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Chiloglottis valida, Iwitihi
Drawing by Catherine Beard

The search for *Petalochilus minor*

1. The imbroglgio

The identity of the true *Petalochilus* (*Caladenia*) *minor* remains elusive, despite our having been embroiled in a taxonomic stew in which the name *P. minor* is the main ingredient.

In 1996 when we came to put the first edition of the *Field guide* together this plant was one point of disagreement, but as editor I insisted we used *C. minor* for a tiny plant I had seen near Wellington and in the far north, with a jutting bare triangular midlobe; I now think I was wrong, and that plant is closest to the Australian *P. pusillus*.

Eric Scanlen on the other hand later made a persuasive case for *C. chlorostyla* as a synonym for *C. minor*, and indeed Fitch's original lithograph shows a labellar midlobe fringed with many calli, and almost every description of *C. minor* since Cheeseman mentions a plant with a midlobe like that.

Bruce Irwin does not accept Scanlen's interpretation, makes a strong case for formally describing a plant he tagnamed *P. aff. chlorostylus*, which is clearly distinct from *P. chlorostylus*, and wonders if *P. aff. chlorostylus* is one of the taxa mistakenly considered to be *P. minor*.

When there is chaos, the best way to deal with it is to impose structure. Break it down into smaller parts and deal with each in turn. We have to examine the past and we have to fall back on the rules, so let's do those one at a time.

2. The past

In 1804 Smith described *Arethusa catenata* and in 1810 Brown described *Caladenia alata*, both from New South Wales.

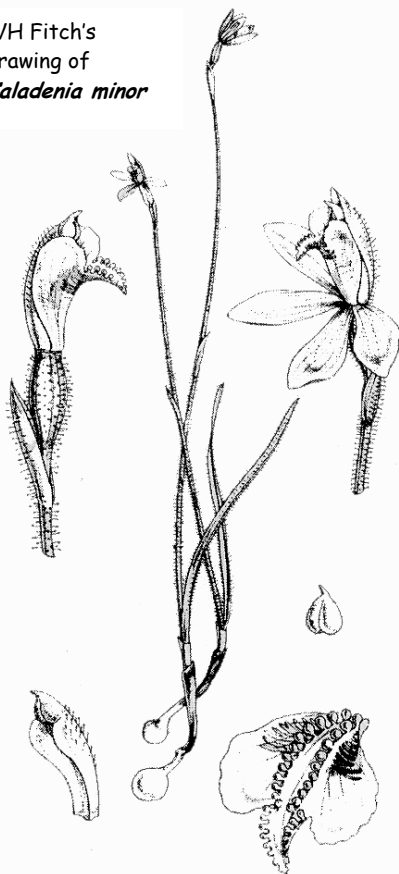
In 1853 JD Hooker described and WH Fitch lithographed *Caladenia minor* (see illustration at R,

and description in box overleaf) from specimens collected by Ederley, and Dan Hatch tells me he would have collected them from within a triangle Hokianga-Bay of Islands-Kaipara.

In 1864 Hooker still recognised only three caladenias from NZ – *C. (Petalochilus) minor*, *C. (Stegastyla) lyallii* and *C. (Aporostylis) bifolia*. Thus *C. minor* could have been any one or more of the small caladenias we now know as *Petalochilus*. Indeed, the type sheet is said to contain two or three taxa – mostly *P. alatus* but others too, one of them resembling *P. chlorostylus*.

Gradually other small caladenias were recognised, named and split off, or lumped back: it all

WH Fitch's
drawing of
Caladenia minor



depended on the edges of the midlobe.

In 1885, when Colenso described *C. variegata* from Hawke's Bay, he wrote, "*C. minor*, which is so common at the north (Bay of Islands), on clayey open hills among fern (*Pteris esculenta*) and *Leptospermum* scrub, I have never met with in these southern parts".

In 1906 Cheeseman described *C. minor* var. *exigua*.

In 1913 Cheeseman raised that taxon to species rank as *C. exigua*. To distinguish the two Cheeseman said his *C. minor* had a labellar midlobe "fringed with linear calli", he lumped Colenso's *C. variegata* with it.

In 1924 Rogers described the two *Petalochilus* species, *P. saccatus* and *P. calyciformis*, with petaloid labella.

In 1944 Rupp thought the NZ *C. minor* was identical with the Australian *C. carnea* var. *pygmaea* and reduced *C. exigua* to *C. carnea* var. *exigua*.

In 1946 when Hatch and he wrote on the different forms in the two countries they admitted, "... even the varieties of *C. carnea* are themselves so liable to vary, that ... we think it best to let the matter rest."

In 1949 Hatch listed *C. carnea* var. *minor* (its midlobe with several marginal calli); *C. carnea* var. *exigua* (its midlobe with one); and *C. carnea* var. *bartlettii* (its midlobe without marginal calli). He later recognised *Stegastyla atradenia* (as *Caladenia carnea* var. *minor* forma *calliniger*), leaving his var. *minor* as *C. carnea* var. *minor* forma *minor*.

In 1970 Moore relumped all the small *caladenias* into *C. carnea*, and even included *Petalochilus* as abnormal forms. She wrote, "In NZ specimens of *C. carnea* both the size of the midlobe of the labellum relative to the sidelobes and the details of its marginal processes show a wide range; there is a gradation from definitely stipitate calli through wholly membranous marginal teeth to mere undulations and almost entire margins".

In 1972 Blaxell changed *C. carnea* to *C. catenata*.

In 1979 Curtis applied the NZ varietal names to Tasmanian plants – thus *C. catenata* var. *minor* and var. *exigua* – with labellar midlobes matching Hatch's 1949 varieties of *C. carnea*.

In 1983 Johns and Molloy noted the range of forms then lumped together as *C. catenata* in NZ,

and remarked, "we have not attempted to resolve these issues here".

In 1987 McCrae recognised that *C. catenata* var. *exigua* was identical with the Australian *C. alata*.

In 1997 Molloy, Jones and Clements named *C. chlorostyla* (see David Jones's illustration reproduced here) and *C. nothofagei*.

In 1999 they named *C. bartlettii*. In the same year Scanlen recognised that the plant known as "big pink" was Colenso's *C. variegata* (Molloy had noted the likelihood of this in a letter to Irwin in 1989, but neither mentioned it).

In 2002 Molloy, Jones and Clements renamed the genus of small *caladenias* *Petalochilus*; among the species they included *P. minor* as well as *P. chlorostylus*, hinting that in their opinion both exist.

3. The rules

The rules that apply here are in the International Code of Botanical Nomenclature (ICBN).

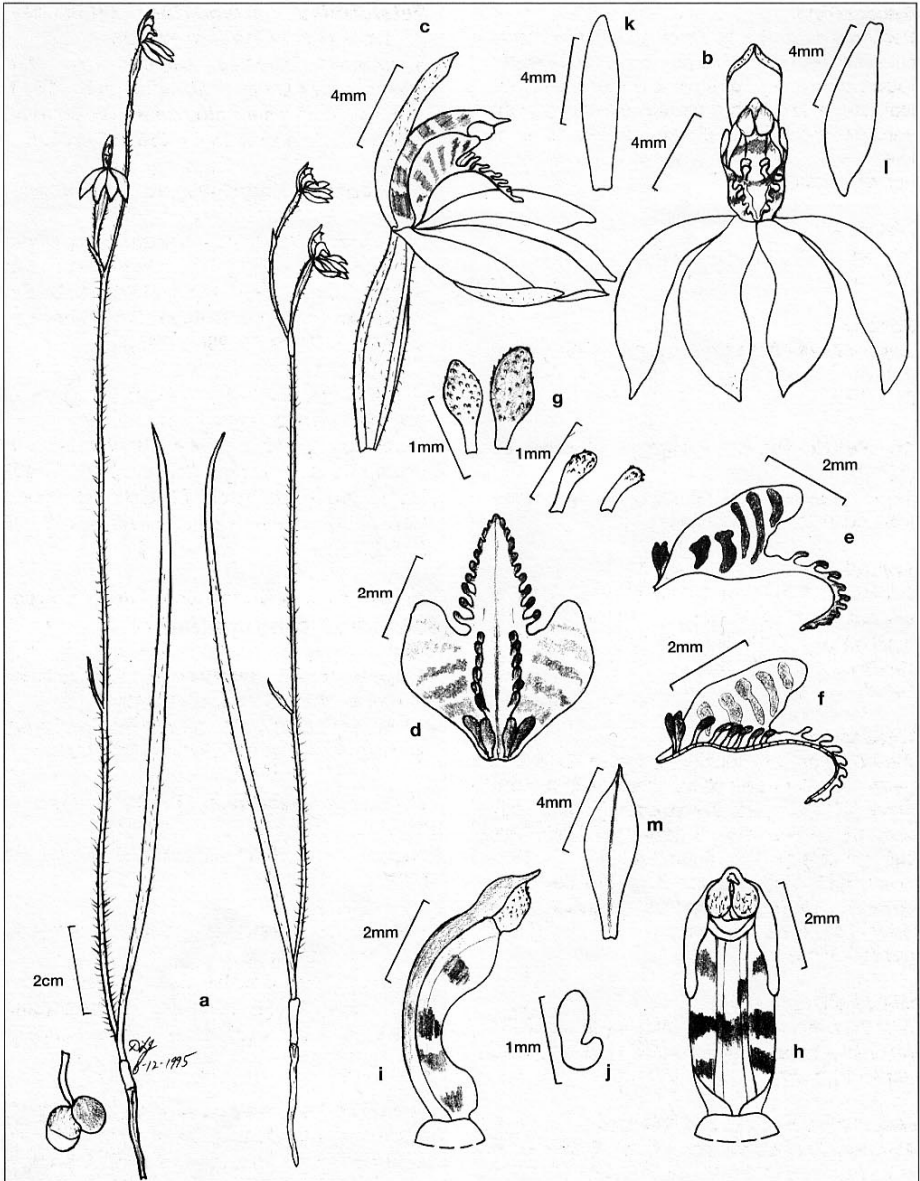
Article 9.1 states: A holotype of a name of a species ... is the one specimen or illustration (but see Art. 37.4) used by the author ... as the nomenclatural type. As long as a holotype is extant, it fixes the application of the name concerned.

Article 37.4 states: ... the type of a name of a new species ... may be an illustration if, and only if, it is impossible to preserve a specimen.

Article 9.12: When a type specimen (herbarium sheet or equivalent preparation) contains parts belonging to more than one taxon, the name must remain attached to that part which corresponds most nearly with the original description or diagnosis.

Article 9.2 states: A lectotype is a specimen or illustration designated from the original material as the nomenclatural type, ... if it is found to belong to more than one taxon. (Article 9.9 repeats that in different words).

Recommendation 9A5 suggests: When two or more heterogeneous elements were included in or cited with the original description or diagnosis, the lectotype should be so



***Petalochilus chlorostylus*, Paranui—New Zealand**

By David Jones (*The Orchadian* 13: 407 (2001). Reproduced with permission.

selected as to preserve current usage. In particular, if another author has already segregated one or more elements as other taxa, the residue or part of it should be designated as the lectotype provided that this element is not in conflict with the original description or diagnosis.

Article 52.1: A name ... is illegitimate and is to be rejected if it was nomenclaturally superfluous when published, i.e. if the taxon to which it was applied, as circumscribed by its author, definitely included the type of a name which ought to have been adopted, or of which the epithet ought to have been adopted, under the rules.

That is legalistic and difficult language, as all such prose must be if it is to be unambiguous. As I interpret it,

1. Among the different specimens on the

Hooker's description of *Caladenia minor*

1. (Translated from Latin): "Roots spreading from the sheathed base of the stem which is covered in glandular hairs. Leaf narrow-linear, glabrous. Scape has a median bract. Flower rose-coloured, with a basal bract. Sepals linear-obtuse, the petals narrower. Labellum broader than long, deeply 3-lobed, the lateral lobes membranous; the midlobe broad, subulate, with a glandular margin. Disc of the midlobe with stalked glands in 2 rows. Anther sessile at the top of the column. (TAB. LVI. B.)"

2. (in English) "Hab. Northern Island. Dry clay hills, abundant, *Edgerley, etc.* The smallest New Zealand species, 4-6 inches high, very slender, one-flowered, covered with spreading patent glandular hairs. *Leaf* solitary, very slender, linear. *Flower* nearly erect, ½ inch broad, pink. – Plate LVI.B. Fig. 1, flower; 2, flower with the sepals and petals removed; 3, lip; 4, column; 5, anther: - *all magnified.*"

original type sheet, the name *C. minor* must be applied to the taxon that best matches ("corresponds most nearly to") Hooker's words (9.12).

2. You cannot use Fitch's illustration as the type because there is an existing type sheet of specimens (37.4).
3. Nobody has designated a lectotype from the taxa that are not *P. alatus* on the type sheet (9.2). It is permissible to do so because Brown had previously described *C. alata* in 1810; but it is only permissible if the taxon chosen agrees with ("is not in conflict with") Hooker's description; the requirement that it must preserve current usage is irrelevant because there is no consistently accepted current usage of the name *P. minor* (9A5).
4. If Hooker's name *C. minor* was applied to *P. alatus* (and if our *P. alatus* is the same as the Australian one Brown described) then the name is illegitimate (52.1).

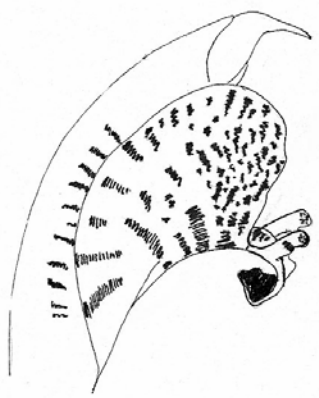
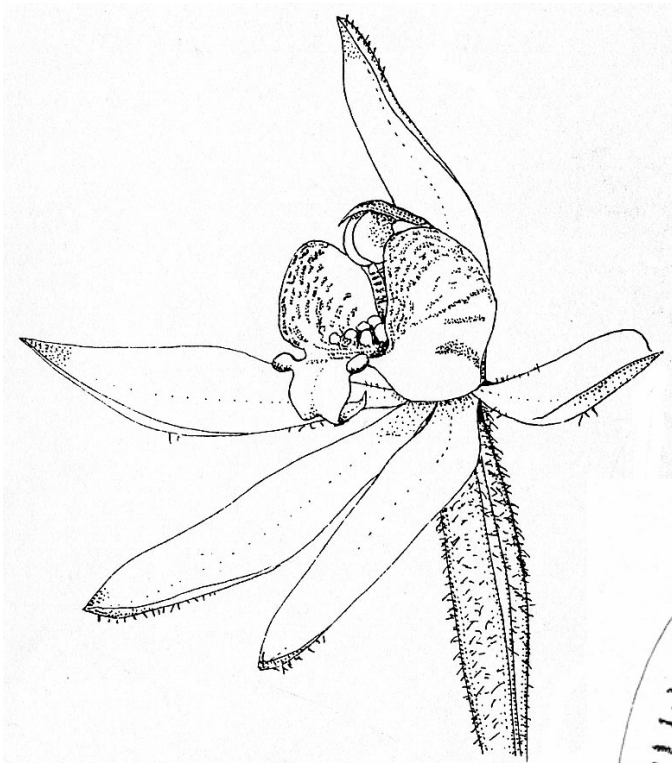
4. The logic

Let's look then at Hooker's description to see what he was writing about (see box).

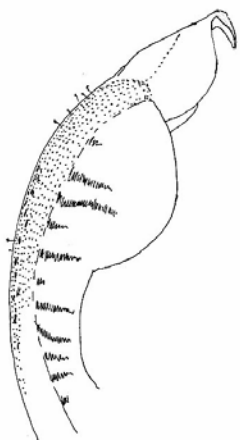
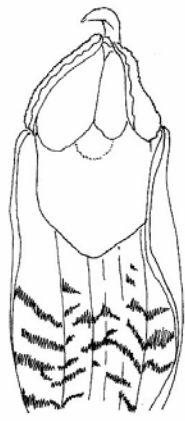
The leaves of all *Petalochilus* species are more or less hairy, so the description "glabrous" is simply wrong; certainly it does not help distinguish among the contenders for the name. I mention that only to observe that Hooker was fallible.

The key diagnostic elements are in the flower:

1. Flower "rose-coloured" and "pink".
Hooker said it was pink either because he could tell the colour from the dried specimen, or because Edgerley told him the fresh flower was pink; it doesn't matter which (*P. chlorostylus* is never pink, *P. alatus* may be, *P. bartlettii* is always so.).
2. Sepals linear-obtuse (*P. alatus* and *P. chlorostylus* normally have pointed sepals, *P. bartlettii* blunt).



Petalochilus alatus, Northland—New Zealand.
Is this the true *Petalochilus minor*?
Drawing by IStG, 1994.



