in error. The exception was the specimen with the toothed mid-lobe as described by Sir J. D. Hooker in 1853 and drawn by W.H. Fitch. The drawing was used by Dan Hatch [3] and by the Editor to illustrate the cover of J72. The "exception" was thus the type specimen of *C. minor*, the only *Caladenia* with a toothed mid-lobe in the Hokianga whence John Edgerley collected Hooker's specimens. Sept. flowering *C. alata* and Oct. flowering *C. minor* do overlap as noted in '98, '99 and '00. So Edgerley could easily have collected both at once. Late flowering *C. alata* are often pink, hence Hooker's vexed "pink" in his description of *C. minor*. His "pink?" adversely influenced most in the 147 year interim, despite colour being decried by taxonomists as a defining character. *C. minor* is white, creamy or greenish, never pink in the north although it usually has red bars to the labellum. But Nelson and Taranaki, do have pink contenders! Gael Donaghy's Fig. 1 [J75 back cover] is one and Gary Peniall has photographed similar in Taranaki. N.B., Gael's Fig. 4, has a *C. minor*, L. and a pale pink *C. variegata*, R. complete with scattered calli.

*C. nothofageti* seem to have been spotted by Graeme Jane and Gael at Innwoods Lookout, Nelson and reported as "a small population of large albino *C. chlorostyla* [alias *C. minor*] 2 with two flowers." [J75

p13] No doubt these are *C. nothofageti* but with twin flowers? One key diagnostic character was "Flower solitary" [7] An albino *C. minor* would be hard to pick from a *C. nothofageti* [J66 p25 cf. Fig.11 p26]. What do you think?

*Caladenia aff. fuscata*. The taxon identified by the Column only from photos and descriptions as *C. fuscata*, [J62 p9, J72 p28], complies closely with the description of *C. "nitido-rosea"* (shining pink) in H. B. Matthews' 1928 manuscript description [1], right down to the "short purple hairs" on the column. It was probably lumped with *C. bartlettii* in error, by imbroglío-beset Doug McCrae, as "*C. minor*" [J35 p35]. The pics and characters of the Aussie *C. fuscata* show many similarities with *C. aff. fuscata* but a 3 flowered specimen (HBM said 1 to 2) was located at the Shenstone Block, Te Pahi, by Gael [J77 Fig10], throwing doubts on it being the single flowered *C. fuscata*. The Oct. field party saw colonies, in bud only, of 1 & 2 flowered specimens at Scott Pt. November's field party opened similar elsewhere at the Shenstone block and at Rubbish Dump Hill so it is well distributed. Perhaps a *C. fuscata* seed blew over the Tasman a million years ago starting a population which has since diverged somewhat? In Nov. '99 & '00, one flower of the late flowering *C. "speckles"* was found at the best colony on Shenstone's Pink Track. It also emerged in Margaret Menzies' photos of Anne Fraser's find on the Shenstone Tk and in Allan Ducker's archive footage from '95 at Barbara Hoggard's, Kaimaumu. On 6 Oct 00, the only open specimen, (Plate 8 & J77 Fig13) among 20 buds at Scott Pt, was also 3 flowered and a month early. It had the hooked-down anther apiculus of *C. "speckles"*, the near-bald column and widely spread column wings but 2 pairs (not 1) of marginal calli to the base of the mid-lobe and long tepals like *C. "papillosa"* [J74 Figs10, 11]. More character mixes were apparent in *Caladenia aff.*

*fuscata* "speckles" on Te Hapua Road batters on 5 Nov 00 (see PART 2 below). The 3 taxa have pointed sepals and more or less speckled dorsal sepals but other characters are shared erratically. It could be one variable species. The recent field studies at Te Paki have only complicated things with the number of intermediates emerging among *C. aff. fuscata*, "speckles" and "papillosa". The first had best stand alone until more work is done on these 3 taxa.

***Caladenia bartlettii***. Blanks were drawn in the type locality for any pink *Caladenia* in '99 and '00. The banks of the Weiti (Wade) River at Silverdale have been completely modified with kikuyu, weeds etc, which efficiently prevent erosion *and drive out native orchids*. Pasture now covers its namesake, Frank Bartlett's Bankside site. Habitat has been decimated in the Silverdale, Wainui, Orewa triangle that Dan Hatch, its describer, regards as its home. What else could be expected? What commercial value is there in the scrubby tea tree, moss and rushes beloved by *Caladenia*? Are *C. bartlettii* and *C. pusilla* the same species? Five previous sticking points of the Column's were now coming unstuck. They were

1. **No marginal calli**. The fragile but all important holotype was with Brian who wrote from Christchurch, "The type specimen has a yellow midlobe with... 2 calli at the base on one side and 2 if not 3 of different sizes on the other side." This differed from Dan's oft stressed "no marginal calli". Dan, on the 'phone, had neither helpful documentation nor pressed specimens for reference and couldn't remember the details from 51 years ago but he offered that he may have struck, for the diagnosis, the 1 in 1000 specimen with no marginal calli. That may sound dubious but it figures. The Oct. '00 field party at Te Paki [J77 p24] spotted quite a few *C. pusilla*, as we then called them, with marginal calli (to midlobe bases) varying from 1-4 per side. 2 pairs were the norm but were no longer definitive. None were without marginal calli, but with the observed variability it was quite possible that 1 in 1000 would comply. Scratch most of sticking point 1.
2. **Rounded sepals**. Dan's diagnosis didn't mention sepal shape but the rounded ends on most *C. bartlettii* sepals made them almost unique among northern NZ *Caladenia*. The only others to date are the *C. aff. bartlettii* in Part 2 below and the occasional *C. minor*. Brian reported, in part, re the type specimen, "The sepals and petals have folded edges which makes it difficult to determine the exact outline, but the tips of both are rather more acute than rounded. The one lateral sepal visible is more rounded than the petals." Scratch sticking point 2.
3. **Red or green peduncle** The Column's slides show red stems on all *C. bartlettii*. But Frank Bartlett's daughter, now Jean Smith, painted one from a live specimen in 1950, with a pale pink flower and a green stem. [Plate 15 Part 3 below]. Allan Ducker videoed a late flowering one with a green stem, as the Column is a witness, on 6 Nov 00 [Part 2 below] in the Shenstone Blk. It was the very image of Jean's painting. *C. minor* also has green and red stemmed taxa, growing side by side at Albany Scenic Reserve. Scratch sticking point 3.
4. **Dark glazed mauve**. Dan always stressed this flower colour but agrees that a deep carmine would qualify for his youthful description of "dark mauve". Nine out of 10 of those seen by the Column had carmine *pink* tepal tips grading to white at their bases. The labella are white with carmine bars and a narrow, yellow, trough-shaped midlobe [J72 Fig1]. But 1 in 10 darker specimens (a colony by Huia Road) show up with carmine flowers [J72 Fig8, ref2 p49], so different colour forms are not uncommon. Anyway, colour isn't normally important, is it? Thus the J72 "Imbrogio" taxa of

(**b**<sub>0</sub>, **b**<sub>1</sub> & **b**<sub>2</sub> being *C. bartlettii* with 0, 1 & 2 marginal calli pairs) can now be included in *C. bartlettii*, because of noted normal variability. Scratch sticking point 4.

5. **Apparent lack of reporting** of a widespread *Caladenia*. Most from Hooker's time until Hatch's [3] had been calling all the **pink** ones *C. minor* in error. The *Transactions* have 14 records from 1863 to 1926 of *C. minor*. [J72 p23] Many of these in the north would have been the most widespread, pink, *C. bartlettii*, not *C. minor*. Scratch sticking point 5.

