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Key to plates at left (see British Orchids, p.4)

Fig 1, 2: *Dactylorhiza incarnata* ssp. *incarnata*. **Fig.3:** *D. incarnata* ssp. *pulchella*. **Fig.4:** *D. incarnata* ssp. *coccinea*. **Fig.5:** *D. incarnata* ssp. *cruenta*. **Fig.6:** *D. incarnata* ssp. *ochroleuca*. **Fig.7** (see Notes, p39): *Nematoceras hypogaea*, Lowes Bush, Masterton.

britishorchids

Early Marsh-orchid *(Dactylorhiza incarnata (L.)* *Soó)* by David Lang

The Marsh-orchids all belong to the genus *Dactylorhiza* - literally "finger-rooted", on account of the shape of the tubers. They are a complex group, prone to hybridisation with fellow members of the Marsh-orchid group and also with the Spotted-orchids, which belong to the same genus. The resulting populations can be so-called "hybrid swarms", which are difficult to determine.

The Early Marsh-orchid is widely distributed as a species throughout all parts of Britain and Ireland, except south-east and most of south-west England where it is rare. It has been much reduced in recent years by the draining of wetlands. This overall picture masks a fascinating picture, since the species exists as five well defined sub-species, each with its own habitat requirements, which in turn dictate its distribution

Ssp. *incarnata*

This is the type plant for the species. The stem is 10-30cm tall, with up to seven erect, yellowish-green, pointed leaves, which are strongly keeled and have hooded tips. The upper leaves sheath the stem, and in all forms (except ssp. *cruenta*) they do not have spots. The bracts are long, often tinged reddish-purple, and project from the dense flower spike.

The flowers of ssp. *incarnata* are pale flesh pink. The lateral sepals are marked with loops and dots, and are folded back so that they stand erect above the loose hood formed by the upper sepal and two upper inner petals.

The shape of the labellum is diagnostic. It is shallowly three-lobed, the side lobes folded back tightly so that the labellum appears narrow. It is marked with a prominent double loop of dark red, within which are red dots and

lines. The spur is short, fat and conical - a feature of all the Marsh-orchids and also their hybrids with the Spotted-orchids.

Ssp. *incarnata* grows in calcareous fens, marshes and wet meadows on base rich soils. It has in recent years successfully colonised fly-ash tips in the north of England, a discovery which was first noted by Dr.R.P.Gemmell near Salford, Manchester in 1954.

It flowers in June and early July, and is pollinated mainly by the female Red-tailed Bumble Bee (*Bombus lapidarius*).

Ssp. *pulchella*

This is a plant of acid habitat, growing in bogs, marshes and on damp heathland. It has a wide distribution in Britain and Ireland, being the dominant form in places such as the New Forest in Hampshire, south of Dartmoor in Devon, in Anglesey and particularly in the west of Scotland. In shape and markings it is identical to ssp. *incarnata*, but is a distinctive mauve colour.

Ssp. *coccinea*

This subspecies grows abundantly in the beautiful coastal grasslands, the machair, of north-west Scotland and the Western Isles. It also grows in huge numbers in damp dune slacks on the coast of Wales and on Anglesey, and on the coast of east Scotland in Fife. When the flowers first open they are a dazzling scarlet colour - think of the Australian Running Postman! - the squat plants having rather thick, short leaves and a dense flower spike. The sight of a dune slack carpeted in scarlet flowers is a sight to remember.

In recent years there have been inland records, once again from fly-ash tips in northern England, and also in calcareous fens. There is a closely related Continental subspecies *lobelii* (stat. nov.), but work by Prof H.Ae. Pedersen clearly differentiates the Welsh form from that in Holland and Denmark.

Ssp. *cruenta*

This subspecies is clearly separated from the other four by the markings on the leaves, which are heavily spotted on both surfaces in the distal third. The bracts are often heavily tinged with purple and bear purple spots.