3. Labellum broader than long (that could be said of *P. alatus*, but not I think, of *P. chlorostylus* – see Jones’s illustration of the latter. But it’s a mere detail),
4. The midlobe broad, subulate, with a glandular margin (that looked at first like a key point: the Latin *marginē glanduloso* was initially translated as “with a single midlobe marginal callus”: unmistakably *P. alatus*; but other Latin scholars tell me it can also be translated as “with a glandular margin” which leaves us no further ahead),
5. Hooker then referred to the illustration, which has a callus-fringed midlobe that fits *P. chlorostylus* best, but is something of a mix otherwise. In any case, the rules say the illustration should carry little weight when specimens exist.

Hooker did not know what the Robert Brown 1810 *Caladenia alata* was - the Fitch lithograph in *Flora Tasmaniae* of what Hooker thought was *C. alata* has a callus-fringed labellar midlobe and four rows of calli on the disc! Hooker admitted: “I refer this plant to Brown’s *C. alata* with some hesitation...”. If he had never seen true *C. alata* he could be forgiven for thinking the northern NZ taxon was new.

Almost everyone since Cheeseman has taken Fitch’s drawing as their guide, and applied the name to plants with callus-fringed labellar midlobes. Interestingly,

Colenso, that considerable orchidologist, wrote that he had never seen *C. minor* as far south as Hawke’s Bay. He wouldn’t have if he was thinking about *P. alatus*.

5. The truth?

Hooker’s description corresponds most nearly with *P. alatus*. Brown had described *Caladenia alata* in 1810, but Hooker did not know the species, so when he received specimens from Edgerley he described them anew as *Caladenia minor*, which was thus an illegal name. Taxonomists may choose a lectotype other than *P. alatus* from the type sheet for *P. minor*, but that could be justified only if that taxon matches Hooker’s description even better than *P. alatus*.

I doubt if it will, though *P. bartlettii*, which does have blunt sepals, remains a possibility if it is present on the type sheet. *P. chlorostylus* would not fit the bill.

Of course the NZ *P. alatus* may differ from the Australian, in which case *P. minor* would be resurrected for it.

Acknowledgements

I thank David Jones for permission to publish his illustration of *P. chlorostylus*. I am grateful for help and criticism by Dan Hatch, Bruce Irwin and Eric Scanlen: these are my opinions, however, and they need not take any blame for them.

July in Gatineau Park

I was invited to give a paper at “the Ottawa Conference” in July. It’s about medical education and this is the tenth, so it’s back in Ottawa. My bumbling presentation betrayed my jetlag - it gets worse with age. The sudden realisation at dinner, at a lecture, anywhere, that you have just woken up and you don’t know how long you were asleep. Did I snore? *Dribble?*

The visitor guide tells me Ottawa has winter and “nonwinter months” - only five are frost-free, so from the orchids’ point of view it’s not a lot of time to make babies. I had looked up Canadian orchids on the net, and had seen *The orchids in the Ottawa district*, with its clear descriptions and excellent drawings – but also, and uniquely, its accounts of detailed and

dedicated observations of colonies over many years. Joyce and Allan Reddoch have achieved a wonderful monograph.

Most of the orchids had finished flowering by July of course, but my guides Marilyn Light and Michael MacConaill kindly picked me up from my hotel, to cross the Ottawa river into Quebec and its splendid Gatineau Park – 363 sq. km of 40 kinds of trees and 1000 different plants. Marilyn is a questioner of conventional orchid wisdom. You will see what I mean when she responds to my invitation to write for our December issue. She accepts nothing at face value, but looks for herself – tries the experiment, repeats the observation – a keen and enquiring intelligence. Michael is similar – lean, fit, acutely aware, enthusiastic; he went back to university to do a maths degree after retirement, and he skis cross-country in 30-below temperatures in Quebec’s severe winters.

We look first at *Epipactis helleborine* growing wild in their front lawn, its stinging-ant pollinators crawling all over it; this is a European orchid, first discovered in north America over a century ago, and it is now the most common orchid in the Ottawa District (a circle of 50km radius centred on the Parliament buildings). We then head for Marilyn’s patch of bush, a place where acid and alkaline soil types meet, so there is a wide range of usually widely separated species in one place. There she has been observing a patch of 300 or so plants of *Cypripedium parviflorum*, the yellow ladies’ slipper, for 7 years. The fruit is setting by now of course, and I wish again medical conference organisers would get the timing right for the orchid season. The bush here is second-growth: tall slender beech, ash, eastern hemlock, birch, alder, elm, eastern white pine, sugar and other maples, the tallest of them bent and broken by the unprecedented ice-storm of three years ago. This was a devastating once-in-a-century natural event and people speak of it with the awestruck gloom we reserve for memories of cyclone Bola.

The area has a wetland fen where we see

Liparis loeslii and *Platanthera hyperborea* flowering, and the leaves of many more. Canada, I am informed, has lots of little green ground orchids. There’s a musty smell of foxes nearby. Marilyn explains carefully what we do if we encounter a bear.

The Reddocks join us for lunch. By now it is hot and humid and on the track after lunch my hands are constantly flailing as screaming mosquitos and deer-fly home in on me; my companions give the occasional desultory swipe, but otherwise don’t seem to notice. “The Reddocks have got something special to show you,” Marilyn had told me earlier, and first stop is Black Lake, its level raised by a beaver dam, and indeed three beaver lodges are clearly visible. Before the dam the shore had been a wetland rich in orchids, so the resurgence of beaver numbers in the area has been greeted with mixed feelings. Now only a few little islets of vegetation survive above the water. One has broken free and has floated to the near shore – and wonder of wonders! Above its little community of plants rise the large pink flowers of the Rose Pogonia, *Pogonia ophioglossoides*. This species had been observed here in 1878, and the Reddocks had seen 80 plants here in 1969 – but the beavers arrived in 1983.

The tiny *Malaxis unifolia* is flowering at the exit trackside, the smallest orchid flowers I have ever seen. Later, in the Larriault Falls area we see *Goodyera pubescens* in bud, its beautiful patterned grey-green leaves a mat on the forest floor.

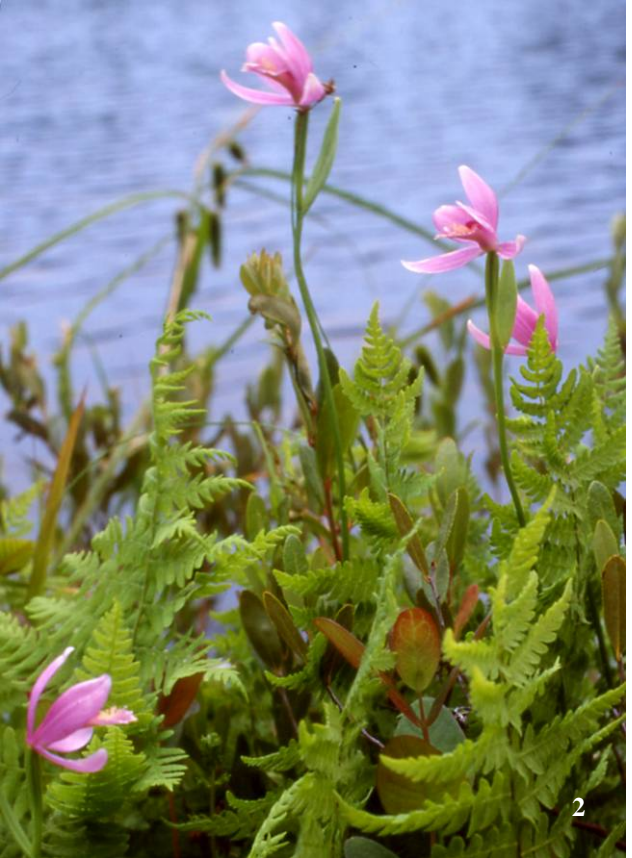
A marmot sits on the roadside verge. There are woodpecker holes in a tree. Groundhogs scurry into their dugouts.

Key to plates

1. *Epipactis helleborine*,
2. *Pogonia ophioglossoides*,
3. *Goodyera pubescens*,
4. *Malaxis unifolia* with kiwi,
5. The “Rose Pogonia”



1



2



3



4



5

close relations: orchids like ours



The Australian *Thelymira ixioides*, painted by WH Nicholls, 1951

A red squirrel, its head and big eyes giving it a childlike cuteness, flicks about our feet at afternoon tea, looking for tidbits. A chipmunk, tan and white striped, follows.

The white-tailed deer can graze and the beaver can drown orchids, but here as everywhere it is man's work that has caused the greatest losses.

Canada had a dour atmosphere when I lived in Hamilton Ontario for a short time in the early seventies, but Ottawa today is full of internationalism – Irish pubs, Moroccan cafes, the languages of Europe and Asia on the street, and fast Italian restaurants with stale pasta. And of course here, with Quebec just across the river, biculturalism and the French connection.

There's a self-conscious little-brother relationship with the United States, but its rather like ours with Australia, and I find it recognisable, familiar, and rather endearing. Both of us were

British colonies, and we both now have big brothers next door to force us to compete. I walk to Parliament Hill, an extraordinary architectural extravaganza of Bavarian/Disneyland gothic towers, Provencal wrought iron tracery, French chateaux, and Norman stolidity. The *son et lumiere* at night is family-oriented, multicultural, a little cloying, as public displays of patriotism tend to be, but nonetheless stirring. And while a southerly hailstorm is freezing Wellington, here it is a balmy 30 degrees and everybody is promenading in the evening air.

It was an extraordinary week and I am excited by the challenging ideas and new information - but above all, by the great beauty and diversity of the Quebec forest.



← *Cypripedium parviflorum* var. *pubescens*

Drawing by Susan Laurie-Bourque,
from *The orchids in the Ottawa District*
by Joyce and Allan Reddoch.

1. DNA & *Pterostylis nana*

Suicidal tendencies in herbarium curators, are being caused by the upsurge in botanical name changes brought about by DNA analyses. After a flurry of e-mails between the Column and Bob Bates a curious DNA twist also brought back to light the long running saga of the Australian *Pterostylis nana* agg. (closely related to our critically endangered *P. puberula*). But to diverge briefly, Carl Robasch wrote, from Germany, shortly before his untimely demise, that DNA analysis of plant species sometimes showed seemingly identical plants to be different or different looking plants to have the same DNA sequences — be aware. It seems that scientists are presently studying the predominating “rubbish” sequences between active genes in the genome (DNA double spiral molecule). A difference of 5 base pairs in the same sequence of two plants is taken as indication of differing genera hence the massive reclassifications of recent months. But this is only an *indicator*, the rubbish DNA has no effect on plant characters. If and when analysis of active genes become feasible, expect another raft of classification changes.

Bob Bates’s has had his articles on South Australian *P. nana* agg. were faithfully reprinted in this Journal because of the close alliance with *P. puberula*. The latter which was known as *P. nana* by Rüpp from 1932 until Mark Clements returned it to Hooker’s *P. puberula* in 1989. Furthermore, Bob was actively pursuing small but consistent differences in the *P. nana* agg. (as we are with our *Nematoceras triloba* agg.) such as differences in pollinators, habitat, flowering times etc. which speak volumes for species differentiation but cannot show in pressed specimens. Taxonomists are conservative about such claims especially if little difference can be seen in the all-important herbarium specimens. But things are

changing dramatically with the advent of DNA analysis.

In J37:21, J40:11 and J49:26 and the recent e-mails, Bob wrote about 5 *P. nana* as below, all with different pollinators and he clearly tagged them to keep the taxa distinct, pending critical analysis:

- A: coastal nana (crenulate leaves and large, brown tipped flowers);
- B: Hills nana, (with smooth round leaves, white hairs on scape, found in Adelaide Hills & Fleurieu Peninsula);
- C: mallee nana (crenulate leaves round to pointed, on long petioles; smooth stems; tiny, laterally compressed flowers)
- D: desert nana, (a second race of Hills nana)
- E: swamp nana, (a third race of Hills nana, closely allied to our *P. puberula*; **is it the same?**)

In J40:11, veined nana appeared, from the Adelaide Hills and the Eyre Peninsular (blue/green with sagittate {arrow head shaped}, prominently veined leaves; reticulate veined flowers turning red in maturity.)

In J79:30 a scientist’s specimens of veined nana from Hale Conservation Park and from Ferries Conservation Park 80km away, looked somewhat different but came out the same in the DNA test. Curious enough, but DNA from his mallee nana and Hills nana said they were the one species! The Column’s journal indexing staggered at this point. Was it shades of Carl Robasch? Not at all, Bob Bates’ reply of 14/6/2 says the scientist was proficient but was not a taxonomist and he picked Hills nana leaves in error for mallee nana — so they *should* have come out the same.

Conclusions

1. DNA testing for species differentiation is a powerful new tool and it is improving.
2. Human error in selection of specimens from confusingly similar species can be a problem.
3. Fortunately, published new species classifications have been done primarily

on physical plant characters; the allozyme electrophoresis process is used only as convincing confirmation.

4. *Pterostylis* “swamp~Hills nana” is close to New Zealand’s *Pterostylis puberula*.

2. *Orchid names*

1. **Introduction** Carl Linnaeus, invented systematic botany with his

elegant binomial nomenclature for classifying plants so bringing order out of chaos in plant naming, around 1740. Carl no doubt envisaged a solitary scientific name for each plant, recognised world-wide. The rub comes when successive refinements in taxonomy require continual re-evaluation of these binomial classifications, hence Carl, if you are listening, *they should never have been used as names*. Johns and Molloy [1] in 1983 championed the cause of the “popular names” because they were “probably less subject to change [than scientific ones].” Since then, DNA analysis has shown the wisdom of those words. More changes can be expected when scientists analyse active gene sites on the plant’s genome rather than the inactive portions of the DNA being pursued today.

In three years since Ian St George published his *Nature Guide to NZ Native Orchids*, 41 changes have been recorded including tagged taxa, 36 of them due to necessary classification changes. Some few have had both genus and species changes so tracking them back in the literature becomes a problem.

The plants haven’t changed but the classifications had to. Controversially, the more taxonomists work on it, and the better they do, the more trouble they get into: the enigmatic oxymoron of this age.

Tearing their hair are dedicated herbarium keepers, authors of botanical texts, all enthusiasts sick of memorising new names and a modest indexer with thousands of orchid slides stored alphabetically.

The modest indexer suggested to our NZ Native Orchid Group (NOG) Editor, Ian St George, that immutable and unique orchid names should be catalogued to see if we could end the name changing misery of these dedicated people. Ian said, “Go ahead.”

Here is the draft result after researching 32 sources. Note that:

1. Where several names are listed, the **bold** name is proposed from weight of numbers and/or earliest application with least ambiguity. So early Maori names have preference BUT overlaps on favoured food species have caused ambiguity on some and doubts as to authenticity arise over such as “maikuku” = claw or finger-nail.
2. The optional word “orchid” may be included and is better for such as “leek” & “potato” but for others, it can make the name unwieldy.
3. Where allied Australian species names are used, “NZ” has been inserted for demarcation. Some of these once applied to NZ orchids before the species were separated.

Orchid name competition. Readers will surely be able to find other references and other orchid names to fill the queries below. Please send them to the editor for inclusion in the final list. Preference will be given to authenticated, previously used names, with references.