The description of *C. pusilla* by Dr. Winifred Curtis [4] and those in [5, 6, 7] identify with the uncommon but widespread *C. bartlettii*. Dan Hatch, following Rupp, described it as *C. carnea* var. *bartlettii* in 1949. Monty Rupp himself had doubts about the *carnea* connection and wrote, on 18 Nov 49, whilst thanking Frank Bartlett for sending him a specimen, "The variety [*Caladenia carnea* v. *Bartlettii*] seems quite distinctive. It is rather curious that *C. carnea* in NZ, although showing the same tendency to develop distinct varieties as it does in Australia, keeps them all very diminutive. You have nothing approaching our v. *gigantea*, up to 50 cm. high, and with flowers often 4 cm across." Something familiarly Aussie about those sentiments! Incidentally *C. carnea* var. *gigantea* isn't mentioned now in Aussie texts nor is any *C. carnea* of that size(?). In '97 David Jones, Mark Clements and Brian Molloy made the new combination *C. bartlettii* at species rank [8]. Earlier, in 1988, our Doug McCrae, caught up in the *C. minor* imbroglio, had his own doubts and reported [J31 p5] from Anglesea, "The pink *Caladenia* species known in Victoria as *C. pusilla*... is identical with the **pink** orchid known in NZ as *C. minor*." Doug too, had the name "*C. minor*" for *C. bartlettii* s.s. (and others), no doubt because of contemporary influence and Hooker's "**pink**". Doug had tagged the more common *C. minor* s.s. as *C. "green column"*, never won-

dering why it hadn't been named, nor realising how he was adding to the imbroglio. In Anglesea, he had met *C. bartlettii* s.s. where it was called "*C. pusilla*" and he thought it was *C. minor*. Confused? Don't feel bad about it, join the elite. Comparisons of live specimens and the holotypes of "*C. pusilla*" and *C. bartlettii* will be necessary to confirm the high probability of their synonymy. Meanwhile *C. bartlettii* adequately covers the NZ taxon named *C. pusilla* in J72.

*Caladenia lyallii*, *C. aff. lyallii* & *C. alpina*. The Column's Journal indexing (interrupted by the orchid season but now almost complete) focused on these taxa [J76 p34]. The Aussies ignore it, but there is a NZ taxon which resembles *C. alpina*. Mark Moorhouse (see Original Paper in this issue) collected a robust alpine specimen from Nelson with the four rows of calli at first but after a week, two rows of green bumps had become two extra rows of yellow topped calli. The labellum has marginal calli, à la *C. alpina* [J63 p4]. But on a return trip to Mt. Robert, he could find no 6 row specimens. The J72 imbroglio mentioned *C. lyallii* only in passing. It was one of the few never confused with *C. minor* but specimens with 2, 4 & 6 rows of disc calli were being reported in the Journal with other different traits so *C. aff. lyallii* and *C. alpina* were included as described in J76. *C. aff. alpina* would have been a better choice for the latter. In Dec. '00, at Iwitahi, the Column pursued the *C. lyallii* agg. before and after transplanting duties. Some 20% have no red bars. All 4 photographed (3 white) were distinct taxa and all had their dorsal sepals clamped down on the column. 3 had the labellum up covering disc calli so pine needle chips had to wedge the flowers open; and ruin the pics. All had red glands atop sepal hairs; on albinos? 3 had the 1 or 2 marginal calli at the base of the side lobes of *C. aff. lyallii*(?). One white one had no marginal calli, only 2 rows of disc calli, except for the odd stray (**Plate 9**) and with label-

lum lowered. It keyed out as *C. lyallii*, albeit a white form. One *C. aff. lyallii* with red bars (**Plate 10**) has 4 rows of calli and *in-folded column wings*. The Column caught one like this on 13 Dec 97 but other pics don't show the in-folds. Finally a white one turned up with six rows of calli and at least four nerves per tepal (not really 5; cf. Gibbs J35, p20) but it needed 2 pine needle chips to open it to view (**Plate 11**). The latter is in the *C. aff. lyallii* agg. too, isn't it? 6 row, red barred forms were transplanted and no doubt there is a red barred *C. lyallii* there too. The *lyallii* story is by no means complete, Iwitihi has a wide range of taxa in this aggregate; more keen observations please.

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## Part 2: Caladenia wash-out at Te Pahi

Eleven souls gathered at Waitiki Landing on 2 Nov, aiming for the all-time best *Thelymitra* and *Caladenia* forage, only to sit out horizontal rain for the first 2 days. Our good weather charm, Bruce Irwin, was with us but Hughie's tropical depression still brought the rains. So the itinerary got hosed out but unusual orchids were seen even so, such as the Aussie *Orthoceras strictum*(?), white *Thelymitra* "sky" which last year was blue, *T. aff. sanscilia* with no split in the post-anther lobe, *Corybas rivularis* s.s. in the type locality, a new taxon of *Caladenia bartlettii* and intermediate forms of *C. aff. fuscata*, and *C. "speckles"*.

On the way in, before the rain, a stop at Seaforth, Elizabeth Mackenzie's Hatfields Beach place, delivered all the '99 species of closed *Thelymitra* except the prime target, *T. "bee"* [J74 p13] with *no plants* showing this year. No, there were no suspicious pot-holes, it had just taken a year or two off as many NZ orchids do. No pink *Caladenia* either but Cynthia Mackenzie's morning tea made up for the disappointment. Luck was

better at the Kaeo Quarry where everyone clambered over to the colony of *Corybas rivularis* s.s. spotted in Sept. It was at peak flowering and brought on a rash of cameras. Its purple peduncle featured also in some of the Takahue colony [J58 p34] and Dan Hatch's photo' of a Kerikeri specimen [J63 p19] but the Maungataniwha specimens [J74 Fig8] and some from Takahue, had green peduncles with purple specks. Good-bye to a key identifier.

Lake Ohia's black ooze had dried enough for moss to grow nearer the reed beds but the odd hole had incautious souls floundering knee deep. Two members, unacquainted with the leaves of *Cryptostylis subulata* were plodding through the ooze with the Column. Guy, thinking he was seeing *Thelymitra* leaves, "Oh they've been bitten off." Gal, "Yes it is soft." Both carried on blithely unaware of their travesty of communications. The troupe were impressed with numbers of flowering *C. subulata* in the reeds, interspersed with half open, blue to pink *Thelymitra pulchella* without a scrap of fimbria, as is the norm hereabouts. The keenly sought *T. "Ahipara"* did not show; also taking a break this year? and the great Oct. show of *T. malvina* was now but a memory.

Excellent fish 'n chips at Waitiki Landing were marred by news from Allan Ducker who took a short cut up Ninety Mile Beach, that our lodgings, DoC's shearers quarters, were full. The rain, wet sheep hence delayed shearers, the snail research people, the NZNOG and loss of water supply in the storm, contributed to a crowded house/caravan problem that Simon Job solved early next morning by subsidising our stay at the Waitiki Landing Motel, thank you DoC.

On 3 November, pm, Allan and the Column set out to improve the tracks in to *Caladenia* "speckles" on Pink Track, Shennstone Block in light rain. One flower was wide open among say 20 buds but the Column's camera froze "on" in the damp.

Allan's video was getting batteries charged, so no pics! Worse, opening the back of the camera instead of the battery compartment ruined 4 frames of *Corybas rivularis*, then the rain set in so the soaked pair trudged back for some dry gear. Anne Fraser's group meanwhile discovered several pink *Caladenia* in bud around the Te Hapua Rd batter slopes.

4 Nov, reading, writing and Scrabble in the recreation room. No risqué words from Margaret Menzies and her identical "sin twister" Glyn Wren but is "er" really a word? The rain persisted but a fine dinner at the Kanuka Restaurant boosted the flagging spirits.

5 Nov, and the whole contingent took to Te Hapua Rd batter slopes nearby to check the *Caladenia* between showers. Oh dear! Some *C.* "speckles" buds had the requisite hooked down apiculi to the anther but further opening with warm breath, revealed 3 pairs (not 1 or 2) of marginal calli indicating *C. aff. fuscata*(?) Others had straight apiculi, 2 pairs of marginal calli and the bald columns of *C.* "speckles". One colony had red leaves instead of green. Most were in tight bud in the wet so close examination and photography were out. Next year!!

Allan drove us back to camp in shifts for a hot cuppa before a move to the *Caladenia* Tk, Shenstone Blk, for a look at 2 *Calochilus herbaceus* which Bob and Hazel Major were thrilled to see for the first time. Doreen Abraham's keen eye spotted a close relative of *C. bartlettii*, let us call it *C. aff. bartlettii* (Plates 12, 13). It had the bald column all right and rounded sepals (but they curl back), an inverted mid-lobe with edges turning down (not up) and it was late flowering. Someone suggested stepping on it to eliminate another complication but Bruce had found a 3 flowered one at Doug McCrae's Parau place, 85km to the SE, in the 1980s. Well it got photographed, videoed and drawn but the Column feels sure the poor thing will survive. This spot will be closely watched in future field trips.

The colony of *Thelymitra* "sky" [J70 p33; J74 p17] would have been open had the weather been warm and dry. The party levered open several spent florets revealing the typical column but with *all white flowers!* Many witnesses saw them sky blue last year including Brian Molloy. Allan videoed one. What is going on? Perhaps this species has white and blue taxa that sprout alternately à la *Caladenia variegata* and *C. aff. variegata*? The *C.* "papillosa" site had leaves but no flowers. Margaret kept looking and 100m from the track, in tall tea tree, kept coming across let us say, *T. aff. sansscilia*, closed of course. They had the scimitar shaped column arms and a few white cilia but lacked the characteristic split right down the post anther lobe. One *T. sansscilia* did show up (but with a few cilia) plus the occasional *T. intermedia* so perhaps *T. aff. sansscilia* was a persistent hybrid? Down the track by the dunes lake, no one could find Anne's *C.* "speckles" [J74 p16] reported there as *C.* "papillosa"] but a few open *C. minor* did relieve the grieving. *C.* "speckles" eluded us at Pink Track too; Friday's flower had flopped and no others were open in the wet. A normal orchid scavenging day of odd surprises and missed targets ended with a fine dinner in the cook-house managed by the ladies and washed up by the guys.

6 Nov Papawiri Hill was the site for unusual *Thelymitra* species on this invigorating climb. The rain and wind eased for our last day at Te Paki. Some *T. aff. longifolia* even tried to open but several of Margaret's *T. aff. sansscilia*, 4.5km SW of her earlier find, stayed shut. Ron Maunder spotted one much the same on 24 Oct 98 at the Earth wall, 4.3km NE. [J70 p35] but has anyone seen it in flower? One lone specimen at Papawiri hill was accepted as *T. sansscilia* s.s. and there was no sign of the *T.* "rough leaf" that Bruce, Ron and the Column had seen (closed) in numbers on 24 Oct 98 [J70 p34]. The third *Thelymitra* of the trip having a year off? But there *was* a surprise. Three

*Orthoceras strictum* (**Plate 14**) on the clay track, had flowers well open with acuminate labella and long, green to purplish bracts over-topping the purple/brown flowers by  $\pm 25$ mm. Out flopped the cameras but not all were convinced of the Column's ID, least-wise himself! A later check on North Island *Orthoceras* slides, showed a range of bract heights from below the flower top to well above but these ones took the cake both for earliness and height of floral bract. A check in Australian texts was no help, theirs match the range of NZ taxa but J34 p3; J59 p4; J60 p21 & J61 p2 had some interesting debate with good pics from Bob Goodger in J60. Bob's long-bract specimen was a green replica of the Papawiri Hill colony. At nearby Lake Ngakeketa, that afternoon, several *O. novae-zeelandiae* appeared to be weeks from opening. David, Mark Clements and Brian made the new combination *O. novae-zeelandiae* on the grounds of different chromosome counts from the Australian *O. strictum*; their promised further work on *Orthoceras* is keenly awaited.

After lunch, at Rubbish Dump Hill Allan led us straight to a colony of closed pink *Caladenia* which he had spotted on an earlier trip, 2m from Graeme Jane's find of *C. bartlettii* a month earlier and right where Doug McCrae had declared that *C. "minor"* grew [J35 p35]. But Doug was talking about the pink ones, not *C. minor* s.s. It is hard to find at Rubbish Dump hill but Allan's were *C. aff. fuscata* with hairy red column and 3 marginal calli at the base of a triangular midlobe. One popped open for filming, with a little encouragement. Nice to see the 11km spread from here to Shenstone Blk with Scott Pt colonies en route. Bruce spotted another *Microtis arenaria* close to Gael's Oct. find but the promised *Thelymitra* aff. *longifolia* failed almost totally. The hill has been closed as a tip for many years so debate revolved around; less soil disturbance hence, as with the overgrown gumfields, a severe decline in the orchids. Perhaps an occasional grader track through

the scrub or the odd fire would put things right? Conservation of orchids raises some contrary issues.

Meanwhile, Allan had shot through to the Shenstone Blk and the rest of the field party headed up the hill near Lake Ngakeketa where the exercise was good but the orchids were poor even though the weather had improved to balmy, no reflection on the field party. Trevor Nicholls, who had been attracted by tales of orchids equalling his beloved Iwitahi, was obviously unimpressed so returned to Margaret's locked car for 40 winks — in the grass because Margaret still had the key. Back at the road, Allan grabbed the Column and the two skived off, not to avoid peeling the potatoes, that was quite coincidental, but to see Allan's find of the green stemmed, late flowering *Caladenia bartlettii* amid a sizeable colony of *C. aff. fuscata* in bud just off the Shenstone Track. (See Part 1 above).

NEXT YEAR, mid Oct. seems best for seeing most orchids, especially *Caladenia*, depending on Hughie and his weather machine. Any starters?

Many thanks to the participants for not complaining about the beastly weather and thanks particularly to those who assisted in the reverse lens 3-D photography.

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### Part 3: Tracking down *Caladenia bartlettii*

The Column's complete failure to track down *Caladenia bartlettii* on 30 Oct 99 at the Weiti (Wade) River where buttercups, kikuyu and honeysuckle had taken over, led to a joint attempt this year with hawk eyed Allan Ducker. Dan's directions to Frank Bartlett's old home brought the pair to the spot on 13 Oct 00. The gate still bore the name Bankside so the pair breasted up to the front door to seek permission to hunt orchids from the owner and were greeted by who else but Frank's daughter Vera, the

fourth generation of the family to hold residence. Vera showed us where the fabulous orchid once grew, in scrub to the south, all now in A1 pasture. Frank's "dread" [J64 p27] had eventuated, "the scrub and its interesting plant life" had gone "up in smoke"!

Undaunted, the pair ratted through a stand of self sown huge gums, a second generation of those planted by Frank's grandparents c. 1865. Bark and branch debris were now waist deep in places. But the Orewa estuary bank had some mossy habitat with *Acianthus sinclairii* in seed. An area of large kanuka also yielded *Corybas cheesemanii* in seed but nary a *Caladenia* reared its beautiful head in an orchid habitat once holding 30 species [ED Hatch list to F Bartlett 23 April '49]. Good farming practice has effectively decimated this once fruitful orchid habitat.