Acianthus sinclairii **NZ pixie cap**; *Adelopetalum tuberculatum* **bulb leaf orchid**; *Adenochilus gracilis* **slender forest orchid**; *Anzybas carsei* **NZ banded helmet**; NZ swamp helmet; *Anzybas rotundifolius* **kauri helmet orchid**; pink helmet orchid; *Aporostylis bifolia* **odd-leaved orchid**; *Calochilus aff. herbaceus* **NZ copper beard**; pale beard; beaked beard; leafless bearded; *Calochilus paludosus* **red beard**; brown beard; strap beard; Father Christmas; *Calochilus robertsonii* **purplish beard**; purple beard; red beard; *Chiloglottis cornuta* **green bird**; *Chiloglottis formicifera* **ant orchid**; *Chiloglottis trapeziformis* **broad-lip bird**; dainty bird; *Chiloglottis valida* **large bird**; common bird; *Corunastylis nuda* **tiny**

midge; *Corunastylis pumila* green midge; *Corybas cheesemani* NZ spurred helmet; *Cryptostylis subulata* duckbill; tongue orchid; large tongue; slipper or wasp; cow orchid; *Cyrtostylis oblonga* oblong gnat; *Cyrtostylis reniformis* gnat orchid; small gnat; *Danhatchia australis* Waipoua; *Drymoanthus adversus* green fleshy; *Drymoanthus flavus* spotted leaf; *Earina aestivalis* (?); *Earina autumnalis* raupeka; Easter; *Earina mucronata* peka-a-waka; *Gastrodia* “city” city; *Gastrodia cunninghamii* maukuuku; para, uhi pere; maukuuku; huperei; huuperei; pere; (tuber as food); potato; *Gastrodia minor* small potato orchid; *Gastrodia* “long column” agg: long column (l.c.); (4 taxa: l.c. Aorangi; l.c. black; l.c. Owhango; l.c. St Arnaud); *Gastrodia* aff. *sesamoides* NZ potato orchid; NZ cinnamon bells; *Ichthyostomum pygmaeum* pipiripi; bulb leaf; *Microtis arenaria* notched onion; onion orchid; *Microtis oligantha* (?); *Microtis parviflora* slender onion; small flowered onion; small flowered *Microtis*; *Microtis unifolia* maikaika; common onion; *Molloybas cryptanthus* hidden spider; *Nematoceras acuminata* (?); *Nematoceras hypogaea* (?); *Nematoceras iridescens* big red; *Corybas* “A”; *Nematoceras longipetala* Waiouru; *Nematoceras macrantha* Silver back; spider; *Nematoceras orbiculata* short tepals; *Corybas* “C”; *Nematoceras papa* Mt. Messenger; *Corybas* “B”; *Nematoceras pandurata* (?); *Nematoceras papillosa* (?); *Nematoceras rivularis* darling; Kerikeri; *Nematoceras rivularis* agg. includes 7 tag names; **Kaimai, rest area, Kaitarakahi, whiskers; Mangahua, sphagnum, veil; *Nematoceras triloba*; common spider; *Nematoceras triloba* agg. includes 12 tag named taxa craigielea, darkie, pygmy, Rimutaka, round leaf, triaug, aff. *triloba* “A” “B” & “C”, *triloba* roundleaf, Trotters, trisept, triwhite; *Orthoceras novae-zealandiae* paratawhiti para or ikaika; mamaika (plus *T. pulchella*); maika (plus *T. pulchella*); maikaika (plus *T. pulchella*); pere tuber as food also for *G. cunninghamii*; *Orthoceras strictum* horned orchid; bird beak or bird’s mouth; crucifix; *Paracaleana minor* small duck; Blue Mountain’s duck; *Petalochilus alatus* fairy; winged fairy or ladies fingers; *Petalochilus bartlettii*; pink fingers; *Petalochilus* aff. *bartlettii* aff. *bartlettii*; *Petalochilus calyciformis* Cup orchid; *Petalochilus chlorostylus* (?); *Petalochilus* “chloroleuca” chloroleuca; *P.* aff. *chlorostylus* swarthy; *Petalochilus* aff. *fuscatus* nitida-rosea; *Petalochilus minor* green column; *Petalochilus nothofagei* white form; *Petalochilus* aff. *pusillus* (?); *Petalochilus* “red stem” red stem; *Petalochilus saccatus* pouch orchid; *Petalochilus variegatus* big pink; *Petalochilus* aff. *variegatus* aff big pink; *Plumatochilus tasmanica* NZ bearded greenhood; small bearded greenhood; southern bearded greenhood; *Prasophyllum colensoi* leek orchid; common leek orchid; *Prasophyllum* “A” mystery; *Prasophyllum* “B” elegant; *Prasophyllum* aff. *patens* NZ scented leek; NZ sweet leek; leek orchid; *Pterostylis agathicola* rubricaulis; *Pterostylis alobula* (?); *Pterostylis alveata* coastal green hood; *Pterostylis areolata* (?); *Pterostylis australis* (?); *Pterostylis banksii* tutukiwi; common greenhood; large leaved *Pterostylis*; *Pterostylis banksii* var. *silvicultrix* (?); *Pterostylis* aff. *banksii* aff. *banksii*; *Pterostylis brumalis* rubella; *Pterostylis cardiostigma* Days Bay; *Pterostylis* “Catlins” Catlins; *Pterostylis cernua* (?); *Pterostylis foliata* slender greenhood; *Pterostylis graminea* (?); *Pterostylis humilis* (?); *Pterostylis irsoniana* (?); *Pterostylis irwinii* Erua; *Pterostylis micromega* (?); *Pterostylis* aff. *montana* agg. (?); *Pterostylis nutans* nodding greenhood; nodding flowered *Pterostylis*; cows horn or parrot’s beak; *Pterostylis oliveri* (?); *Pterostylis paludosa* linearis; *Pterostylis patens* (?); *Pterostylis porrecta* (?); *Pterostylis puberula* NZ snail orchid; *Pterostylis tanypoda* NZ swan greenhood; *Pterostylis tristis* NZ midget greenhood; NZ blunt green hood; NZ shortened green hood; *Pterostylis trullifolia* (?); *Pterostylis venosa* (?); *Pterostylis* “Sphagnum” Opuatia; *Singularibas* “aestivalis” aestivalis; *Singularibas oblongus* (?); *Spiranthes novae-zealandiae* NZ ladies tresses; NZ pink spiral; *Spiranthes* “Motutangi” Motutangi; *Stegostyla* aff. *alpina* swampy; *Stegostyla atradenia* calliniger; NZ bronze; *Stegostyla lyallii* white fingers; *Stegostyla* aff. *lyallii* (?);**

Stegostyla lyallii agg. Mt Robert; *Thelymitra aemula* (?); *Thelymitra carnea* tiny sun; pink sun; *Thelymitra cyanea* veined sun; blue sun; striped sun; *Thelymitra x dentata* (?); *Thelymitra formosa* (?); *Thelymitra imberbis* beardless; yellow sun; *Thelymitra hatchii* (?); *Thelymitra intermedia* pseudopauciflora; *Thelymitra* aff. *ixioides* NZ dotted sun; NZ spotted sun; *Thelymitra longifolia* maikuku; common sun; Maori potato; *Thelymitra* aff. *longifolia* agg: blue, halo, cupped, deep cleft, tired one; *Thelymitra malvina* pink whiskers; *Thelymitra matthewsii* spiral sun orchid; *Thelymitra nervosa* NZ graceful sun; *Thelymitra* aff. *pauciflora* NZ slender sun; NZ few flowered sun; *Thelymitra pulchella* maikaika; maika (white fish); mamaika; striped sun orchid; pretty *Thelymitra*; veined sun; *Thelymitra sanscilia* (?); *Thelymitra tholiformis* (?); *Thelymitra* “Ahipara” Ahipara; *Thelymitra* “Comet” Comet; *Thelymitra* “darkie” darkie; *Thelymitra* “rough leaf” rough leaf; *Thelymitra* “sky” sky; *Thelymitra* “Whakapapa” Whakapapa; *Townsonia deflexa* creeping forest orchid; *Waireia stenopetala* yellow beak; *Winika cunninghamii* winika; ladies slipper.

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3. Back copies

The Column had reason to read in detail all 20 of Dorothy Cooper's first amazing Newsletters. It was like a mystery story unfolding with revelation upon revelation for the eyes of the newly assembled NZNOG members. The mysteries were more intriguing in hindsight because many of the answers have since come to light. You see, until the NZNOG was formed — in a stroke of genius by Dorothy — orchids were spurned by many botanists (and still can be because of their erratic de-materialisation in dormancy) and were only locally well known by a few dedicated specialists. There was a strong contingent from the south trying to see, in their local taxa, species usually described from the north or the far north so the Group formed a nucleus for the pooling of knowledge from disparate, dedicated souls New Zealand wide and started a valuable process of rationalisation.

Dorothy struck gold with 80 keen enrolments before issue 2 was published and numbers were soon up to 120 members. Her reputation, gained from her excellent book, *A field guide to New Zealand native orchids*, rang the bell which drew the throng but the spell binding of the native orchids took hold and seems not to have diminished since.

There was Dan Hatch's casual revelation, in the very first issue, of *Corybas rivularis* agg. (as *C. orbiculatus*) in the wet muck at Kaitarakahi Reserve. It is now established as a new taxon, tagged *Nematoceras* "Kaitarakahi" (J74:18).

Jean Jenks, in issue 2, spotted differences between different colonies of *Corybas orbiculatus* in Nelson and argued with Dan that they didn't all grow in the wet because she had some green ones on a dry road bank. Our first report of Bruce Irwin's *N.* "whiskers" no doubt and the bank can't have been that dry. Jean also separated out a red one lacking the long sepals. First report of *N. orbiculata* or short tepals. Then Dorothy slipped in an editorial comment with some prophetic

snippets about variations in *Caladenia catenata* (now *Petalochilus minor* agg. of at least 7 species), *Caladenia lyallii* (now *Stegostylis lyallii* agg. with some 4 variants plus albinos) and among others, *Aporostylis bifolia* with or without calli? What?

Your doughty Column delved deep into the old pics and there they were, dare he say, unnoticed until now. Fig. 1 (colour plate) from Iwitahi, 10 Dec 00 is *Aporostylis bifolia* with small yellow blobs on an unspotted labellum. Brown spots adorn the column and there are 2 rows of little yellow calli mid-disc just as Hooker described it (then, as *Caladenia bifolia*). Then there is the hypochromic *A. bifolia* in Fig. 2, lacking the port wine keels on the sepals but still with yellow calli mid-disc. It also has green leaves with no red colouring. But Fig. 2, from Horopito, 3 Jan 97 has 2 large yellow blobs with 3 to 5 brown spots on each side of a broader labellum and no visible calli mid-disc. Let us call it *Aporostylis* "sanscalli" because it seems to lack the definitive 2 rows of calli. This one still needs more checks to be certain but the pictorial evidence, backed by Dorothy's and Max Gibbs' observations seems clear.

Do please note, oh gentle reader, that orchids with small but consistent differences can be quite distinct species. Do look closely and please do not be tempted to squeeze your finds into known taxa if the don't fit! For instance, *Thelymitra aemula* and *T. tholiformis* (then *T. intermedia sensu* Moore) with minute differences in the column structure, are now known to have 40 and 66 chromosomes respectively but they had the experts in the Newsletters fooled at first. Tell the world of your different finds via Ian St George and the Journal, even if you too didn't notice it until years later on your slides!

From the Puffer Track, Dorothy's discomfort showed when she found her first albino *Gastrodia cunninghamii* (short column) together with her first *G.* "long column" a "dark green-black specimen with a long column as in *G. sesamoides*". But she pounced on them, announced them in issue 5 along

Fig.5

Nematoceras orbiculata

Drawn by Eric Scanlen
From Bob Goodger's slide,
Dawson Falls Oct 84.

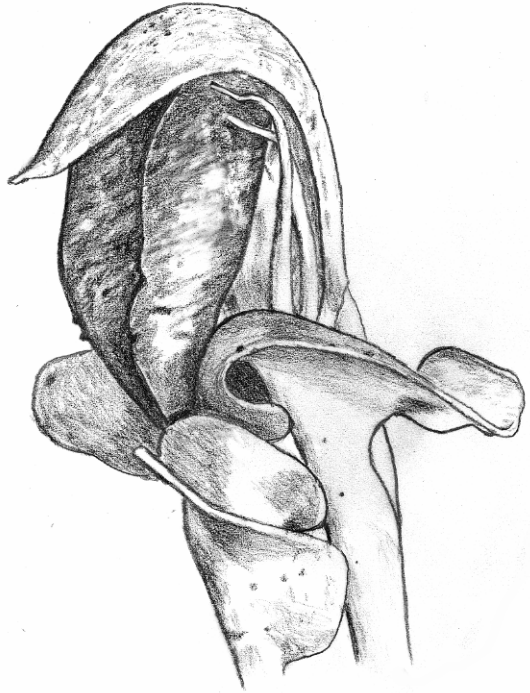
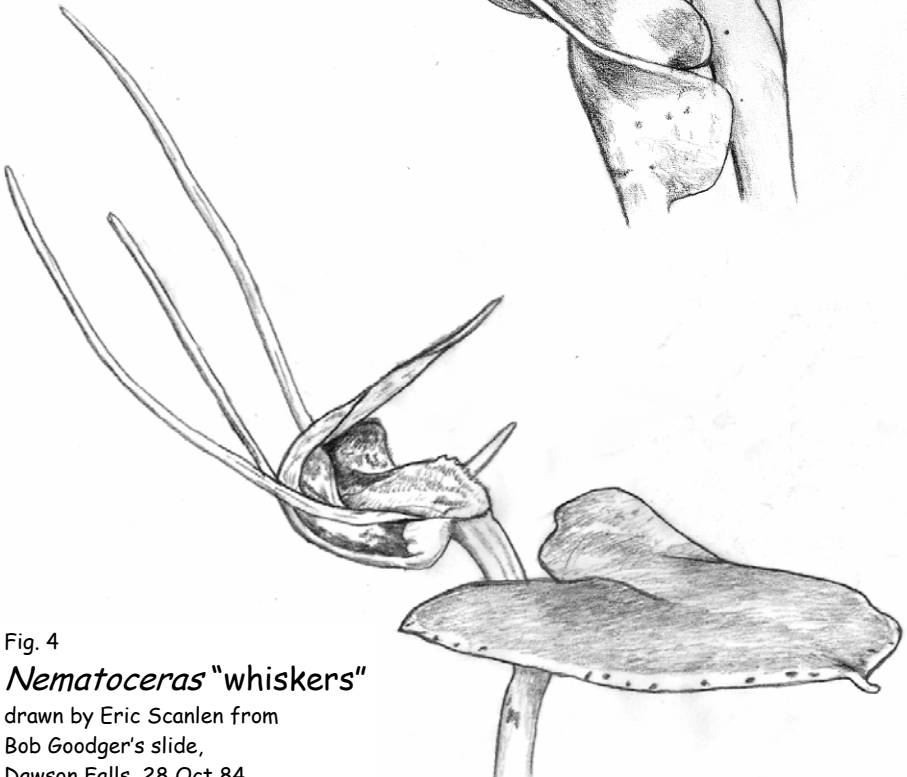


Fig. 4

Nematoceras "whiskers"

drawn by Eric Scanlen from
Bob Goodger's slide,
Dawson Falls, 28 Oct 84.



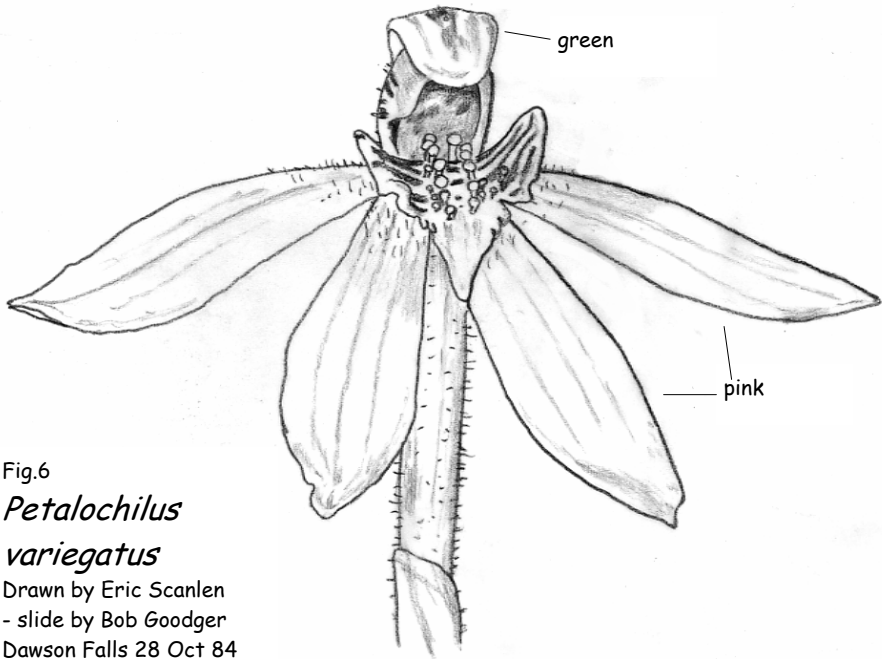


Fig.6
Petalochilus
variegatus

Drawn by Eric Scanlen
 - slide by Bob Goodger
 Dawson Falls 28 Oct 84

with the fact that colour plate 7 in her book could not be *G. cunninghamii*, as captioned, because it had a long column! So there, in a 1981 publication is a photo of *G.* “long column, black”. Shades of the Column announcing for 5 years that his *G.* “long column St Arnaud” slides were *G. cunninghamii* until Bruce Irwin whispered in his shell-like that the column was poking out under the labellum (J52:39). Now we have 3 or 4 known long-column taxa from Owango to Stewart Island, some perfumed and insect pollinated, some scentless and most likely self pollinated.

Dorothy was either short of column soace or was uneasy with suggestions of new species so when Mark Moorhouse did such a thing in his submission for issue 6, his large form of *Stegostyla lyallii* got edited out (pers. comm.) and we lost our first chance of meeting *S.* aff. *alpina* but Mark’s then rational suggestion that

the large form could be a cross between *S. lyallii* and *Caladenia catenata* (with a green dorsal sepal which he’d also found; our first meeting with *Stegastyla* “Mt Robert”) was left in. Now they have been found to be separate genera and unlikely to cross.