Next stop Seaforth, out of Hatfields Beach. *Caladenia atradenia*, the sole member of the genus found, was finished but numerous *Thelymitra* were showing their closed buds on a showery day.

Final call, Vera's sister Jean Smith at Coatesville. She had taken an active interest in the orchids and had participated in the celebrated field party that collected the *Corybas cryptanthus* holotype at Wellsford on 29 July 50 [J42 p13]. Now she hospitably allowed the pair to track down at last the elusive *C. bartlettii* (Plate 15), not in the field but as a delicate watercolour from life, intricately painted by Jean herself, also in 1950. But her carefully preserved herbarium of pressed specimens (all titled with the names of the time) like Dan's, held no *C. bartlettii*. Agriculture in the district has eliminated most of the scrubby habitat so the surviving population of this orchid is minimal and diminishing.

**Acknowledgements.** For the able and willing assistance afforded to the Column for the above, many thanks to V. Bartlett, G. Donaghy, A. Ducker, E.A. Fraser, E.D Hatch, J.B. Irwin, G.

Jane, M. Menzies, B.P.J. Molloy, M. Moorhouse, G. Peniall, M. Ritchie, I. St George, J. Smith and G. Stacey.

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## *Corybas carsei*: can it carry on?

Peter de Lange had the Column cornered on 21 September; it was day 28 of his 40 day 'flu but here was a chance to splash out into another swamp and get a first look at the critically endangered *Corybas carsei*. What self respecting orchid buff could resist? Peter warned that a waist deep hole caught most everyone so wear woollen long-johns; that way the swamp-soaked clothes warm up to some extent and save one from hypothermia. What a prospect! Lying down on a swamp to photograph a perishing orchid (he jokes not) in swamp soaked gear?

Peter, whilst plodding resignedly out into the Whangamarino in shorts and swamp filled boots, filled the Column in (as he galumphed from grass head to grass head) on the involved process of getting authorisa-



tion from the Department to burn off small patches of swamp. *C. carsei* emerges from its tuber only under the stimulus of a thorough burn-off, in keeping with its close relative (or identical twin?) *C. fordhamii* in south-east Australia. DoC of course, is empowered only to put out fires, not to light them! Permission was duly won on a special case scenario and several carefully chosen micro-areas of this immense swamp were duly burnt off [J70 p16, and see *Original papers* in this issue—*Ed.*]. The orchid had been drastically dwindling since the steam trains stopped their summer conflagration of the swamp (see trains elsewhere in this issue—*Ed.*) but with the renewed firing, up with moss and liverworts 125 flowers of *C. carsei* this year — plus the sedges to protect them and the slugs and snails to browse them off!

Plot one's 43 buds had succumbed to the pesky browsers except for one mini leaf but plot two, deeper into the vast wetland, yielded a number of prime 20mm high flowers and the Column, whose long gum-boots had saved him from the worst, flopped down on his sheet of plastic for a much needed rest; and of course to capture this mini gargoyle in 3-D. Results in 2-D are revealed in **Plates 16, 17, 18**. Whether it

has the five rows of red calli inside the labellum (like *C. fordhamii*) you cannot see because none of the beastly plants would look the Column in the eye, no matter how he squirmed. Lying inside the orchid patch had not been an option. Peter assures us the calli are there but the "strange oniony-meaty smell" he reports [J70 p16] is at odds with "smelling strongly of mushrooms" reported by Tony Bishop's [1]. Variations in smell, of course, like colour, could hardly be defining characters.

On the homeward splosh, on a different track, a healthy colony of *Pterostylis paludosa* in full flower climbed liana-like from the reeds. Quite normal for this area according to Peter but not the habit of the straight and short-stemmed form in the Tawhai wetland below Chateau Whakapapa. The significance didn't register at the time in the Column's 'flu fuddled brain but it could definitely do with a closer look next year.

Nearby Peanut Island, where *Pinus radiata* was taking over from black wattle, yielded only *Acianthus sinclairii* and *Chiloglottis cornuta* orchids.

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**Bog:** a type of nutrition-poor peatland dominated by sphagnum mosses that usually forms in a basin. Except around the margins, the peatland is unaffected by run-off or groundwater receiving most of its moisture from rainfall. Consequently, the pH of water trapped within is 4.2 or less, with a dissolved calcium concentration of 2 mg/L or less. Most bogs are raised or slightly dome-shaped where accumulation of peat has removed the surface from direct influence of run-off or groundwater. Bogs are usually drier than fens with a lower species diversity of plants that have evolved to tolerate these harsh conditions.

**Fen:** a peatland formed in a basin that is both wetter and better nourished than a bog. Nutrient source and water source is from a combination of run-off or groundwater or both, and rainfall. As a result the peatlands are minerotrophic, and increasingly alkaline (or less acidic) with a dissolved calcium level >2.0 mg/L and a resulting pH >4.2.

Some scientists simplify the definition and describe a fen as any peatland that is very wet at the surface growing zone (an obvious indication of groundwater or run-off). A fen also contains one or more fen indicator plants, and is more botanically diverse - sometimes richly so. Bogs may evolve from fens, however, when sufficient accumulation of peat gradually removes the surface from its primary source of enrichment.

—from *NativeOrchids@egroups.com* (and see p48 *et seq.*)





## Notes, letters, questions, comments

### International Orchid Workshop

“Underlying mechanisms of trends and fluctuations in terrestrial orchid populations”

6-13 May 2001

in the Faculty of Biological Sciences,  
University of South Bohemia, České  
Budejovice, Czech Republic.

(<http://www.bf.jcu.cz/tix/kindlman/announc.html>)

The symposium aims to provide a forum for the presentation and discussion of recent trends in the biology of temperate terrestrial orchids, with special emphasis on the population dynamics in terrestrial orchid populations.

The topics include

- Trends and fluctuations in long-term studies
- The fate of small populations (eventually related to genetic diversity)
- Pollination biology and seed production
- The impact of mycorrhiza on population processes
- Field experiments in orchid populations (in order to understand population processes)
- Different strategies among orchid species (short- and long-lived individuals, r-K strategies)

e-mail to [pavel@entu.cas.cz](mailto:pavel@entu.cas.cz).

The Second Meeting of the Indian Subcontinent Regional Orchid Specialist Group will be held from 17-19 April 2001 at Dehra Dun, India. The Wildlife Institute of India is hosting the three day meet.

**P**eter de Lange wrote (13 November), “... since I wrote my article on Threatened Orchids I have received very useful

information on various threatened orchids including *Pterostylis porrecta* (Pat Enright), *Thelymitra matthewsii* (Anne Fraser), *Calochilus robertsonii*, *Pterostylis puberula* (Eric Scanlen, Allan Ducker), *Caladenia atradenia* (Ian St George) and *Calochilus* aff. *herbaceus* (Maureen Young via Alan Ducker). I think we should all pay homage to the original discover of the *Calochilus* aff. *herbaceus* Michael Pratt. He recognized it for what it was in 1993, and as a result put people on to what is, for the moment the southern limit of this elusive and critically endangered species. The confirmation of his discovery so many years later also speaks strongly of the need for people to keep an eye on the year to year cycle of particular species - we tend to only guess at species life cycles, for example, how many plants in a population flower then go dormant, only to reappear say a few years later, what is the mortality rate of various species, what proportion flower? Dan Hatch did some work on this, and we have followed the cycle of *Corybas carsei* in some depth but it would be great to see if *Calochilus* aff. *herbaceus* does have a dormant period. Knowing orchid names is one thing but finding out about their basic ecology is another, somewhat neglected field NZNOG people could look into....”

**W**allenwein & Saad wrote on the pH of the soil around native Mediterranean orchids in situ in the latest issue of the Journal *Europäischer Orchideen*. Some, as expected, showed a preference for alkaline soil (single peak numbers at pH in brackets after the names): *Cephalanthera* sp. (7.0), *Aceras anthropophorum* (7.5), *Anacamptis pyramidalis* (7.5), *Barlia* sp. (7.0 - 8.0). One orchid showed a single peak at slightly acid pH: *Neotinea maculata* (5.0 - 5.5). Unexpectedly others showed a biphasic distri-

bution with two peaks: *Ophrys* sp. (5.5; 7.0-7.5), *Orchis* sp. (5.0-5.5; 7.0-7.5), *Limodorum* sp. (5.0; 7.0), *Serapias* sp. (5.0; 7.5), *Dactylorhiza* sp. (5.0; 7.5). Are these the acidity levels favoured by different mycorrhizal fungi? Perhaps so: fungi obtained from calciphilous orchids do not thrive on substrates with a low pH. The fungus *Tulasnella calospora* grew a little faster if the pH of its medium was set within the basic range (up to a pH of 8). is a teleomorphic genus within the form genus *Rhizoctonia* s.l. that produces mycorrhizas with the following orchids in vitro: *Spiranthes sinensis*, *Dactylorhiza incarnata*, *D. majalis*, *D. purpurella*, *Coeloglossum viride*, and *Orchis morio*, according to Hanne Rasmussen (*Terrestrial orchids - from seed to mycotrophic plant*. Cambridge University Press. 1995).

**S**ome day my preence will come: a quick visit to the Iwitahi Orchid Reserve on 21 January showed veritable forests of *Gastrodia* aff. *sesamoides* in early flower, and similar numbers of *G. minor* still in late flower. That Australian vagrant *Chiloglottis valida* was in good numbers as Trevor Nicholls reports on p43 of this issue, and a few flowers were still open, waiting, waiting, for that Australian insect pollinator that will never come.

At Whakapapa three late flowers of *Thelymitra* "Whakapapa" with deformed columns hung on; at Middle Road Horopito *T. cyanea* was in glorious full bloom, on the Turoa skifield a tiny bronze-flowered *Prasophyllum colensoi* was in full flower among the alpiners, and at home in Wellington *Earina autumnalis* was in early flower.

Funny season.

**A**lbert Rebergen emailed (22 November), "Today Tony Silbery and I looked at three wetlands in the Allsops Bay/Western Lake Wairarapa area which appeared suitable for the rare orchid *P. micromega*: Davies Swamp, Matthews/Waiorongomai wetlands and south of Western Lake Reserve. We found a single *P. micromega* in full flower at the first site, growing in an open manuka swamp, with *Baumea*



*Pterostylis micromega* in the Wairarapa

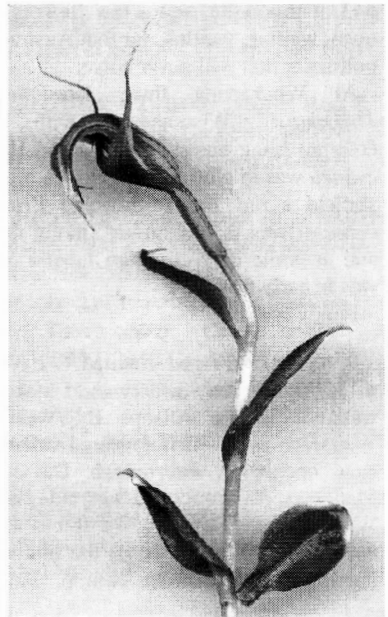
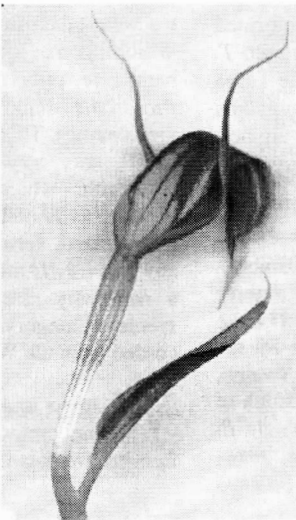
sp., *Gunnera prorepens*, *Gonnocarpus micranthus* and *Centella uniflora*. We searched the area pretty well and failed to find any other *P. micromega*. We did find two other species of *Pterostylis* orchids, which have not yet been identified. Photos were taken from all three species. At Waiorongomai (just south of the covenant) we only found an unidentified *Pterostylis* orchid (same as from the Davies swamp). This site looks very suitable for *P. micromega*. This area is grazed with cattle - which may limit the presence of *Pterostylis* orchids. The third site was over grazed, fertile and not suitable for any *Pterostylis* orchids. *P. micromega* is a nationally rare and declining orchid species (Category A). It has not been recorded from the Wairarapa in 15 years."

**W**ant to look at pictures of Argentine orchids? Go to <http://perso.freesbee.fr/edelanno/orchids.html>.



On totara at a site near Palmerston North in early November:  
just about the best *Drymoanthus adversus* any of us had ever seen.

Mark Moorhouse sent scans of a *Pterostylis* which he regards as *P. oliveri* or *P. aff. oliveri*: "It has the *P. oliveri* labellum, but notice the straight tip on the dorsal sepal, whilst the petals curve down. Also the petiolate upper leaf is a new one on me. There were 54 plants in the colony with about 8 that were developing flowers, but this was the only one that had reached maturity. I may have to burn the Xmas excess off and take to the mountain again to have another look. I did locate 3 *P. oliveri* colonies about 8 - 10km away, so they are in the area."



Mark Moorhouse emailed (15 Jan 01), "It is rather taxing to understand why *Pterostylis oliveri* is limited in distribution to the NW sector of the South Is. considering many apparently similar sites exist in other parts of N.Z. which have both habitat and climate matching Nelson sites. I couldn't help pondering this one and recollected studying a geological map which displayed a similar pattern. This part of New Zealand predominates in metamorphic and plutonic rocks (granites, marbles, gneiss, etc) and is clearly divided from northeast South Is by the transalpine fault-line.

"The dominant soils of the area are 'Southern and Central podzolized yellow brown earths and podzols related to steepland complexes' (*Descriptive Atlas of New Zealand* - A.H. McLintock [1960]). Are we witnessing an orchid distribution pattern which is dictated by the needs of the associated mycorrhizal fungi for this soil type? If so, we should start looking on the East side of Stewart Is (eg Port Pegasus), Resolution Is and outer Dusky Sound or on the coastal land between the mouth of Milford Sound and the South side of Jackson Head. These are the only other places in N.Z. where any significant areas of this soil type occur. Anyone doing the walking track through to Martins Bay (S Westland) might do well to keep an eye open!

If Mark Moorhouse is right, and *Caladenia* aff. *lyallii* flowers continue to develop calli on the lateral lobes of their labella as they mature (see *Original paper* in this issue), could it be that *Caladenia variegata* does the same, and that *Caladenia* aff. *variegata* (see *The column* in this issue) is just a less-mature form? Was Iwitahi a week or two earlier this year (botanically speaking)? **Longitudinal studies please:** that is the only way we will answer some of these riddles. —Ed

## IWITAHİ 2000

by Trevor Nicholls

Over the weekend 39 folk peered through lenses, magnifying and camera, at the orchids in flower, not always agreeing with what it was they saw, but all agreeing at their uniqueness. Thirty-nine folk transferred more orchids into the reserve and were proud to be involved in preserving the uniqueness they had seen.