Bob and Beryl Goodger invaded the south to some effect in issues 15 & 16 then announced some interesting finds in the north, all accurately recorded with names of the era, first at Kati Kati, *Corybas orbiculatus* (no doubt *Nematoceras* “Kaimai”) on 15 Sep 84 and secondly, at the Dawson Falls, Mt Taranaki on 28 Oct 84. Their *C. orbiculatus* here turned out to be, from Bob’s slides, our second contact with *Nematoceras* “whiskers” Fig. 4, and with *N. orbiculata* (short tepals) Fig. 5, which has been in and out of a *Corybas rivularis* phase in the intervening 18 years but now returns rightfully to its old misnomer! Is anyone

confused?

But their most notable find (Fig. 6) was *Petalochilus variegatus*! Or *Caladenia carnea* as Bob meticulously labelled it at the time but it has Colenso's stray calli etc. Unmistakably *P. variegatus* and has not been reported from anywhere near Mt. Egmont until now.

Dean Pendrigh put Oxford on the orchid map with enthusiastic reports of *Pterostylis tristis* and *P. tanypoda* there, observed insect pollination of *Orthoceras novae-zeelandiae* plus many other points of interest in issues 14, 19 & 20.

Iwitahi took Editor Dorothy by storm when she witnessed *Chiloglottis valida* being found there amongst *Pinus nigra* and a profusion of orchids which took her breath away; in issue 20.

What brought on this Newsletter kerfuffle? It was the occasion of the Column's complete upgrade of the index, to cover some 41 botanical classification (BC) changes in one year. Reports for one unchanging orchid could be spread over 1-10 different BCs! The Column for one had no show of remembering all these so, after reference to Ian St George's draft list (this

issue), each orchid's reports were brought up to their present BCs and each old BC had the latest one inserted beside it for reference. Journal 83 was included of course and, in response to calls from David McConachie and Gordon Sylvester, the first 20 Newsletters were added in too. Kevin Ross had already indexed these BUT most BCs had changed since then so Kevin's index went to one side whilst the records therein were drawn again from source; a most rewarding process. How can you lay hands on a copy of an index, issues 1-84 inclusive?

1. Either send \$6 (cost-of-materials and postage only) to Eric Scanlen, 4 Sunny Park Ave, Papakura, Auckland 1703, to receive a copy along with Journal 85 in 3 month's time. The index is complete with a mini-encyclopaedic keyword section, plus alphabetical author listing, orchid sites and feature articles;
2. or send \$7 and you will get one index under separate cover within a week;
3. or, if you have MS Publisher 2000 on your computer, and you don't mind printing all 44 pages, e-mail eamscanlen@xtra.co.nz for a free copy by e-mail.

NZ orchid books sought

I am trying to assemble a library of books on Australasian orchids.

To date I have only a few books on New Zealand Orchids.

I seek Ian St George: *Wild Orchids of the far South of NZ.*

Ian St George: *Historical series* No 1 to 11: *Colenso on orchids. Orchid papers of E.D. Hatch Vol. 1 & 2. Cheeseman on orchids. The N.Z. orchids: references & illustrations. Orchid extracts from the Matthews correspondence. The Hookers on the N.Z. orchids. Orchids in the Transactions Pt.1 & Pt.2. Orchids of the Wellington district. Miscellaneous early writing on the N.Z. orchids Pt. 1. 1769 - 1832*

If you have any of the above or any titles that you feel may be relevant please contact me.

Grahame Muller, P.O. Box 4192, TINANA, Qld, 4650, Australia.
or email me at books@orchidaceousbooks.com.au

Orchid keys—5: Graeme Jane

The single long narrow leaf of *Thelymitra* distinguishes the genus from all others except *Calochilus* and the latter can often be identified by a blue-green almost glaucous leaf and large stem bracts. The individual species of *Thelymitra* can sometimes be identified by the leaves although not with certainty. The following key might prove useful:

Thelymitra leaf key

1	Leaf less than 5 cm long, spiralled around stem	matthewsii
	Leaf more or less straight, occ. curled	2
2	Leaf broad, flat	3
	Leaf narrow, flat, cupped or V-shaped	7
3	Leaf long drooping on the ground, veins strongly evident	longifolia/aff. longifolia
	Leaf held more or less erect or arcing outwards	4
4	Leaf short, curved in plane of leaf	5
	Leaf straight but may be curved outwards, or at tip	6
5	Leaf tip rounded, leaf thin	intermedia
	Leaf tip acute, leaf thick	"comet"
6	Back of leaf rough, 1 pair parallel veins	"rough leaf"
	Back of leaf smooth, 2 pair parallel veins	malvina/tholiformis
7	Leaf flat or channelled in section	8
	Leaf V-shaped in section	13
8	Leaves papillose, at least below	9
	Leaves smooth below	11
9	Leaf wiry, stem zig-zagged	carnea
	Leaf thick but not wiry	10
10	Midrib strongly evident below	nervosa
	Midrib scarcely visible	aff. ixioides
11	Sheath keeled	12
	Sheath smooth	"Whakapapa"
12	A pair of lateral veins evident	hatchii
	Lateral veins weakly evident	"sky"
13	Leaf strongly sheathing at the base	14
	Leaf scarcely sheathing at base	15
14	leaf dull above; straight	formosa
	Leaf glossy above; off-set at base	aemula
15	Leaves tapering to margins	"Ahipara"/pauciflora
	Leaves abruptly margined, rounded	16
16	Leaf margins recurved	x dentata
	Leaf margins thick rounded	17
17	Leaf, in section, of 3 "lobes" including lower midrib	cyanea
	Leaf deeply channelled, a thick U	pulchella/sanscilia

The flowers provide a more certain means of identification. Flower colour can be useful in some instances but in several species it can range from deep blue to mauve and magenta and occasionally pink. The column at the centre of the flower and its appendages are the most reliable parts of the flower to use in identification. The top of the column may be open and almost tubular or arched over and enclosing. The top of the column can also be variously ornamented. Appendages are often present, forward pointing ones being referred to as the column arms. Again this can be variously ornamented and shaped. These characters can often be used to identify a species long after the flower has shrivelled. The following key uses a wide range of characters but careful examination of the column is often required.

Key to species based largely on flowers

1	Leaf small, strongly spiralled (Northland)	matthewsii
	Leaf over 4 cm, twisted but not spiralled	2
2	Petals spotted or prominently striped	3
	Petals plain	8
3	Petals spotted	4
	Petals striped	5
4	Column top serrate; column blue with pale margins	nervosa
	Column top irregularly castellate; column pale blue with violet band near the top	aff. ixioides
5	Column arms without cilia	6
	Column arms ciliate	7
6	Column arms yellow, spiralled	cyanea
	Column arms white, curved upwards	sanscilia
7	Column arms densely ciliate	x dentata
	Column arms sparsely ciliate towards the tip only	pulchella
8	Flowers white or tinged pink	9
	Flowers variously coloured	10
9	Flowers scented, all open simultaneously	aff longifolia
	Flowers not scented, open in sequence	longifolia
10	Column arms lacking cilia	carnea
	Column arms ciliate	11
11	Top of column erect edges serrate or castellate	12
	Top of column domed or curved inwards	14
12	Top of column even, horseshoe shaped with a notch at the back	hatchii
	Top of column castellate, strongly sloping backwards;	13
13	Petals long narrow, pointed; column arms, white ciliate above	formosa
	Petals broad with a pinched tip; column arms reddish, ciliate above and below	aemula
14	Back of column smooth	14
	Back of column warty	nervosa
15	Column top more or less rounded	16
	Column top deeply cleft of an infolded, castellate top	tholiformis
16	Column top much narrowed above the column wings to form box-like top	17
	Column top scarcely narrower than the wings	18
17	Leaf broad, strongly ribbed	malvina
	Leaf V-shaped	"Ahipara"
18	Stem and leaf brownish purple	19
	Stem and leaf light to dark green	20
19	Flowers very pale mauve/blue	"Whakapapa
	Flowers deep purplish blue	"darkie"
20	Column top forming a broad, rounded open V	intermedia
	Column top hooded over and downward or forward pointing	21
21	Column forward edge weakly cleft	22
	Column forward edge rounded, toothed in side profile	23
22	Cilia of column arms sparse and held free of column top; flower blue	aff. pauciflora
	Cilia of column arms dense and held close against the column; flower pale blue/mauve	"comet"
23	Leaf rough to touch	"rough leaf"
	Leaf smooth to touch	"sky"

The New Zealand orchids: a list of synonyms with brief notes

by Ian St George.

While I am greatly indebted to Graeme Jane, Eric Scanlen and Peter de Lange for helpful criticism and careful editing, the responsibility for the final list and comments is mine.

***Acianthus* R.Br. *Prodr.* 1: 321 (1810) (*Acianthus* alliance).**

Acianthus sinclairii Hook.f. *Fl. Nov. Zel.* 1: 245 (1853).

Acianthus fornicatus var. *sinclairii* (Hook.f.) Hatch. *Trans. Roy. Soc. N.Z.* 75: 369 (1945).

***Adelopetalum* Fitzg., *J. Bot.* 29: 152 (1891) (*Bulbophyllum* alliance).**

Adelopetalum tuberculatum (Col.) D.L.Jones, M.A.Clem. & Molloy. *Orchadian* 13(11): 498 (2002).

Bulbophyllum tuberculatum Col. *Trans. N.Z. I.* 16: 336 (1884).

Bulbophyllum exiguum as meant by Buchanan. *Trans. N.Z. I.* 16: 397 (1884), is not that of F.Muell. (1860).

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

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

***Aporostylis* Rupp & Hatch. *Proc. Linn. Soc. N.S.W.* 70: 60 (1946).**

Aporostylis bifolia (Hook.f.) Rupp & Hatch. *Proc. Linn. Soc. N.S.W.* 70: 60 (1946).

Caladenia bifolia Hook.f. *Fl. Nov. Zel.* 1: 247 (1853).

Chiloglottis traversii F.Muell. *Veg. Chath. Is.* 51 (1864).

Caladenia macrophylla Col. *Trans. N.Z. I.* 27: 396 (1895).

Chiloglottis bifolia (Hook.f.) Schlecht. *Engl. Bot. Jb.* 45: 383 (1911).

***Anzybas* D.L.Jones & M.A.Clem. *Orchadian* 13(9): 442 (2002) (*Corybas* alliance).**

Anzybas carsei (Cheesem.) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 443 (2002).

Corysanthes carsei Cheesem. *Trans. N.Z. I.* 44: 162 (1912).

Corybas carsei (Cheesem.) Hatch. *Trans. Roy. Soc. N.Z.* 75: 367 (1945).

Corybas unguiculatus as meant by Moore. *Fl. N.Z. Vol II* 116: (1970) is not *Corysanthes unguiculatus* of R. Br. (1810).

Anzybas rotundifolius (Cheesem.) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 443 (2002).

Nematoceras rotundifolia Hook.f. *Fl. Nov. Zel.* 1: 251 (1853).

Corysanthes rotundifolia (Hook.f.) Hook.f. *Handbk. N.Z. Fl.* 266 (1864).

Corybas rotundifolius (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).

Corysanthes matthewsii Cheesem. *Trans. N.Z. I.* 31: 351 (1899).

Corybas unguiculatus as meant by Hatch. *Trans. Roy. Soc. N.Z.* 75: 367 (1945), is not *Corysanthes unguiculatus* of R.Br. (1810).

***Calochilus* R.Br. *Prodr.* 1: 320 (1810) (*Thelymitra* alliance).**

***Calochilus* aff. *herbaceus*.**

Calochilus herbaceus McCrae *N.Z.N.O.G. Newsl.* 24: 9 (1987).

Calochilus campestris as meant by Hatch. *Trans. Roy. Soc. N.Z.* 77: 248 (1949), is not that of R.Br. (1810).

Calochilus paludosus R.Br. *Prodr.* 1: 320 (1810).

Calochilus robertsonii Benth. *Fl. Austr.* 6: 315 (1873).

Calochilus campestris as meant by Fitzg. *Austr. Orch.* 1(4): t.6 (1878), is not that of R.Br. (1810).

Calochilus campestris as meant by Cheesem. *Man. N.Z. Fl.* 686 (1906), is not that of R.Br. (1810).

***Chiloglottis* R.Br. *Prodr.* 1: 322 (1810).**

Chiloglottis cornuta Hook.f. *Fl. Antarct.* 1: 69 (1844).

Caladenia cornuta (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).

Simpliglottis cornuta (Hook.f.) Szlach. *Polish Bot. J.* 46(1): 13 (2001).

Chiloglottis trapeziformis Fitzg. *Austr. Orch.* 1(3): t.10 (1877).

Chiloglottis formicifera as meant by Cheesem. *Trans. N.Z. I.* 33: 312 (1900), is not that of Fitzg. (1877).

Chiloglottis valida D.L.Jones. *Austr. Orch. Research* 2: 43 (1991).
Simpliglottis valida (D.L.Jones) Szlach. *Polish Bot. J.* 46(1): 14 (2001).
Chiloglottis gunnii as meant by Molloy. *Native orchids of N.Z.* 9 (1983), is not that of Lindl. (1840).

***Corunastylis* Fitzg. *Austr. Orch.* 2 (3): t.1 (1888) (Prasophyllum alliance).**

Corunastylis nuda (Hook.f.) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 461 (2002).

Prasophyllum nudum Hook.f. *Fl. Nov. Zel.* 1: 242 (1853).

Prasophyllum tunicatum Hook.f. *Fl. Nov. Zel.* 1: 242 (1853).

Prasophyllum variegatum Col. *Trans. N.Z. I.* 20: 208 (1888).

Genoplesium nudum (Hook.f.) D.L.Jones & M.A.Clem. *Lindleyana* 4(3): 144 (1989).

Corunastylis pumila (Hook.f.) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 461 (2002).

Prasophyllum pumilum Hook.f. *Fl. Nov. Zel.* 1: 242 (1853).

Genoplesium pumilum (Hook.f.) D.L.Jones & M.A.Clem. *Lindleyana* 4(3): 144 (1989).

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

Corybas cheesemanii (Kirk) Kuntze. *Rev. Gen. Plant.* 6: 657 (1891).

Corysanthes cheesemanii Hook.f. ex Kirk. *Trans. N.Z. I.* 3: 180 (1871).

Corybas aconitiflorus as meant by Hatch. *Trans. Roy. Soc. N.Z.* 75: 367 (1945), is not that of Salisbury (1807).

***Cryptostylis* R.Br. *Prodr.* 1: 317 (1810).**

Cryptostylis subulata (Labill.) Reichb.f. *Beitr. Syst. Pflk.* 15 (1871).

Malaxis subulata Labill. *Nov. Holl. Spec. Pl.* 2: 62 t.212 (1806).

***Cyrtostylis* R.Br. *Prodr.* 1: 322 (1810).**

Cyrtostylis oblonga Hook.f. *Fl. Nov. Zel.* 1: 246 (1853).

Acianthus reniformis var. *oblonga* (Hook.f.) Rupp & Hatch. *Proc. Linn. Soc. N.S.W.* 70: 59 (1946).

Cyrtostylis reniformis R.Br. *Prodr.* 1: 322 (1810).

Cyrtostylis rotundifolia Hook.f. *Fl. Nov. Zel.* 1: 246 (1853).

Cyrtostylis macrophylla Hook.f. *Fl. Nov. Zel.* 1: 246 (1853).

Caladenia reniformis (R.Br.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).

Cyrtostylis oblonga (Hook.f.) var. *rotundifolia* (Hook.f.) Cheesem. *Man. N.Z. Fl.* 685 (1906).

Acianthus reniformis (R.Br.) Schlecht. *Engl. Bot. Jb.* 34: 39 (1906).

Acianthus reniformis var. *reniformis* (Hook.f.) Rupp & Hatch. *Proc. Linn. Soc. N.S.W.* 70: 59 (1946).

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

Danhatchia australis (Hatch) Garay & Christenson. *Orchadian* 11(10): 469 f.471 (1995).

Yuania australis Hatch. *Trans. Roy. Soc. N.Z. (Bot.)* 2: 185 (1963).

***Drymoanthus* Nicholls. *Vict. Naturalist* 59: 173-5 f. (1943).**

Drymoanthus adversus (Hook.f.) Dockrill. *Australasian Sarcanthinae* 32 t.3 (1967).

Sarcochilus adversus Hook.f. *Fl. Nov. Zel.* 1: 241 (1853).

Sarcochilus breviscapa Col. *Trans. N.Z. I.* 14: 332 (1882).

Drymoanthus flavus St George & Molloy. *N.Z. J. Bot.* 32: 416 f.1 (1994).

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

Earina aestivalis Cheesem. *Trans. N.Z. I.* 51: 93 (1919).

Earina autumnalis (Forst.f.) Hook.f. *Fl. Nov. Zel.* 1: 239 (1853).

Epidendrum autumnale Forst.f. *Prodr.* 60 (1786).

Earina suaveolens Lindl. *Bot. Reg.* 29 (1843).

Earina alba Col. *Trans. N.Z. I.* 18: 267 (1886).

Earina mucronata Lindl. *Bot. Reg.* 20 sub t.1699 (1834).