The orchids in the reserve are having a good year, 50+ flowers on just one patch of thriving *Chiloglottis valida*. Everywhere there is evidence that the transplanting has been successful. Many have moved on to spots that they find more congenial, something they were doing before we became involved. Not only do the *Gastrodia* travel, but also the other orchids. As the area they are in becomes depleted, they move on via their rhizomes or by seed dispersal.

Work continued with the programme of under-planting with young *Pinus nigra*. Plants were wrenched and an area cleared of undergrowth ready for planting in the spring.

Meal times, times of relaxation and the evening sessions of slides and videos were times of sharing our ignorance of the native as experienced by the members.

**On 7 to 9 December 2001 we will be doing more of the same. Put it in your calendar.**

Thanks folk for your generosity – and for five months of possum bait!

## Profile of a threatened NZ orchid: 6

Reproduced with permission—from Dopson SR et al. *The conservation requirements of New Zealand's nationally threatened vascular plants*. Biodiversity Recovery Unit, Dept of Conservation, Wellington, 1999.

### *Caladenia atradenia* D.L.Jones, Molloy et M.A.Clem.

**Family:** Orchidaceae

**Endemic to:** North Island and northern South Island.

**Common name:** -

**Ranking:** B      **In cultivation:** No.

**Descriptor:** An elusive orchid, slender, hairy, dark reddish-green with greenish flowers. The labellum and calli are a dark chocolate brown.

**Conservancy:** NL, WK, BP, TT, NM.

**Habitat:** Forest and shrublands, including exotic forest.

**Threats:** Weed encroachment; successional changes; fluctuating water levels.

#### Work undertaken to date

Opportunistic survey and monitoring by orchid enthusiasts; taxonomy revised.

#### Priority sites for survey

Opportunistic survey.

#### Monitoring: objectives and priority sites

Continue at Northland to monitor population trends.

#### Research questions

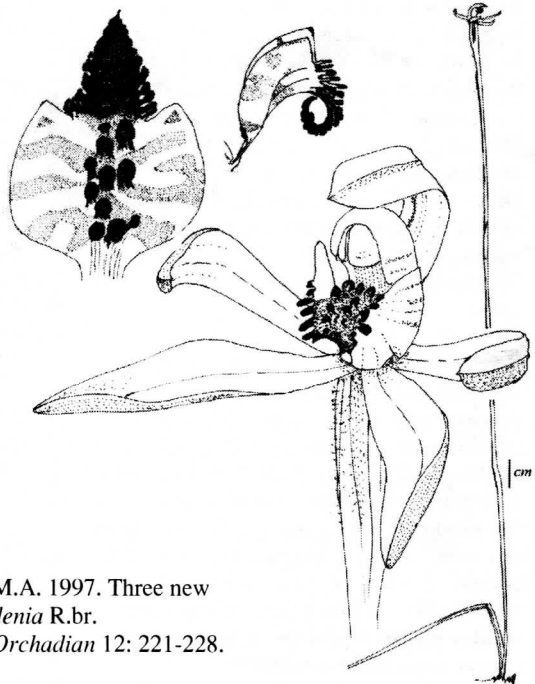
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#### Management needs

Weed control at sites; habitat restoration.

#### Selected references

Jones, D.L.; Molloy, B.J.P.; Clements, M.A. 1997. Three new species and a new combination in *Caladenia* R.br. (Orchidaceae) from New Zealand. *The Orchadian* 12: 221-228.



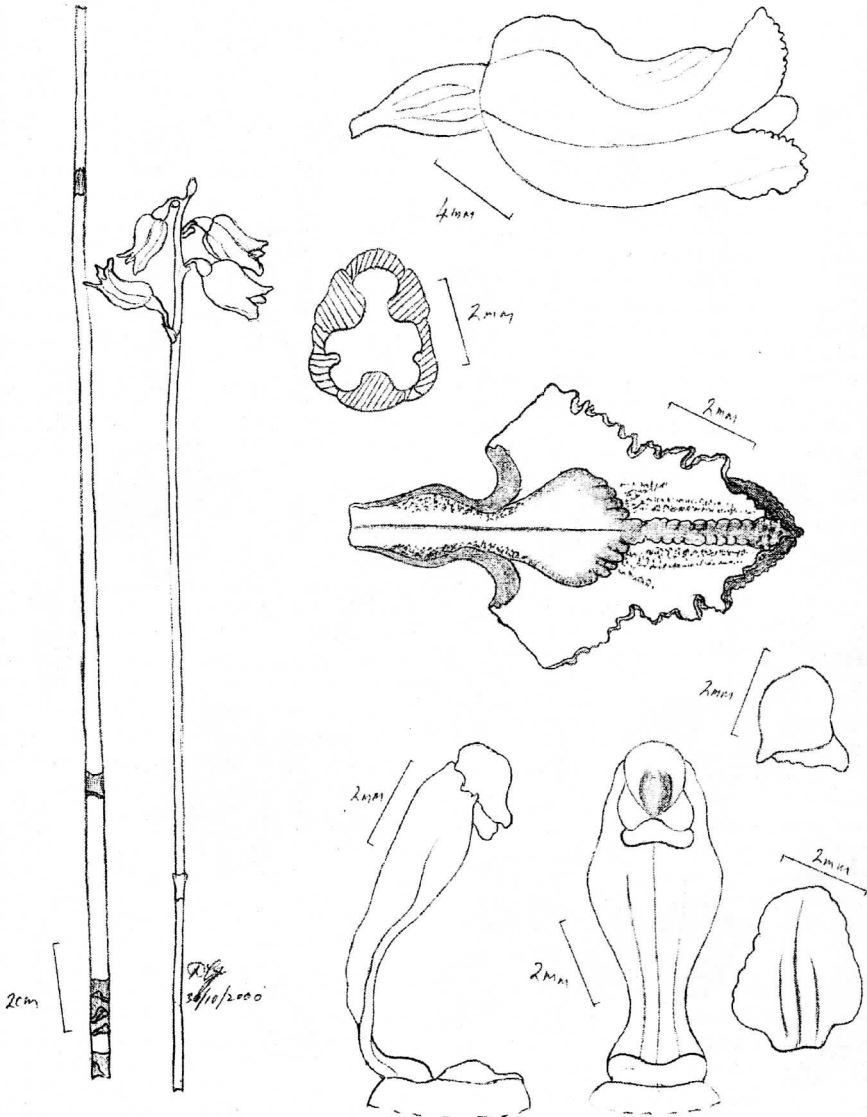
**Close relations: orchids like ours:** *Pterostylis nana*,  
watercolour by WH Nicholls, from the first edition of his *Orchids of Australia*, 1958.





# Australian notes

This new *Gastrodia* was found on the suburbs of Sydney in October 1999. It is yellow rather than the brown of *Gastrodia sesamoides* found in the same area. Its labellum when flattened is more triangular. There are only about ten plants and they are under great threat from weed growth. The drawing is reproduced with permission from David Jones.



**R**ay Barkalow of First Rays Orchids ([www.firstrays.com](http://www.firstrays.com)) listed (in ANOS Warringham Group's newsletter of January 2001) a number of **home made remedies** that come highly recommended; a few are reprinted here, but Ray says he will take no responsibility for the outcome.