Earina quadrilobata Col. *Trans. N.Z. I.* 15: 325 (1883).

***Gastrodia* R.Br. *Prodr.* 1: 330 (1810).**

Gastrodia cunninghamii Hook.f. *Fl. Nov. Zel.* 1: 251 (1853).

Gastrodia leucopetala Col. *Trans. N.Z. I.* 18: 268 (1886).

Gastrodia minor Petrie. *Trans. N.Z. I.* 25: 273 t20 f5–7 (1893).

Gastrodia “long column” agg: there are a number of undescribed *Gastrodia* with a long column.

Gastrodia aff. *sesamoides*.

Gastrodia sesamoides as meant by Cheesem. *Man. N.Z. Fl.* 697 (1906), is not that of R.Br. (1810).

Gastrodia “city” appears to be a variant.

***Ichthyostomum* D.L.Jones, M.A.Clem. & Molloy. *Orchadian* 13(11): 499 (2002) (Bulbophyllum alliance).**

Ichthyostomum pygmaeum (Smith) D.L.Jones, M.A.Clem. & Molloy. *Orchadian* 13(11): 499 (2002).

Dendrobium pygmaeum Smith. *Rees' Cyclop.* 11: n.27 (1808).

Bulbophyllum pygmaeum (Smith) Lindl. *Gen. & Spec. Orch. Pl.* 58 (1830).

Bulbophyllum ichthyostomum Col. *Trans. N.Z. I.* 26: 319 (1894).

***Microtis* R.Br. *Prodr.* 1: 320 (1810) (Prasophyllum alliance).**

Microtis arenaria Lindl. *Gen. & Spec. Orch. Pl.* t.306 (1840).

Microtis biloba Nicholls. *Vict. Naturalist* 66: 93 f.J-L (1949).

Microtis oligantha Moore. *N.Z. J. Bot.* 6: 473 f.1 (1969).

Microtis magnadenia as meant by Hatch. in *Trans. Roy. Soc. N.Z. (Bot.)* 2: 185-9 (1963), is not that of Rogers (1930).

Microtis parviflora R.Br. *Prodr.* 1: 321 (1810).

Microtis javanica Reichb.f. *Bonplandia* 5: 36 (1857).

Microtis benthamiana Reichb.f. *Beitr. Syst. Pflk.* 24 (1871).

Microtis porrifolia (Sw.) R.Br. ex Spreng. var. *parviflora* (R.Br.) Rodway. *Tasm. Fl.* 159 (1903).

Microtis aemula Schlecht. *Bot. Jahrb. Syst.* 39: 37 (1906).

Microtis bipulvinaris Nicholls. *Vict. Naturalist* 66: 92-4, f.A-F (1949).

Microtis holmesii Nicholls. *Vict. Naturalist* 66: 93 f.G-I (1949).

***Microtis unifolia* (Forst.f.) Reichb.f. *Beitr. Syst. Pflk.* 62 (1871).**

Ophrys unifolia Forst.f. *Fl. Ins. Austr.* 59 (1786).

Epipactis porrifolia Sw. *Kongl. Vetensk. Acad. Nya. Handl.* 21: 233 (1800).

Microtis porrifolia (Sw.) R.Br. ex Spreng. *Syst. Veget.* 3: 713 (1826).

Microtis banksii A.Cunn. *Bot. Mag.* 62: sub t.3377 (1835).

Microtis frutetorum Schldt. *Linnaea* 20: 568 (1847).

Microtis viridis F.Muell. *Fragm.* 5: 97 (1866).

Microtis longifolia Col. *Trans. N.Z. I.* 17: 247 (1885).

Microtis papillosa Col. *Trans. N.Z. I.* 18: 269 (1886).

Microtis pulchella as meant by Lindley. *Gen. & Spec. Orch. Pl.* 395 (1840) is not that of R.Br. (1810).

There are a number of different taxa in the *Microtis unifolia* aggregate, perhaps including some of these.

***Molloybas* D.L.Jones & M.A.Clem. *Orchadian* 13(10): 448 (2002) (Corybas alliance).**

Molloybas cryptanthus (Hatch) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 448 (2002).

Corybas cryptanthus Hatch. *Trans. Roy. Soc. N.Z.* 83: 577 (1956).

Corybas saprophyticus Hatch. *Trans. Roy. Soc. N.Z.* 79: 366 t.71 (1952), is not that of Schlecht. (1923).

***Nematoceras* Hook.f. *Fl. Nov. Zel.* 1: 249 (1853) (Corybas alliance).**

Nematoceras acuminata (M.A.Clem. & Hatch) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).

Corybas acuminatus M.A.Clem. & Hatch. *N.Z. J. Bot.* 23: 491 (1985).

Corybas rivularis as meant by Cheesem. *Man. N.Z. Fl.* 697 (1906), and others (1906-1985) is not

Acianthus rivularis of Cunn. (1837).

***Nematoceras hypogaea* (Col.) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).**

Corysanthes hypogaea Col. *Trans. N.Z. I.* 16: 336 (1884).

***Nematoceras iridescens* (Irwin & Molloy) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).**

Corybas iridescens Irwin & Molloy. *N.Z. J. Bot.* 34: 1 (1996).

Corybas “A” tagname.

- Nematoceras longipetala*** (Hatch) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).
Corybas macranthus (Hook.f.) Reichb.f. var. *longipetalus* Hatch. *Trans. Roy. Soc. N.Z.* 76: 580 t.60 (1) (1947).
Corybas longipetalus (Hatch) Hatch. *N.Z.N.O.G. J.* 47: 6 (1993), is not that of Schlecht. (1923).
Corybas "Waiouru" tagname.
- Nematoceras macrantha*** Hook.f. *Fl. Nov. Zel.* 1: 250 (1853).
Corysanthes macrantha (Hook.f.) Hook.f. *Handbk. N.Z. Fl.* 266 (1864).
Corybas macranthus (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
 North and South Island forms differ somewhat. Possible hybrids with members of the *N. triloba* group have been reported.
- Nematoceras orbiculata*** (Col.) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).
Corysanthes orbiculata Col. *Trans. N.Z. I.* 23: 389 (1891).
Corybas orbiculatus as meant by Molloy & Irwin. *N.Z. J. Bot.* 34 (1): 5 (1996).
Corybas "short tepals" tagname.
- Nematoceras papa*** (Molloy & Irwin) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).
Corybas papa Molloy & Irwin. *N.Z. J. Bot.* 34 (1): 5 (1996).
Corybas "Mt Messenger" or *Corybas* "B" tagnames.
- Nematoceras pandurata*** (Cheesem.) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).
Corysanthes rotundifolia (is not *Nematoceras rotundifolia* of Hook.f.) var. *pandurata* Cheesem. *Man. N.Z. Fl.* 366 (1925).
 This has been regarded as a synonym of *Nematoceras rivularis*.
- Nematoceras papillosa*** (Col.) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).
Corysanthes papillosa Col. *Trans. N.Z. I.* 16: 337 (1884).
 This has been regarded as a synonym of *Nematoceras macrantha*.
- Nematoceras rivularis*** (A.Cunn.) Hook.f. *Fl. Nov. Zel.* 1: 251 (1853).
Acianthus rivularis A.Cunn. *Compan. Bot. Mag.* 2: 376 (1837).
Corysanthes rivularis (A.Cunn.) Hook.f. *Handbk. N.Z. Fl.* 266 (1864).
Corybas rivularis (A.Cunn.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
Corysanthes rotundifolia as meant by Cheesem. *Man. N.Z. Fl.* 695 (1906), is not *Nematoceras rotundifolia* of Hook.f. (1853).
Corybas orbiculatus as meant by Moore. *Fl. N.Z. Vol II* 118 (1970) and others (1970-1996), is not *Corysanthes orbiculatus* of Col. (1891).
Corybas "Kerikeri" tagname. The *Nematoceras rivularis* complex includes unnamed taxa tagged *N.* "Kaimai", *N.* "rest area", *N.* "Kaitarakihī", *N.* "whiskers", *N.* "Mangahūia", *N.* "sphagnum" and *N.* "veil".
- Nematoceras triloba*** Hook.f. *Fl. Nov. Zel.* 1: 250 (1853).
Corysanthes triloba (Hook.f.) Hook.f. *Handbk. N.Z. Fl.* 265 (1864).
Corybas trilobus (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
 Taxa in the *Nematoceras triloba* complex include the tiny May to July-flowering form *Corybas* "pygmy"; the later-flowering *N.* "Trotters" (*N.Z.N.O.G. Newsl.*; 28: 10-13 [1988]), *N.* "Rimutaka" (*N.Z.NOG Journal*; 58: 8-9 [1996]), *N.* "round leaf", *N.* "craigielea", *N.* "darkie", *N.* "trisept", *N.* "trihwhite". and others, including perhaps a tetraploid form on the Chathams (Molloy B.P.J. *Orchids of the Chatham Islands*. DOC, 2002).
- Orthoceras* R.Br. Prodr. 1: 316 (1810).**
- Orthoceras novae-zeelandiae*** (A.Rich.) M.A.Clem., D.L.Jones & Molloy. *Catalogue Austr. Orch.* 100 (1989).
Diuris novae-zeelandiae A.Rich. *Essai Fl. Nov. Zel.* 163 t.25 f.1 (1832).
Orthoceras solandri Lindl. *Gen. & Sp. Orch. Pl.* 512 (1840).
Orthoceras rubrum Col. *Trans. N.Z. I.* 18: 273 (1886).
Orthoceras caput-serpentis Col. *Trans. N.Z. I.* 22: 490 (1890).
- Orthoceras strictum*** R.Br. *Prodr.* 1: 317 (1810).
 The longer vs shorter floral bracts and pointed vs round labella are present in some N.Z. plants, suggesting *O. strictum* is in N.Z.
- Paracaleana* Blaxell. Contr. N.S.W. Natl. Herb. 4: 281 (1972).**
- Paracaleana minor*** (R.Br.) Blaxell. *Contr. N.S.W. Natl. Herb.* 4: 281 (1972).
Caleana minor R.Br. *Prodr.* 1: 329 (1810).
Caleya minor (R.Br.) Sweet. *Hort. Brit.* 385 (1827).

Caleyia sullivani F. Muell. *Chem. & Druggist, Aust. suppl.* 4: 44 (1882).
Paracaleana sullivani (F. Muell.) Blaxell. *Contr. N.S.W. Natl. Herb.* 4: 281 (1972).
Calceana nublingii Nicholls. *Vict. Naturalist* 48: 15 (1931).

***Petalochilus* Rogers. *J. Bot.* 62: 65 (1924) (Caladenia alliance).**

Petalochilus alatus (R.Br.) D.L.Jones & M.A.Clem. *Orchadian* 13(9): 406 (2001).

Caladenia alata R.Br. *Prodr.* 1: 324 (1810).

Caladenia minor Hook.f. var. *exigua* Cheesem. *Man. N.Z. Fl.* 688 (1906).

Caladenia exigua Cheesem. *Trans. N.Z. I.* 45: 96 (1913).

Caladenia carnea R.Br. var. *alata* (R.Br.) Domin. *Bilb. Bot., Stuttgart Heft.* 85: 549 (1915).

Caladenia carnea R.Br. var. *exigua* (Cheesem.) Rupp. *Proc. Linn. Soc. N.S.W.* 69: 75 (1944).

Caladenia holmesii Rupp. *Vict. Naturalist* 70: 179 (1954).

Caladenia catenata (Smith) Druce var. *exigua* (Cheesem.) W.M.Curtis. *Students' Fl. Tasm.* pt 4A: 133 (1979).

Caladenia minor may be a synonym for *P. alatus*.

Petalochilus bartlettii (Hatch) D.L.Jones & M.A.Clem. *Orchadian* 13(9): 406 (2001).

Caladenia carnea R.Br. var. *bartlettii* Hatch. *Trans. Roy. Soc. N.Z.* 77: 402 (1949).

Caladenia bartlettii (Hatch) D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(5): 227 (1997).

Petalochilus calyciformis Rogers. *J. Bot. Lond.* 62: 66 t.571, 1-3 (1924).

Moore (1970) treated this as an aberrant form.

Petalochilus chlorostylus (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones & M.A.Clem. *Orchadian* 13(9): 406 (2001).

Caladenia chlorostyla D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(5): 223 f.1 (1997).

Caladenia catenata as meant by Cooper. *Field guide to the N.Z. native orchids* 17 (1984), is not that of Druce (1917).

Caladenia "green column" tagname. Scanlen argues that *P. chlorostylus* may be a synonym for *P. minor*. A similar but distinct plant is known as *P. aff. chlorostylus*. *Arethusa catenata* and *Caladenia alba* are names used for Australian plants once confused with NZ taxa.

Petalochilus minor (Hook.f.) D.L.Jones & M.A.Clem. *Orchadian* 13(9): 410 (2001).

Caladenia minor Hook.f. *Fl. Nov. Zel.* 1: 247 t.56b (1853).

Caladenia carnea var. *pygmaea* (Rogers) Rupp. *Proc. Linn. Soc. N.S.W.* 69: 74 (1944).

Caladenia carnea R.Br. var. *minor* (Hook.f.) Hatch. *Trans. Roy. Soc. N.Z.* 77: 401 (1949).

Caladenia catenata var. *minor* (Hook.f.) W.M.Curtis. *Students' Fl. Tasm.* pt 4A: 106 (1979).

The status of *Petalochilus minor* is not clear: it may be a synonym for *P. alatus*, or perhaps for *P. chlorostylus* or may be the true identity of *P. aff. chlorostylus*.

Petalochilus nothofageti (D.L.Jones, Molloy & M.A.Clem.) Jones & M.A.Clem. *Orchadian* 13(9): 410 (2001).

Caladenia nothofageti D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12 (5): 226 f.1 (1997).

Petalochilus saccatus Rogers. *J. Bot. Lond.* 62: 66 t.571, 4-7 (1924).

Moore (1970) treated this as an aberrant form.

Petalochilus variegatus (Col.) Jones & M.A.Clem. *Orchadian* 13(9): 410 (2001).

Caladenia variegata Col. *Trans. N.Z. I.* 17: 248 (1885).

Caladenia "big pink" tagname. A form with two clear rows of calli (ie lacking the scattered calli of *P. variegatus*) otherwise looks exactly the same, but flowers at a different time: it has been called *Caladenia aff. carnea* and *C. aff. variegata*.

Petalochilus aff. fuscatus: a small pink *Petalochilus* which appears similar to this variable Australian species, with 1-3 flowers (see Scanlen. *N.Z.N.O.G. J.* 1999; 72: 22). It appears to be identical with Matthews's Ms. *Caladenia* "nitida-rosea".

Petalochilus aff. pusillus: a tiny pink *Petalochilus* with broad oval sepals and petals, an incurved dorsal sepal and a triangular labellar midlobe grows near Wellington and in Northland (W.M.Curtis. *Students' Fl. Tasm.* Pt. 4A: 133 [1980]).

***Prasophyllum* R.Br. *Prodr.* 1: 317 (1810) (Prasophyllum alliance).**

Prasophyllum colensoi Hook.f. *Fl. Nov. Zel.* 1: 241 (1853).

Prasophyllum pauciflorum Col. *Trans. N.Z. I.* 18: 273 (1886).

Prasophyllum rogersii as meant by Hatch. *Trans. Roy. Soc. N.Z.* 76: 290 (1946) is not that of Rogers & Rees 1921.

Probably a number of taxa, possibly including Irwin's *P.* "A" and *P.* "B" (*N.Z.N.O.G. J.* 79: 9-10).

***Prasophyllum* aff. *patens*:** at least one undescribed New Zealand taxon.

Gastrodia hectori Buchanan. *Trans. N.Z. I.* 19: 214 (1886).

Prasophyllum patens as meant by Cheesem. *Man. N.Z. Fl.* (1906) is not that of R.Br. (1810).

Prasophyllum suttoni as meant by Hatch. *Trans. Roy. Soc. N.Z.* 76: 291 (1946) is not that of Rüpp (1928).

***Pterostylis* R.Br. Prodr. 1: 326 (1810).**

Pterostylis agathicola D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 266 (1997).

Pterostylis montana (Hatch) var. *rubricaulis* (Cheesem.) Hatch. *Trans. Roy. Soc. N.Z.* 77: 240 pl.23 (1949).

Pterostylis graminea (Hook.f.) var. *rubricaulis* H.B.Matthews ex Cheesem. *Man. N.Z. Fl.* 351 (1925).

Pterostylis "rubricaulis" tagname.

Pterostylis alobula (Hatch) LB Moore. *N.Z. J. Bot.* 6: 486 f.3 (1969).

Pterostylis trullifolia Hook.f. var. *alobula* Hatch. *Trans. Roy. Soc. N.Z.* 77: 244 pl.30 (1949).

Pterostylis alveata Garnet. *Vict. Naturalist* 59: 91 (1939).

Pterostylis areolata Petrie. *Trans. N.Z. I.* 50: 210 (1918).