## **INSECTICIDE**

### **Soft-bodied bugs, such as aphids & mealie bugs**

**Garlic/pepper spray:** liquefy 2 bulbs of garlic and 2 hot peppers in a blender 1/2 to 2/3 full of water. Strain to remove the solids and add enough water to the garlic/pepper juice to make 1 gallon of concentrate. Use 1/4 cup of concentrate per gallon of spray. To make garlic tea, simply omit the pepper and add another bulb of garlic. Add two tablespoons of blackstrap molasses for more control.

### **Ant eliminator**

A surprising - and no doubt smelly - ant repellent is fermented cow manure tea. Put about a gallon volume of fresh manure in a 5-gallon bucket and top it up with water. cover and let stand for a couple of weeks or more until it's fully "cured." Spray around the greenhouse and under the benches.

### **Insect repellent**

Place small, open containers of eucalyptus oil in the growing area. The vapours will discourage critters from approaching. (Yeah, it's going to smell like a Hall's Cough Drop factory, but it's good for opening your sinuses, too - a la Vick's Vapo-Rub.) Eucalyptus oil has also been shown to be an effective fungicide, but I know that a dispersion in water and alcohol, when sprayed directly on the plant, will damage flower buds, so I can't recommend that use.

## **FUNGICIDE**

It turns out that the chemicals in the bark of cinnamon have all sorts of medicinal applications (I've even cured athlete's foot with my alcohol extract!) Choose the consistency that is best for your situation:

**Powder:** Apply normal, household cinnamon powder directly to the affected part of the plant by dusting heavily.

**Poultice:** An alternative to the powder, but waterproof and long-lasting is made by mixing cinnamon powder and cooking oil to form a thick paste.

**Spray:** You can prepare a cinnamon spray using either alcohol or water as your solvent. Put 2 tablespoons (30ml) of cinnamon powder in a pint (500ml) of isopropyl rubbing alcohol. Shake well and let stand overnight. Filter the solution to remove the sediment (coffee filters work well), and use the brown liquid as a spray.

## **MILDEWCIDE**

Mix approximately 1/3 cup milk into a quart of water, and spray. I have not tested this one, but even if it doesn't work, you end up with shiny leaves!

Mix 3 tablespoons cooking oil and 1 tablespoon baking soda in a gallon of water; spray at three-day intervals for powdery mildew.

## **LEAF SHINE**

If you live in an area where the water has a fair amount of dissolved minerals, or if you mist with a fertilizer solution, the leaves of your plants can become dull in appearance. Folks may warn you that these treatments can clog the pores (stomata) on the leaves, but I've never seen a problem. Pineapple juice, or any citrus juice (lemon, lime, orange), when rubbed onto the leaves with a soft cloth or paper towel will also remove such deposits so your leaves will be nice and shiny. I suppose the acidity reacts with the mostly alkaline deposits. Mix about a 50% dispersion of whole milk in 1 litre of water. Using a soft cloth or paper towel, wipe the leaf surfaces with the dispersion, use fresh paper on each plant. Similar to the milk above, dilute mayonnaise with water to form a thin paste. Again, apply using a soft cloth or paper towel, being sure that you wipe off as much of the paste as you can.





## From NativeOrchids@egroups.com

A recent conversation on **railways and Orchids** is interesting in view of the past train-sparked burnings of the Whangamarino wetland which hosts *Corybas carsei*:

1. Up to the end of steam traction (July 9th 1967) on the main railway line that ran through our Hampshire village, the lineside margins were a consistent short grassland sward which was never treated with herbicides, etc. This resulted in a mass of flowering species, including orchids, which used to colour the lineside for miles during the spring and summer.

The reason for this consistent floral habitat was the steam locomotive! Because of the regular 'burn backs' due to fires started by stray sparks and hot clinker, scrub was never able to invade the sward. Also, the constant steam and water droplets (due to locos 'priming') showering the grassland during dry summer periods kept it as green as a prize lawn!

Since the demise of steam, and the advance of diesel and electric railway traction, these linesides have been completely invaded by scrub and trees and the verdant floral habitat has been lost.

2. On one of my forays in central Pennsylvania, I went hiking along the disused rails with one of my friends. I was surprised to find goodyeras (probably *G. pubescens*) growing in the gravel between the sleepers.

3. The very first native orchid I can remember seeing was a *Platanthera ciliaris*, growing along the Norfolk and Western railway. That was in 1973. Later in 1984 I stumbled across my first sighting of a *Cypripedium*, *C. reginae*, growing just off the slag mound along another railway. It seems that several of the State Nature bog and fen preserves here in Northeastern Ohio butt up to railways.

The Column's excursion to the Whangamarino swamp [p38] has its northern hemisphere equivalent.

1. Are there any brave *Hammarbya paludosa* searchers out there? Or have they all disappeared without trace? In the south of England *H. paludosa* inhabits **the wettest and most treacherous bogs**. I have always been aware of these dangers and, as a result, my photographs of this species have always been at a distance!

Last year I made a mistake and as I rapidly sank under the mire both my camera and binoculars were submerged. So my advice to anyone planning to seek out *H. paludosa* during 2001 is to be careful. As well as distress flares, you might even consider taking a snorkel with you!

2. Over here (USA) whenever you go into a wet area, it is sneakers or bare feet. Anyone who goes into a mire area with rubber boots is in for trouble. The real fun areas are "quaking bogs".... Sometimes you break through and have to tread water, and it aint easy to get back on the peat moss!

3. You may wish to try a technique that's rather popular here. Find yourself a set of the oldfashioned caned web snowshoes (we used to call them beavertails). You will look rather silly, but put one on your dominant foot, and nearly nothing on the other while carrying the second snowshoe on your back. The dominant foot will stay above the peat, while you search for areas that don't punch through with the other. You may start wearing the two snowshoes where there's a fairly clear path so as not to trample the vegetation too much. These work well even where there's surface water. The ideal method has you not punching through: that's frowned on here.

4. If a botanist was found wearing snowshoes on a British bog in the middle of

the flowering season he/she would be lectured on the damage they were causing.

5. Another justification I've heard for their use is that it distributes the body's weight over a larger area with fewer lbs/sq inch, and thus less damage than something like a boot sole. The larger concern is to avoid punching through - not just for your safety but the bog's stability. An old Eastman album shows where, in Pennsylvania, he'd stepped off a bog boardwalk and punched through, whole body. He took a photo of the same spot more than 10 years later and showed where it hadn't closed in at all; there was still a pool, and he'd destroyed roughly a square meter of sphagnum mat.

6. Earlier on in my bog-trotting days I too shared a reverence for these places and was very concerned with damage of my steps. But early on, with the revisits to many of my favourites, I also noted that my footsteps would disappear over the winter. So I can say without qualm that the snowshoe adherents are overreacting somewhat. This disturbance is likely of benefit to some species - if seed is lying on the moss surface, for example; treading on it will likely plant it for betterment of germination. Furthermore, one shares these places with other wildlife that actually cause much more havoc. Deer, moose, bear - even beaver create disturbance. I have noted with considerable interest how some of these wildlife paths in fens in my own province have been colonized by *Platanthera blephariglottis*, *P. dilatata*, *Arethusa bulbosa*, *Spiranthes romanzoffiana*. In one wetland a township survey crew was running a line through a fen of medium richness. As a result years later, this line had expressed itself in a huge linear colony of Calopogons running across the area.

7. I find the spring use of snowshoes very useful. I've used them all my life. I see them used mostly to cross swampy habitats and

sphagnum mats. I generally use a somewhat awkward tussock-to-tussock hop barefoot (well, I do wear pantyhose - leeches are another story).

8. A gentle correction: your "bog" mat and most other sphagnum areas where you seek out the wayward orchids are not bogs at all; rather they are fens, places of better (often very much better) nutrition. Most orchids would find a bog a most unsuitable place to grow. While doing plant survey work I would actually follow animal tracks (moose were my favourite) as these places would be sometimes more interesting than much of the rest. On such a track, for example, I found *Piperia* in Newfoundland. In a fen on Cape Breton Island where someone had driven a vehicle (winter I presume) some year(s) earlier a great population of *Calopogon* had colonized (including a two-stemmed plant of some interest). In Newfoundland (west coast) the areas between hydro poles through fen peatlands have huge populations of *Spiranthes romanzoffiana* due to the "traffic" maintaining this infrastructure.

9. In the Boston area and on Cape Cod, *Arethusa* grows in sphagnum in interdunal swales and on floating sphagnum mats that certainly would be considered bogs as opposed to fens. There are no true fens in eastern Massachusetts. In northern Maine I can find it in open sphagnum woodlands, albeit on the border of fens, but well into the trees with *Cypripedium parviflorum* var. *pubescens* and *Cypripedium parviflorum* var. *makasin*. In Peacham, Vermont and at Chickering Bog near Montpelier, Vermont *Arethusa* is locally frequent in true acid sphagnum bogs with not a hint of fen. On the other hand at Crystal Bog in Aroostook County, Maine the largest populations of *Arethusa* occur with over 5000 flowering plants and plants are equally distributed in both bog and fen. The other classic habitat for *Arethusa* in southern New England was in open, grassy, sphagnum meadows and cranberry bog edges. Few of those are left

untouched and the best is in extreme southern Maine where an excellent population continues to be monitored.

10. After consulting with THE Dutch expert on managing quaking bogs with *Malaxis* (*Hammarbya*) for nature conservation, it seems better not to use snowshoes but to use bare feet. In Holland these bogs are managed by yearly mowing, followed by low-density cattle grazing for some weeks. The mud that is brought onto the Sphagnum-surface by cowfeet "going through the crust" seems to enhance the pH. *Malaxis*—although sometimes eaten—seems to profit from this.

11. At my nearest location for *Hammarbya* (or *Malaxis*), constant puncturing of the bog surface seems to benefit many plant species. And I would suggest that the main reason for *Malaxis* success such a long way from its main Scottish location is the bog 'dynamism' generated by the local wild ponies. I consider *Malaxis paludosa* to be virtually aquatic. To survive in the above location it requires running water (and therefore avoids valley bogs), and I find as many spikes growing out of the actual water as I do the sphagnum cushions. It is not surprising that the species has evolved a water dependent seed dispersal system as opposed to atmospheric dispersal.

12. How on earth would you mow a bog? I would think the mowers would just sink below into the lake! I know that cattle have been killed when they fell through the mat!

13. Ah, mowing a bog makes perfect sense. These peatlands are considerably drier than fens and one would have to work very hard indeed to fall through a "mat" that is likely meters thick. One would also have quite a time finding one floating on anything. A floating fen mat, would be most unsuitable for mowing. - which would explain why they don't do it.

14. Many peatlands carry the baggage of

old labels. Most are called X bog or Y bog etc. Some are true bogs perhaps - but many are more fen than bog but never receive the label distinction - for any number of reasons. It is also possible to have combinations of these wetlands - Glazer refers to these as mire complexes.

15. If the water comes in - drainage or rain (in this day and age sometimes even more acidic than the bog itself) and does not drain, IT IS A BOG!! If said water drains, eventually, IT IS A FEN!!

16. Before this discussion I had been totally clear in my mind what was a BOG and what was a FEN. I have always gone "in" to a bog, but "on" to a fen! Get it? Based on the fact that *Malaxis* virtually ALWAYS has to have wet sphagnum I cannot visualise an intrepid individual "mowing" to benefit the species, unless he/she uses a hover-mower and is wearing snowshoes.

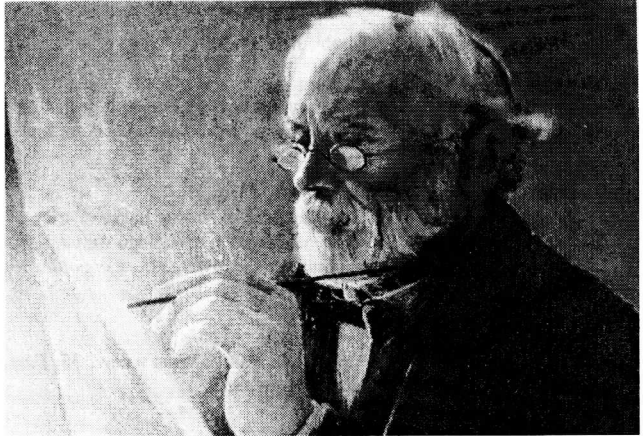
17. I have an excellent array of bogs in my part of southern England. In one area of bogs *Malaxis palustris*, *Epipactis palustris*, *Dactylorhiza incarnata* and *Platanthera bifolia* grow successfully. In another area of bogs the only orchid species is *Dactylorhiza incarnata*. Guess which area of bogland is constantly trampled by horses!

18. If there is water on or near the moss surface it is almost certainly a fen. It will look all hummocky, and have sphagnum galore, orchids - maybe. Or it could be thick in shrubs and support trees. It is most certainly a fen. I.e: if you are standing on a cliff and looking down at a sphagnum mat around a little pond, you are looking at a fen. If there is a greater peat plain extending even back from this - one is still looking at a fen (probably). If you are on the south coast of Newfoundland and having a great time orchiding, you are walking upland blanket fen. Bogs throughout our areas are rarer than fens. People call these places bogs, because that is what they are used to calling them.



## Historical reprint: *Pterostylis oliveri*

Donald Petrie wrote "Descriptions of new native plants &c" and it was published in the *Transactions of the NZ Institute* (26: 266-274, 1894). In that paper he described *Pterostylis oliveri* for the first time. Petrie was a Scot who became School Inspector in Otago in 1874; he combined his travels with plant collecting, and published descriptions of many new species, including *Pterostylis areolata* and *Gastrodia minor*.



Professor Daniel Oliver of Kew 1830-1916  
for whom Petrie described *Pterostylis oliveri* in 1894  
[*Linnaea* 16 (3): p13 July (2000)]

### ***Pterostylis oliveri*, sp. nov.**

A rather stout leafy species 6in. to 12in. high. Leaves reticulately veined, bright glossy-green, amplexicaul or shortly sheathing; radical several, narrow-ovate, acute, narrowed into a rather broad petiole, 2½in. to 3½in. long, ¾in. to 7/8in. wide; cauline several, amplexicaul, sessile, almost acuminate, the upper gradually diminishing in size.

Flowers usually solitary and terminal, a second flower occurring but rarely in the axil of the uppermost cauline leaf, about 2in. long, curved forward and downward in front almost to the level of the ovary. Upper sepal boat-shaped, broad, tapering gradually to an acute point, the free lobes of the lower sepals broadly obtuse and produced into very slender erect filaments 1¼in. in length. Petals falcate, 1¼in. long, ¼in. broad, acuminate. Claw broadly linear, brown, of nearly uniform width to the base; appendage much narrower than the claw, terminating in numerous very narrow filaments. Column ¾in. long.

*Hab.* Open scrub and low bush on the banks of Kelly's Creek, Otira River (1,100ft.). In flower in the early part of January.

I have much pleasure in dedicating this plant to Professor D. Oliver, F.R.S., of Kew, in acknowledgment of valued assistance in my botanical studies.