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

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

Pterostylis emarginata Col. *Trans. N.Z. I.* 15: 328 (1883).

Pterostylis speciosa Col. *Trans. N.Z. I.* 22: 488 (1890).

Pterostylis auriculata Col. *Trans. N.Z. I.* 22: 489 (1890).

Pterostylis subsimilis Col. *Trans. N.Z. I.* 28: 611 (1896).

Pterostylis banksii* var. *silvicultrix F.Muell. *Veg. Chath. Is.* 51 (1864).

***Pterostylis* aff. *banksii*:** A smaller taxon than true *P. banksii*, common around Wellington, and apparently found elsewhere (see *N.Z.N.O.G. J.* 80: 14, 19).

Pterostylis brumalis Moore. *N.Z. J. Bot.* 6: 485 f.3 (1969).

Pterostylis trullifolia Hook.f. var. *rubella* Hatch. *Trans. Roy. Soc. N.Z.* 77: 244 (1949).

Pterostylis rubella Col. *Trans. N.Z. I.* 18: 271 (1886) has been placed here and under *P. trullifolia*.

Pterostylis cardiostigma D.A.Cooper *N.Z. J. Bot.* 21: 97 (1983).

Pterostylis cernua D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 267 f (1997).

Pterostylis foliata Hook.f. *Fl. Nov. Zel.* 1: 249 (1853).

Pterostylis gracilis Nicholls. *Vict. Naturalist* 43: ~~324-6~~ (1927).

Pterostylis vereenae Rogers. *Trans. Roy. Soc. S.A.* 38: ~~360-1~~ f.18 (2) (1914).

Pterostylis graminea Hook.f. *Fl. Nov. Zel.* 1: 248 (1853).

There may be several taxa in the *P. graminea* complex, including one tagged *P.* "sphagnum".

Pterostylis humilis Rogers. *Trans. Roy. Soc. S. A.* 46: 151 (1922).

Pterostylis irsoniana Hatch. *Trans. Roy. Soc. N.Z.* 78: 104 t.18 (1950).

Pterostylis irwinii D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 269 (1997).

Pterostylis "Erua" tagname.

Pterostylis micromega Hook.f. *Fl. Nov. Zel.* 1: 248 (1853).

Pterostylis polyphylla Col. *Trans. N.Z. I.* 22: 489 (1890).

Pterostylis furcata Lindl. var. *micromega* Hatch. *Trans. Roy. Soc. N.Z.* 80: 326 (1953).

Pterostylis montana Hatch. *Trans. Roy. Soc. N.Z.* 77: 239 t.22 (1949).

***Pterostylis* aff. *montana* agg:** includes several undescribed taxa.

Pterostylis nutans R.Br. *Prodr.* 1: 327 (1810).

Pterostylis matthewsii Cheesem. *Trans. N.Z. I.* 47: 46 (1915).

Pterostylis oliveri Petrie. *Trans. N.Z. I.* 26: 270 (1894).

Pterostylis paludosa D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 271 (1997).

Pterostylis montana Hatch. var. *linearis* Hatch. *Trans. Roy. Soc. N.Z.* 77: 243 pl.29, 2 (1949).

Pterostylis "linearis" tagname.

Pterostylis patens Col. *Trans. N.Z. I.* 18: 270 (1886).

Pterostylis banksii Hook.f. var. *patens* (Col.) Hatch. *Trans. Roy. Soc. N.Z.* 75: 370 (1945).

- Pterostylis porrecta*** D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 272 (1997).
Pterostylis aff. *graminea*.
- Pterostylis puberula*** Hook.f. *Fl. Nov. Zel.* 1: 249 (1853).
Pterostylis nana as meant by Hatch. *Trans. Roy. Soc. N.Z.* 77: 237 (1949), is not that of R.Br. (1810).
Pterostylis aff. *nana*.
- Pterostylis tanypoda*** D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 273 (1997).
Pterostylis cynocephala as meant by Moore. *Fl. N.Z. Vol II* 135 (1970) and others (1970-1997), is not that of Fitzg. (1876).
- Pterostylis tasmanica*** D.L.Jones. *Muelleria* 8(2): 177 (1994).
Pterostylis squamata as meant by Hook.f. *Fl. Nov. Zel.* 1: 249 (1853), is not that of R.Br. (1810).
Pterostylis barbata as meant by Cheesem. *Man. N.Z. Fl.* 683 (1906), is not that of Lindl. (1840).
Pterostylis plumosa as meant by Cooper. *Field guide to N.Z. native orchids* 51 (1981), is not that of Cady (1969).
Plumatochilos tasmanicus (D.L.Jones) Szlach. *Polish Bot. J.* 46(1): 23 (2001).
- Pterostylis tristis*** Col. *Trans. N.Z. I.* 18: 271 (1886).
Pterostylis mutica as meant by Cheesem. *Trans. N.Z. I.* 15: 300 (1883), is not that of R.Br. (1810).
- Pterostylis trullifolia*** Hook.f. *Fl. Nov. Zel.* 1: 249 (1853).
Pterostylis trullifolia Hook.f. var. *gracilis* Cheesem. *Trans. N.Z. I.* 47: 271 (1915).
Pterostylis rubella Col. *Trans. N.Z. I.* 18: 271 (1886).
- Pterostylis venosa*** Col. *Trans. N.Z. I.* 28: 610 (1896).
Pterostylis confertifolia Allan. *Trans. N.Z. I.* 56: 32 (1926).
Pterostylis trifolia Col. *Trans. N.Z. I.* 31: 281 (1899).
- Pterostylis* “Catlins”** is undescribed; see St George. *Wild orchids in the far south of N.Z.* (1992).
- Singularibas* (Hook.f.) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002) (Corybas alliance).**
- Singularibas oblongus* (Hook.f.) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 449 (2002).**
Nematoceras oblonga Hook.f. *Fl. Nov.Zel.* 1: 250 t.57B (1853).
Corysanthes oblonga (Hook.f.) Hook.f. *Handb. N.Z. Fl.* 266 (1864).
Corybas oblongus (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
 There are two or three taxa included in this complex. One was named in manuscript by Matthews as *Corybas* “aestivalis”.
- Spiranthes* L.C.Rich. *Orchideas Eur. Annot.* 20, 28, 36 (1817).**
- Spiranthes novae-zelandiae*** Hook.f. *Fl. Nov. Zel.* 1: 243 (1853).
Spiranthes australis as meant by Hook.f. *Handb. N.Z. Fl.* 272 (1864), is not that of Lindl. (1824).
Spiranthes sinensis as meant by Rüpp & Hatch. *Proc. Linn. Soc. N.S.W.* 70: 58 (1946), is not that of Ames (1908).
Spiranthes lancea as meant by Hatch. *Trans. Roy. Soc. N.Z.* 82: 614 (1954), is not that of Backer, van den Brink & van Steenis (1950).
 The name *Neottia sinensis* was never applied to N.Z. plants.
- Spiranthes* “Motutangī”** tagname for endangered Far North taxon similar to *S. australis*.
- Stegostyla* D.L.Jones & M.A.Clem. *Orchadian* 13(9): 411 (2001) (Caladenia alliance).**
- Stegostyla* aff. *alpina*.** Plants closer to *S. alpina* than to *S. lyallii* are in N.Z. See St George. *N.Z.N.O.G. J.* 63: 4 (1997).
- Stegostyla atradenia*** (D.L.Jones, Molloy & M.A.Clem.) D.L.Jones & M.A.Clem. *Orchadian* 13(9): 414 (2001).
Caladenia carnea R.Br. var. *minor* forma *calliniger* Hatch. *Trans. Roy. Soc. N.Z. (Bot)* 2: 187 (1963).
Caladenia atradenia D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12 (5): 221 (1997).
Caladenia iridescens as meant by Hatch. *N.Z.N.O.G. Newsl.* 16: 1 (1985) is not that of Rogers (1920).
 “*Caladenia calliniger*”, *Caladenia* aff. *iridescens* tagnames.
- Stegostyla lyallii*** (Hook.f.) Jones & M.A.Clem. *Orchadian* 13(9): 413 (2001).
Caladenia lyallii Hook.f. *Fl. Nov. Zel.* 1: 247 (1853).
 There seem to be further taxa currently included in *S. lyallii* agg. including a small form from Iwitahi and Nelson Lakes.

***Thelymitra* J.R.Forster & Forst.f. Char. Gen. Pl. 97 t.49 (1776) (Thelymitra alliance).**

Thelymitra aemula Cheesem. *Trans. N.Z. I.* 51: 94 (1919).

Thelymitra carnea R.Br. *Prodr.* 1: 314 (1810).

Thelymitra imberbis Hook.f. *Fl. Nov. Zel.*; 1: 244 (1853).

Thelymitra carnea R.Br. var. *imberbis* (Hook.f.) Rupp & Hatch. *Proc. Roy. Soc. N.S.W.* 70: 59 (1946).

***Thelymitra cyanea* (Lindl.) Benth. *Fl. Austr.* 6: 323 (1873).**

Macdonaldia cyanea Lindl. *Bot. Reg.* 25 (1840).

Thelymitra uniflora Hook.f. *Fl. Antarct.* 1: 70 (1844).

Thelymitra venosa as meant by Cheesem. *Man. N.Z. Fl.* 671 (1906), is not that of R.Br. (1810).

Thelymitra venosa R.Br. var. *typica* Hatch, var. *cedricsmithii* Hatch, var. *cyanea* Hatch. *Trans. Roy. Soc. N.Z.* 79: 390-1 (1952).

Thelymitra xdentata: a sterile hybrid of *T. longifolia* x *T. pulchella*.

Thelymitra colensoi Hook.f. *Handbk. N.Z. Fl.* 271 (1864) has also been identified with *T. intermedia* Bergg.

Thelymitra dentata Moore. *N.Z. J. Bot.* 6: 478 f.2 (1969).

***Thelymitra formosa* Col. *Trans. N.Z. I.* 16: 338 (1884).**

Thelymitra circumsepta as meant by Hatch. *N.Z.N.O.G. J.* 65: 8 (1997), is not that of Fitzg. (1878).

***Thelymitra hatchii* Moore. *N.Z. J. Bot.* 6: 477 f.2 (1969).**

Thelymitra pachyphylla as meant by Hatch. *Trans. Roy. Soc. N.Z.* 79: 394 pl.79 D-H (1952), is not that of Cheesem. (1906).

***Thelymitra intermedia* Bergg. *Minneskr. Fisiog. Sallsk. Lund* 8: 21 f (1878).**

Thelymitra longifolia J.R.Forster & Forst.f. var. *stenopetala* Hatch. *Trans. Roy. Soc. N.Z.* 79: 396 pl.80 F-H (1952).

Thelymitra longifolia J.R.Forster & Forst.f. var. *intermedia* Hatch. *Trans. Roy. Soc. N.Z.* 79: 396 pl.80 J (1952).

Was tagged *T. "pseudopauciflora"* for a time. *Thelymitra colensoi* Hook.f. *Handbk. N.Z. Fl.* 271 (1864) has been identified with *T. intermedia* but the description does not fit well.

***Thelymitra* aff. *ixioides*.**

Thelymitra ixioides as meant by Hook.f. *Handb. N.Z. Fl.* 669 (1864), is not that of Swartz (1800).

Thelymitra ixioides var. *typica* (Hook.f.) Rupp & Hatch. *Proc. Linn. Soc. N.S.W.* 70: 59 (1945).

T. ixioides is insect pollinated in Australia - the N.Z. taxon is not.

***Thelymitra longifolia* J.R.Forster & Forst.f. Char. Gen. Pl. 98 t.49 (1776).**

Serapias regularis Banks & Sol. ex Forst.f. *Prodr.* 59 (1776).

Thelymitra forsteri Swartz. *K. Svenska Vet. Akad. Handl.* 21: 228 (1800).

Thelymitra nemoralis Col. *Trans. N.Z. I.* 17: 249 (1885).

Thelymitra purpureofusca Col. *Trans. N.Z. I.* 17: 249 (1885).

Thelymitra alba Col. *Trans. N.Z. I.* 18: 272 (1886).

Thelymitra cornuta Col. *Trans. N.Z. I.* 20: 206 (1888).

Thelymitra longifolia J.R.Forster & Forst.f. var. *alba* (Col.) Cheesem. *Man. N.Z. Fl.* 339 (1925).

Thelymitra longifolia J.R.Forster & Forst.f. var. *forsteri* Hatch. *Trans. Roy. Soc. N.Z.* 79: 396 pl.80 B-E (1952).

Thelymitra aristata as meant by Hatch. *Trans. Roy. Soc. N.Z.* 79 pl. 79-80 (1952), is not that of Lindl. (1840).

***Thelymitra* aff. *longifolia* agg:** some undescribed taxa that appear to be insect-pollinated.

***Thelymitra malvina* M.A.Clem., D.L.Jones & Molloy. *Austr. Orch. Research* 1: 141 (1989).**

***Thelymitra matthewsii* Cheesem. *Trans. N.Z. I.* 43: 177 (1911).**

***Thelymitra nervosa* Col. *Trans. N.Z. I.* 20: 207 (1888).**

Thelymitra decora Cheesem. *Man. N.Z. Fl.* 1151 (1906).

***Thelymitra* aff. *pauciflora* agg.**

Thelymitra pauciflora as meant by Cheesem. *Man. N.Z. Fl. 2nd Ed.* 340 (1925), and others until now, is not that of R.Br. (1810).

***Thelymitra pulchella* Hook.f. *Fl. Nov. Zel.* 1: 244 (1853).**

Thelymitra concinna Col. *Trans. N.Z. I.* 20: 207 (1888).

Thelymitra fimbriata Col. *Trans. N.Z. I.* 22: 490 (1890).

Thelymitra pachyphylla Cheesem. *Man. N.Z. Fl.* 1151 (1906).

Thelymitra caesia Petrie. *Trans. N.Z. I.* 51: 107 (1919).

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

Thelymitra sanscilii Irwin ex Hatch. *Trans. Roy. Soc. N.Z.* 79: 397 pl. 81 B-E (1952).

Thelymitra tholiformis Molloy & Hatch. *N.Z. J. Bot.* 28: 111 f.1 (1990).

Thelymitra intermedia as meant by Moore. *Fl. N.Z. Vol II* 129 (1970), is not that of Berggr. (1878).

Thelymitra “**Ahipara**”: a cleistogamous, unnamed taxon from the far north.

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

Thelymitra “**Whakapapa**”: undescribed taxon from Ruapehu, may be *Thelymitra purpureofusca* Col. *Trans. N.Z. I.* 17: 249 (1885).

Thelymitra “**darkie**”: undescribed taxon from the Far North.

Thelymitra “**rough leaf**”: undescribed taxon from the Far North.

Thelymitra “**sky**”: undescribed taxon from the Far North.

***Townsonia* Cheesem. *Man. N.Z. Fl.* 692 (1906). (*Acianthus* alliance).**

Townsonia deflexa Cheesem. *Man. N.Z. Fl.* 692 (1906).

Townsonia viridis as meant by Schlecht. *Fedde Repert. Spec. Nov. Regn. Veg.* 9: 250 (1911), is not *Acianthus viridis* of Hook.f. (1860).

Acianthus viridis as meant by Moore. *Fl. N.Z. Vol II* 107 (1970), is not that of Hook.f. (1860).

***Waireia* D.L.Jones, M.A.Clem. & Molloy. *Orchadian* 12(6): 282 (1997).**

Waireia stenopetala (Hook.f.) D.L.Jones, M.A.Clem. & Molloy. *Orchadian* 12(6): 282 (1997).

Thelymitra stenopetala (Hook.f.) *Fl. Antarct.* 1: 69 (1844).

Lyperanthus antarcticus Hook.f. *Fl. Antarct.* 2: 544 (1847).

***Winika* M.A.Clem., D.L.Jones & Molloy. *Orchadian* 12(5): 214 (1997).**

Winika cunninghamii (Lindl.) M.A.Clem., D.L.Jones & Molloy. *Orchadian* 12(5): 214 (1997).

Dendrobium biflorum as meant by A. Rich. *Essai Fl. Nov. Zel.* 221 (1832), is not that of Swartz (1800).

OUT THEY GO!!

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This is taken from the introduction to **Gillman MP & Dodd ME: Orchid population variability. *Bot. J. Linn. Soc.* 1998. 126 (1 & 2: Orchid population biology, conservation and challenges, Ed. S Waite): 65-74.**

There is much anecdotal evidence to suggest that the numbers of plants in orchid populations are highly variable. Orchid enthusiasts returning to a site year after year have often been struck by the apparently large fluctuations in numbers (usually of flowering plants) over time. For example, Summerhayes (1968) remarked of the bee orchid (*Ophrys apifera*):

The uncertainty of finding the plant at all is always accompanied by the entrancing possibility of discovering immense numbers of individuals where previously the number has never risen above half a dozen per year.

It also appears that these populations are spatially variable, with plants being abundant at one location and then, a few metres away, absent. Is this temporal and spatial fluctuation peculiar to orchids or is it just that orchids receive much more attention than most other herbaceous plants? Until now there has been no quantitative analysis of the amount of variation in orchid population size. Indeed whilst variation in animal populations has received a great deal of attention there has been little work on variation in plant populations.

Temporal variation is interesting for two related reasons. First, it gives information on the potential for local population extinction - a highly variable population is expected to have a higher probability of extinction over a given period of time - and second it provides insights into population regulation. Recent reviews and analyses have supported earlier contentions that populations are characterized by an increase in variability with increasing census duration. This result may follow from one or a combination of the following two mechanisms. First, environmental fluctuations are characterized by oscillations or trends on a number of different time-scales. A population that

follows these fluctuations will then show increasing variability with census duration. The second possibility is that population size is autocorrelated over time, e.g. a first order (lag 1) autocorrelation described by an equation with variables for population size, time and a value in a probability distribution (e.g. normal). For values drawn at random and independently from the probability distribution in each year, population variability will increase with census duration.

In the first mechanism an analogy is with the decomposition of light into a series of waves of different frequencies. If there are equal amounts of all frequencies of fluctuation this is termed white noise in which the variance does not increase with census duration. With white noise the relative importance of high frequency (short time-scale) fluctuations is greater than long-term fluctuations. Beyond white noise is a so-called reddened spectrum within which low frequency (long time-scale) events increasingly predominate. Within this spectrum there are three characteristic forms: pink, brown and black noise. Brown noise (from Brownian motion) is typical of a population undertaking a random walk in size over time and emphasizes relatively long-scale (low frequency) events over short-term events. Pink noise is intermediate between white and brown. Black noise is characterized by some external forcing on the population, such as changing carrying capacity [1, 2].

References

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2. Halley JM. Ecology, evolution and 1/f noise. *Trends in ecology and evolution* 1996; 11: 33-37.

Pollination ecology of New Zealand orchids

By Carlos A. Lehnebach, Palmerston North

The abstract of a thesis presented in partial fulfilment of the requirements for the degree of Master of Science in Ecology at Massey University, reprinted from Winika, the journal of the Manawatu Orchid Society.

The New Zealand orchid flora comprises twenty-five genera and at least 100 species occurring throughout the country. Although the number of endemic species is high (69%) only four genera are endemic to New Zealand. The main physical threats to orchid survival in New Zealand are habitat destruction, modification and fragmentation. The effect of the disruption of interactions with their pollinators has never been considered. This study concentrates on this mutualistic interaction, by assessing the breeding system, pollination syndromes and pollinator-dependence of four widespread terrestrial (*Gastrodia cunninghamii*, *Thelymitra longifolia*, *Pterostylis alobula* and *P. patens*) and four widespread epiphytic orchids (*Earina autumnnalis*, *E. aestivalis*, *E. mucronata* and *Winika cunninghamii*) occurring in the southern portion of the North Island.

In order to determine the breeding system and the presence of self-incompatibility, hand-pollination treatments were conducted in all eight orchid species during the flowering seasons of 2001 and 2002. Pollen grains and ovules numbers, pollen:ovule ratio and presence of floral scent glands were assessed. In those nectariferous species (*E. autumnnalis*, *E. aestivalis*, *E. mucronata* and *W. cunninghamii*), the nectar standing crop was determined using the anthrone colorimetric assay for total carbohydrates. The activity of pollinator was observed both in the field and in captivity. Insects observed foraging in these orchids were identified and ranked according to their likely pollination effectiveness. Finally, measurements of pollination success and pollinia removal and

deposition were used to assess whether fruit-set is pollen limited in these species and explore the effect contrasting rewarding strategies (nectar v/s deception) has on the pollination success of these orchids.

Pollination treatments in three terrestrial (*T. longifolia*, *P. alobula* and *P. patens*) and two epiphytic (*E. autumnnalis* and *E. mucronata*) orchids confirmed the absence of genetic incompatibility. Despite these five orchids being self-compatible, their reproduction relies on contrasting reproductive strategies. *T. longifolia* is predominantly self-pollinated, whereas *Pterostylis* and *Earina* species are incapable of autonomous selfing and completely dependent on pollinators.

The epiphytic species *E. aestivalis* and *W. cunninghamii* are partially self-incompatible and also completely dependent on pollinators. Agamospermy is likely to occur in *G. cunninghamii* but not involved in seed-production in any of the remaining seven orchids. Both terrestrial and epiphytic species showed a positive reaction to neutral red except *E. autumnnalis*. This indicated the presence of scent glands, mainly located around the column, lip and sepal tips. Pollen:ovule ratios calculated for these species ranged from 20: 1 in *E. mucronata* and *E. aestivalis* to 320: 1 in *P. alobula*.

Of the four terrestrial orchids studied, insect visitation was observed only in *P. alobula*. This orchid is pollinated by male fungus gnats of the genus *Zygomia* (Diptera: Mycetophilidae). Pollination by sexual deception is likely to occur in species of this genus. Numerous insects were recorded visiting the nectariferous epiphytic

orchids (3 orders, 13 families). Insects considered as “probable pollinator” were *Eristalis tenax* (Diptera: Syrphidae) for *Earina autumnalis*, *Dilophus nigrostigmus* (Diptera: Bibionidae) for *E. mucronata*, and *Melangyna novaezealandiae* (Diptera: Syrphidae), *Calliphora quadrimaculata* (Diptera: Calliphoridae), the Ichneumonid wasp *Aucklandella* sp. (Hymenoptera: Ichneumonidae), *Hylaeus* sp. (Hymenoptera: Colletidae) and an unidentified weevil (Coleoptera: Curculionidae) for *E. aestivalis*. In *W. cunninghamii* the species *Apis mellifera* and the native syrphid flies *Helophilus antipodus* and *M. novaezealandiae* were considered as “probable pollinators”.

Levels of natural fruit-set were similarly

low in rewarding and non-rewarding species fluctuating from 4.3% (*P. alobula*) to 40% (*P. patens*). Fruiting in these orchids is pollen limited, as supplementary hand-pollinations increased fruit set above 40% in all species except *P. patens*. The degree of pollen limitation varied from 0.32 (*P. patens*) and 0.94 (*P. alobula* and *E. mucronata*). Pollen limitation in these orchids may be caused by the simplicity of their flowers, the poor efficiency of their pollinators in depositing pollinia and the use of species-specific pollination systems (e.g. *Pterostylis*).

The survival capability and conservation requirements of these orchids are discussed in the light of the specific reproductive requirements revealed by this study.

Request: Shortage of orchid seed for study and description for new seed atlas

By Debby Redmond, Lincoln

As a follow up to his book, *Seeds of New Zealand gymnosperms and dicotyledons*, and to complete coverage of the native seed plants, Colin Webb is now working on a seed atlas for the indigenous monocotyledons.

For most families, good seed collections can be taken from herbarium specimens. For the orchids, many specimens are of flowering plants, and where fruiting collections are made the small dust seeds are often already dispersed—thus there is a shortage of good seed in many of the orchid species. We would very much appreciate help in collecting seed for the species where there is a shortage.

It will greatly assist us if over the next couple of fruiting seasons, ripe capsules from the orchids listed below are collected for this study.

As this is to be a technical book, it is important that the plant is accurately identified while in flower, before the seed is formed, as most of the identifying characters

are lost once the plant has started to wither.

Please collect ripe capsules preferably as they turn yellowish and before they dehisce and place in a paper envelope, labelled with name and collecting details—collector, date, whether wild or cultivated (for cultivated, where original collection was made if that information is known). These can then be forwarded to

Debby Redmond, Manaaki Whenua – Landcare Research, Box 69, Lincoln, E-mail: redmondd@LandcareResearch.co.nz, Phone: (03) 325 6700

Acianthus sinclairii Hook.f. *Adelopetalum tuberculatum* (Col.) D.L.Jones, M.A.Clem. & Molloy. *Adenochilus gracilis* Hook.f. *Anzybas carsei*. *Anzybas rotundifolius*. *Caladenia alata* R.Br. *Caladenia atradenia* D.L.Jones, Molloy & M.A.Clem. *Caladenia bartlettii* (Hatch) D.L.Jones, Molloy & M.A.Clem. *Caladenia carnea* var. *minor*

(Hook.f.) Hatch. *Caladenia catenata* (Sm.) Druce. *Caladenia chlorostyla* D.L.Jones, Molloy & M.A.Clem. *Caladenia lyallii* Hook.f. *Caladenia minor* Hook.f. *Caladenia nothofagei* D.L.Jones, Molloy & M.A.Clem. *Caleana minor* R.Br. *Calochilus campestris* R.Br. *Calochilus herbaceus*. *Calochilus paludosus* R.Br. *Calochilus robertsonii* Benth. *Chiloglottis cornuta* Hook.f. *Chiloglottis trapeziformis* Fitzg. *Chiloglottis valida* D.L.Jones. *Corybas* (Rimutaka Range). *Corybas cheesemani* (Hook.f. ex Kirk) Kuntze. *Cryptostylis subulata* (Labill.) Rehb.f. *Cyrtostylis oblonga* Hook.f. *Cyrtostylis reniformis* R.Br. *Danhatchia australis* (Hatch) Garay & Christenson. *Drymoanthus flavus* St. George & Molloy. *Earina aestivalis* Cheeseman. *Earina autumnalis* (G.Forst.) Hook.f. *Earina mucronata* Lindl. *Gastrodia minor* Petrie. *Gastrodia sesamoides* R.Br. *Genoplesium pumilum* (Hook.f.) D.L.Jones & M.A.Clem. *Ichthyostomum pygmaeum* (Sm.) D.L.Jones, M.A.Clem. & Molloy. *Microtis parviflora* R.Br. *Molloybas cryptanthus* (Hatch) D.L.Jones & M.A.Clem. *Nematoceras acuminata* (M.A.Clem. & Hatch) Molloy, D.L.Jones & M.A.Clem. *Nematoceras dienema* (D.L.Jones) D.L.Jones, M.A.Clem. & Molloy. *Nematoceras iridescens* (Irwin & Molloy) Molloy, D.L.Jones & M.A.Clem. *Nematoceras orbiculatus* (Colenso) Molloy, D.L.Jones & M.A.Clem. *Nematoceras papa* (Molloy & Irwin) Molloy, D.L.Jones & M.A.Clem. *Orthoceras novae-zeelandiae* (A.Rich.) M.A.Clem. *Prasophyllum patens* R.Br. *Pterostylis agathicola* D.L.Jones, Molloy & M.A.Clem. *Pterostylis albula* (Hatch) L.B.Moore. *Pterostylis alveata* Garnet. *Pterostylis areolata* Petrie. *Pterostylis australis* Hook.f. *Pterostylis brumalis* L.B.Moore. *Pterostylis cardiostigma* D.Cooper. *Pterostylis cernua* D.L.Jones, Molloy & M.A.Clem. *Pterostylis cynocephala* Fitzg. *Pterostylis foliata* Hook.f. *Pterostylis humilis* R.S.Rogers. *Pterostylis irsoniana* Hatch. *Pterostylis irwinii* D.L.Jones, Molloy & M.A.Clem. *Pterostylis micromega* Hook.f. *Pterostylis*

montana Hatch. *Pterostylis nutans* R.Br. *Pterostylis oliveri* Petrie. *Pterostylis paludosa* D.L.Jones, Molloy & M.A.Clem. *Pterostylis patens* Colenso. *Pterostylis porrecta* D.L.Jones, Molloy & M.A.Clem. *Pterostylis puberula* Hook.f. *Pterostylis tanyпода* D.L.Jones, Molloy & M.A.Clem. *Pterostylis tasmanica* D.L.Jones. *Pterostylis tristis* Colenso. *Pterostylis trullifolia* Hook.f. *Pterostylis venosa* Colenso. *Singularybas oblongus* (Hook.f.) Molloy, D.L.Jones & M.A.Clem. *Spiranthes novae-zeelandiae* Hook.f. *Spiranthes sinensis* (Pers.) Ames. *Spiranthes sinensis* subsp. *australis* (R.Br.) Kitam. *Thelymitra aemula* Cheeseman. *Thelymitra carnea* R.Br. *Thelymitra cyanea* (Lindl.) Benth. *Thelymitra dentata* L.B.Moore. *Thelymitra formosa* Colenso. *Thelymitra ixioides* Sw. *Thelymitra malvina* M.A.Clem., D.L.Jones & Molloy. *Thelymitra mathewsii* Cheeseman. *Thelymitra nervosa* Colenso. *Thelymitra pulchella* Hook.f. *Thelymitra sanscilia* Irwin ex Hatch. *Thelymitra tholiformis* Molloy & Hatch. *Townsonia deflexa* Cheeseman. *Waireia stenopetala* (Hook.f.) M.A.Clem., D.L.Jones & Molloy. *Winika cunninghamii* (Lindl.) M.A.Clem., D.L.Jones & Molloy.

Key to plates (see The Column 3, p21)

1. *Aporostylis bifolia* Iwitahi 10Dec00 has Hooker's 2 rows of yellow calli down the disc, no brown spots and port wine stripes down the sepals. The crowded tepals may mean it has just opened.
2. *A. bifolia* alba, Iwitahi, 10Dec00 still has the 2 rows of yellow calli but lacks the port wine stripes.
3. *Aporostylis* "sanscalli", Horopito 3Jan97. No visible calli but has brown spots on the labellum.
4. *Nematoceras* "whiskers" Dawson Falls 28Oct84 from Bob Goodger's slide.
5. *Nematoceras orbiculata* Dawson Falls 28Oct84 from Bob Goodger's slide.
6. *Petalochilus variegatus* Dawson Falls 28Oct84 from Bob Goodger's slide. Notice stray calli.



Figures for Eric Scanlen's "Back issues", p.16.

Fig.1 (upper L): *Aporostylis bifolia*, Iwitahi.

Fig.2 (upper R): *A. bifolia*, Iwitahi.

Fig.3 (L): *Aporostylis "sanscalli"*, Horopito.

Below: South Island Aporostylises for comparison - from the editor.





↑ Tiny early flowering *Nematoceras* aff. *triloba* near Levin, May 2002: photos by Brian Tyler. ↑
Note the upright stance.

An early spring? This group of *Nematoceras* aff. *papa* was flowering near Levin in midJuly ↓



↑ A large grannie-smith-green-dorsal-sepalled *N. aff. triloba* growing alongside *N. hypogaea*, near Levin, July.

Vic Vercoe of Palmerston North sent these prints of *Pterostylis venosa* taken near the Rangiwahia Hut in the Ruahine ranges on 1 December 2001.



Brian Tyler wrote (4 June), “There are two *Corybas trilobus* colonies in flower near the *Chiloglottis trapeziformis* in the Waiterere Forest, one has very small trilobed leaves about 10mm across by 7mm deep the other has trilobed leaves about 10mm by 10mm. The flowers are similar sized but have differing shape and colour.

To me these look the same as the July-flowering Queenstown C. aff. trilobus I have described elsewhere—see colour pages—Ed.

Brian wrote again (21 June), “The earliest we saw the *Nematoceras* aff. *trilobus* at Waiterere was 22 May. We found the darker flowers hiding under pine needles; they were not seen on 8 May and the flowers were almost finished by 2 June. These will almost certainly be the *N. aff. trilobus* in your photograph. The other colony with the pale green translucent flowers was found on 24 May in full flower. The flowers are densely packed, all intertwined, again one flower for every leaf. These were sitting up above the pine needles. From above it looked like a green carpet on the needles. The colony is about a meter across and no others were found although several people have searched the area. The green flowers are just finishing now. Ian Townsend has just received a letter from Bruce Irwin who I understand thinks the pale flowers may be an albino *N. aff. trilobus*”.

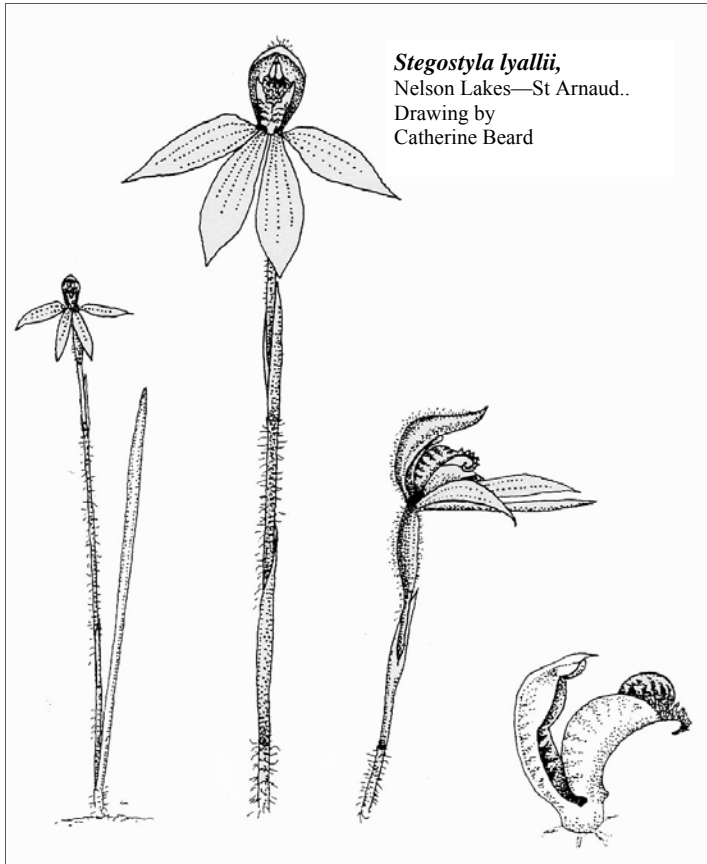
The Nematoceras near Levin are flowering a month earlier than last year. When I visited on 27 July there were masses of N. iridescens, N. hypogaea, and a green-sepalled large N. aff. triloba in full flower under macrocarpa, and nearby what appeared to be a hybrid swarm of N. papa and N. iridescens (see plates)- Ed.

New member Russell St Paul of **Waiheke Island** wrote (20 May), “I am a Forest & Bird member and have been on the committee of Hau-raki Islands since its formation. I have been ranger for the Te Haaki-Goodwin reserve since it was gifted by the late Harold Goodwin in 1980. There is a good population of orchids in this reserve. They have been listed in the two management plans. Since then I have discovered two varieties not

listed from Waiheke. I was first introduced to orchids in the Hunua Ranges where I spent my first 18 years, in the late 1930s, while on bird study expeditions with the late Ross McKenzie.... Another of my many interests is photography, and I have photos of many of the orchids in 'my' reserve.

Catherine Beard sent the drawing (ar right) of *Stegostyla lyallii* from Nelson Lakes—St Arnaud (Rotoiti). It is a much more slender plant than the robust southern forms. → →→

Geoff Monk wrote, "*Chiloglottis trapeziformis* recovery: on 24 April, I decided, for no particular reason, to check progress at the *Chiloglottis trapeziformis* site in the Waitare Forest only to find some trees already felled, close to patches of our precious orchid. On closer inspection the *Pinus radiata* logs had marks indicating they were be-



OBITUARY. Ross Bishop; May 1937-3 August 2002. It is with deepest regret we mark the passing of our stalwart orchid enthusiast. He was also active in conservation through the Royal Forest and Bird Society and the QE 2 Trust. Ross and Helen's hospitality and generosity towards Orchid Group members will not be forgotten. They were always welcome at Owango despite his "bad back" and despite us pestering him for photos and information about the rare NZ orchids amongst his rhododendrons. Our deepest sympathies go out to Helen and the family. *We are grateful to Eric Scanlen for this appreciation.*

ing assessed for felling. DoC Area Manager, Ian Cooksley contacted the forest owners, Rayonier, and arranged a meeting with two local reps. On 1 May we were escorted to the site and told felling was to start within days in that area, depending on tender prices being accept-

able. On being shown what the orchids looked like, one rep. Darryl Strickland, promptly found a new patch! They agreed to start logging in another area to give us a chance to recover some, also explaining if left behind, a small group of trees would probably blow over in a storm. It was decided a group would meet on 8 May to transfer some plants in the hope they will survive. The group comprised Trevor Nicholls and Doreen Abraham from Taupo, Eric Scanlen from Auckland and five members of Levin Native Flora Club, Leita Chrystall (the discoverer), Brian Tyler, Ian Townsend, Pauline Jackson and Geoff Monk. It was decided a sample of each of the 19 plots would be relocated at Leita's property north of Foxton, in a 10 metre wide *Pinus radiata* shelter block which gives protection from the west and south; it has filtered sunlight, it is on sand, with shallow needle duff similar to the original site, with undergrowth of karo, Camellias and lacebark. Others have been delivered to Nga Manu Sanctuary, west of Waikanae, Percy's Reserve at Petone, Otari Plant Museum in Wadestown, Wellington, plus a large quantity taken to Iwitahi Orchid Reserve's *Pinus nigra* by Eric and Trevor. Others are to be taken to Pakipaki dune forest south west of Levin and Karori Sanctuary in Wellington. Some of these sites will be pine others native species."

Erich Nelson, *Book of plates of the genus Orchis*. N°007413. Price: £112.00. Comprises a text volume (English/German) and illustrations of the genus *Orchis* (c.80 plant portraits in their original size on 44 plates 280 x 375 mm). The highest quality of reproduction has been strived for in order to depict the undiminished beauty of the water-colours for which Nelson's earlier works are renowned. Order from: Intercept Limited, PO Box 716, Andover, Hampshire SP10 1YG, UK. Email: intercept@andover.co.uk. Web: www.intercept.co.uk.

Oops! Peter de Lange wrote (21 June), "On reading J83, I note for the Chatham list that you mentioned *Pterostylis* aff. *patens* for what is obviously *Prasophyllum* aff. *patens*. To many "P" orchids I guess! As I collected the only known Herbarium Specimen (CHR!) during my visit there in February 1996, I feel comfortable saying a few things about it. The main issue is that I don't believe it is any different to the North Island *P.* aff. *patens*. The Chatham plants had yellow flowers true, but so do some populations of this taxon in the lower Wai-kato (e.g., Opuatia and Whangamarino Wetlands) of which I have sent samples to Dr Brian Molloy during the early 1990's. The basis for the presumed potentially distinct Chatham plant comes from David Jones (pers. comm.) who examined my specimen in 1996 and suggested then that it might "possibly be distinct" because it had yellow flowers, although he also admitted there were no other obvious differences. In any case what has eluded us since is further specimens, this despite careful searching of my original site, or comparable habitats on the Chathams, by Dr Geoff Walls, Ms Amanda Beard (DoC, Chathams) or Dr Brian Molloy. Maybe what I found was the result of a chance long distance dispersal from New Zealand? I now gather from Brian Molloy (pers. comm.) that my Chatham Island *Prasophyllum* site - Otoi Creek - has been subjected to extensive flooding, and he has suggested to me that the plants may have disappeared through scouring of their stream bed habitat".

Droughts and floods.... A correspondent to NativeOrchids.com wrote, "Arizona experienced one of the driest winters in the last 100 years, with less than 1" of rain. One genus of mycotrophic orchids has been severely impacted. In the two sites where I track *Hexalectris revoluta* no plants came up. Last year 48 plants appeared. Only one plant of *H. spicata* is up and last year there were dozens in the same location. I

have not been able to observe our other genus of mycotrophic orchids, *Corallorhiza* because the forests have been closed to entry due to the wildfire danger. Does anyone else have any information on the impact of drought on mycotrophic orchids?"

Another replied, "Here in North Florida, we've been experiencing similar drought conditions. It seems that the abundance of *Corallorhiza* stems is directly related to how good the rainfall levels were earlier in the spring. Since they have underground rhizoids, they are not as susceptible to droughts as plants with parts aboveground. My best guess is that the plants just wait out the dryness and re-emerge when conditions are more favorable. I had a rescued *Cleistes divaricata* that stayed underground an entire year.... I thought it was dead, only to be surprised by its re-emergence the year after that."

A European correspondent added, "In my opinion the negative impact of drought is not restricted to mycotrophic orchids. E.g. for *Anacamptis pyramidalis* in coastal dunes in the Netherlands regular rainfall in spring, especially May and June, is important for flowering. Vegetatively this orchid is above ground from early October through to July. It flowers in July. On the other hand, in my experience, prolonged inundation can have an equally or even more severe impact on (mycotrophic) orchids, for instance on *Neotia nidus-avis*."

Then came a despairing, "All of Arizona is pretty much shut down for orchid hunting this year because the National Forests are closed to entry due to the extremely high wildfire danger. Therefore I plan to head north until the woods are no longer burning. Specifically I am going to Idaho".

For superb photography of **Irish orchids** check this site, <http://www.ulstermuseum.org.uk/flora/default.htm> (Pat Enright).

The **Global Strategy for Plant Conservation** was adopted at the sixth COP to the CBD on April 19th 2002. For details see: <http://www.iucn.org/themes/ssc/plants/whatsnew/globalstrategystory.htm> and <http://www.biodiv.org/programmes/cross-cutting/plant/default.asp> for background documents.

Oops (again)! In J83 p16 Fig. 3 and Fig. 4 were inadvertently transposed.

Shelagh Kell writes: Establishment of **Orchid Conservation International** (OCI) - a new charity to promote and coordinate international efforts in orchid conservation, in conjunction with the IUCN/SSC Orchid Specialist Group (OSG) and other orchid conservation networks.

Moves to establish a new charity, Orchid Conservation International, were made at the 2002 Plenary meeting of the OSG at the 17th World Orchid Conference in Malaysia in April. A proposal was presented at this meeting, and an overwhelming vote was given in favour of its establishment. Subsequently, the proposal was also endorsed by the International Orchid Commission (IOC).

In addition to endorsement by OSG members and non-members present at the plenary meeting, and the IOC, the proposal has been favourably received by a number of other individuals and organisations, including Marie Selby Botanic Garden and members of the Board of Trustees of the AOS.

Two OCI Development Committee Meetings have been held to date. These have been attended by Ms. Shelagh Kell (OSG Executive Officer), Dr. Phillip Cribb (OSG Chair) Prof. Michael Hutchings (University of Sussex), Mr. Philip Seaton (Chair, OSG Ex situ Conservation Group) and Dr. David Roberts (RBG Kew). A number of other individuals have been included in the consultation process, including: Ms. Marilyn Light (Chair, North American Regional OSG and OSG Education Committee); Mr. Udai Pradhan (Chair, Indian Subcontinent

Regional OSG); Dr. Henry Oakeley (Royal Horticultural Society); Dr. Kiat Tan (National Parks Board, Singapore); and Dr. Wendy Strahm (Plants Officer, IUCN Species Survival Programme).

We aim to have the charity established and registered by the autumn this year, and hope to launch OCI at EOC2003 in London next March.

We have received an initial donation from Mr. John Tan, and further donations have been pledged by Lady McNeice over the two years, 2003 and 2004. We estimate the cost of establishment of the charity in the first year to be in the region of £40,000.00 (c. US \$60,000.00) and are now seeking further funding. A full break down of the budget is included in the proposal.

We would be grateful if you would forward this message to your networks, including botanic gardens, universities and orchid societies, or any individuals that you think may be interested in supporting this venture.

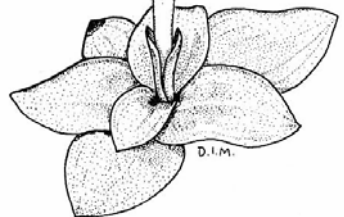
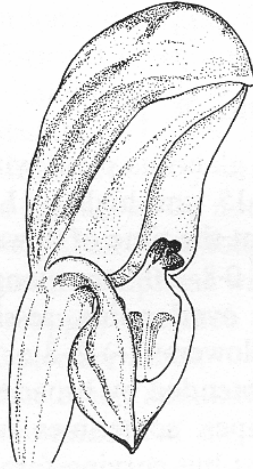
For Western Australian Thelymitras check this site, <http://members.iinet.net.au/~emtee/Thelymitras%20Page%201.htm> (David McConachie).

An orchid like ours -

Pterostylis cycnocephala

Drawing by DI Morris

- from WM Curtis's *Student's flora of Tasmania*, 1979



Indoor pursuits: Catherine Beard, Bruce Irwin and Bev Woolley at the Iwitahi Irwin Symposium in December.

Photo: Betty Seddon.

Corunastylis Fitzgerald

- from Fitzgerald RD. *Australian orchids Vol 2 part 3 1876.*

Genus *Corunastylis* (Fitzgerald.)

(Κούνη, a thick stick; Στύλος, a style)

THIS new genus is, in my opinion, extremely interesting, as uniting the very abnormal genus *Apostasia* with other Orchids, and as showing how the discovery of a single genus or species may and does bridge over the gaps which are made so much of by those who cannot accept the theory that all forms of life are united by a common descent.

The habit and general appearance of *Corunastylis* is that of the small flowered section of *Prasophyllum*, but the parts of the flowers in the two genera are very distinct.

The free filiform style embedded in the anther, the absence of rostellum and caudicle, the rudimentary bifid petals, absence of wings to the column, and the lanceolate petal-like labellum in *Corunastylis*, are peculiarities wholly unlike those of *Prasophyllum*. Its place appears to be between *Prasophyllum* and *Apostasia*. Though in *Corunastylis* there is only one anther, that anther is attached near the base of the style, and embraces it, and the style resembles that of *Apostasia* more than any other, while in *Apostasia* the second anther is said to be often abortive.

DESCRIPTION

Flowers small in terminal spike, numerous, reversed. Sepals lanceolate, acute, concave. Lateral sepals somewhat longer than the dorsal. Petals much smaller than the sepals, linear, and bifid. Labellum as long as the sepals, lanceolate, acute on short claw. Column short, not winged, and without lateral appendages. Style shorter than the anther, terete, but clubbed at the end, and without rostellum. Anther on short claw at the base of the style, two-celled, the flaps incurved so as to form a channel in which the filiform style lies. Pollen-masses granular and without caudicle. Terrestrial glabrous herbs with under-ground tubers. Stem

This is from the ANOS (Vic) Bulletin Vol. 35(1), July 2002 and is a follow-up to the article " *Pterostylis despectans* Project" reprinted in the Aussie Notes in J81.

Monitoring & searching for *Pterostylis despectans* by Andrew Dille

On Saturday the 8th of June, nine Conservation Group members and two visitors met at Talbot at 10.00am - an early start after a late A.N.O.S. meeting the night before. Our mission was to determine how the *Pterostylis despectans* had survived after last year's onslaught by White-winged Choughs.

By the end of 2001, the Choughs had dug up and eaten 76% of the plants at one of the monitoring sites. Consequently, we were concerned about the number of orchids that would re-appear this year, especially because the season, and the area, has been relatively dry. At one of our smaller monitoring sites, there was only an occasional rosette showing. But, as we searched further afield, we discovered a new colony where we took an accurate count. Moving on to another of our monitoring sites, we conducted a thorough count of the rosettes. This relatively open area is very vulnerable to Chough damage.

The counts were conducted by laying out coloured string lines, about one metre apart, over a given area; then each attendee was allocated a row in which to count rosettes. Using this method, we felt confident that rosettes were not counted twice, and that not too many were missed. This procedure was repeated at another of our sites where there was thicker understorey. Altogether, nearly 1200 rosettes were counted, leading us to believe that the total count is probably closer to 2000, as only the densely growing areas were counted. Although this was reassuring as far as numbers are concerned, very few large rosettes were seen as most plants were seedlings. To try and maximise the flowering rate (and keep the Choughs out) the largest rosettes were caged.

Another important factor in getting to the point where *P. despectans* can be taken off the endangered species list, is to establish several colonies at dispersed locations. This will help minimise the threat of natural disasters on the species. To this end, we embarked on a search of potential sites for new colonies. Our first search was conducted to the south west of Maryborough. We visited a site where a few plants have been seen previously and, although a couple of rosettes were found, a wider search failed to find anything further.

Our next search was in a State Forest in the Avoca area. We felt this site has definite potential as the vegetation and soil type are very similar to our monitoring sites. As we were thinking about moving on, Sue Dille made a discovery which gave us new hope. She found a colony of about 40 rosettes that looked very much like *P. despectans*. GPS readings were taken, and the largest rosettes caged, with the hope that they will flower and give us positive identification. (Since then, one of our members returned to this site and found another colony of about 20 plants.) If these rosettes do turn out to be *P. despectans*, we will have made a major find, because this site is far enough away from our other monitoring sites to give the geographic diversity required.

The following day, 13 members met at Stawell to search forests in the area. Last year, a colony of *P. maxima* was found and, because the conditions that *P. maxima* and *P. despectans* grow under are very similar, it was considered worthwhile searching these sites. Rosettes of *P. maxima* were found at the known location, and much discussion was spent on the differences between the rosettes of each species. Are *P. maxima* leaves slightly broader than those of *P. despectans*? Do *P. despectans* rosettes have less spacing between the leaves than *P. maxima*? Do *P. maxima* leaves have a slightly hairy point on the end? The more rosettes we looked at the less confident we were of being able to positively distinguish these two species by rosettes alone.

We stopped at several sites throughout the day. Generally we were looking around old gold diggings, as these orchids seem to like the moss beds that grow over disturbed ground. At nearly every stop we found rosettes that we believed were *P. maxima*. We also found several "bottomless" mine shafts waiting to swallow the careless orchid searcher.

Before the end of the day, we made up some more cages to protect the largest plants so they can be identified when they flower. Altogether it was a very successful weekend. Whether the rosettes turn out to be *P. despectans* or *P. maxima*, the finds are significant. Thank you to all the members who participated in the monitoring and search, that was successful due to the skills of the dedicated observers.

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