It grows in alkaline or neutral soil, and is well known in the limestone area of the Burren in Co. Clare, Ireland, where it can be found particularly on the margin of the seasonal lakes - the turloughs. It is also found in the west of Ireland in Mayo.

Then in 1982 it was discovered for the first time outside Ireland near Ullapool, West Ross in the north-west of Scotland. Two sites are now known, and the subspecies could well be overlooked elsewhere.

Ssp. *ochroleuca*

This subspecies was first found in Britain by Ted Lousley in an alkaline fen in Norfolk in 1936, where Pugsley later found a second colony nearby. It is a rather tall plant, characterised by straw-coloured flowers which lack the normal loops and spots on the labellum. It flowers some two weeks later than *ssp. incarnata*. It had been recorded prior to 1977 from a number of localities in Norfolk, Suffolk, Cambridgeshire and Hampshire, but has declined dramatically over the last fifty years until only two populations remain and it appears to be on the verge of extinction in Britain. It is highly sensitive to a drop in water level, and widespread drainage has probably hastened its demise.

Albino *ssp. incarnata* are easily confused with this subspecies, and may even have a yellowish flush at the base of the labellum.

The Marsh-orchids and the Spotted-orchids are often treated by orchidophiles as the poor relations of the orchid flora of Britain, but they have a charm all their own and a capability to grow in such abundance that they can dazzle the eye.

The discovery recently of *Dactylorhiza incarnata ssp. cruenta* in Scotland, and then *D. lapponica* new to Britain, also in north-west Scotland, illustrates delightfully that the era of botanical discovery is far from over. Seek and ye shall (maybe) find!

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BOOK NOW

Haurangi State Forest park field days 26-28 November;
contact the editor on istge@mzcgp.org.nz.

Iwitahi Native Orchid Reserve field days 10-12 December; contact Robbie and Sue Graham on
info@wildwoodgallery.co.nz

COMPREHENSIVE JOURNALS INDEX

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1. Elementary, my dear...

In response to a reader suggestion, Dan Hatch begins in this issue a back-to-basics series on the New Zealand orchids. Welcome back Dan.

2. Taxonomy made easy

Morphology

Morphology (structure, shape) is the main way to classify organisms into taxonomic groups or taxa.

Early systems relied on only a few features (for instance plants were classified into herbs, shrubs, trees, climbers, on the basis of their habit; Linnaeus suggested a system based mainly on the features of stamens and carpels). Later, as in Bentham and Hooker's system of classification of plants, many morphological features were considered.

Similarities in morphological features are used for grouping plants; differences are used for separating them. Plants with great differences are regarded as unrelated or distantly related.

For instance, all flowering plants with ovules inside the ovary cavity are grouped as Angiosperms, which are then divided into Dicotyledons and Monocotyledons, on the basis of different features of the root system, leaf venation, flower symmetry and number of cotyledons in the embryo.

Numerical taxonomy

The major problem with the Linnaean system is that it is subjective. Different people interpret different groups because each level is arbitrarily defined. So, beginning in the 1950s, scientists began looking for new methods of classifying organisms. This gave rise to numerical taxonomy.

Numerical taxonomy is the classification of organisms by mathematical means. It is based on counting observable features of organisms and may be operated at various taxonomic levels to deal with species or higher taxa. It involves the grouping and computation of the similarity of characters; the results are usually displayed graphically, as a phenogram or dendrogram.

The goal of numerical taxonomy was to be

objective. This was to be achieved by converting all observations into numbers and then using a predefined calculation to divide organisms into taxa. However, there was still a lot of subjectivity in selecting the features to be counted and in how the observations were converted into numbers.

Chemical taxonomy

The presence and distribution of various chemical compounds in plants serve as taxonomic evidence.

Phylogenetic considerations

In the more recent systems, greater emphasis is given to the phylogenetic arrangement of plant groups, based on the evolutionary sequence of the groups, and reflecting their genetic similarities.

The principle of phylogenetics is that organisms should be classified the way they evolved. Our present knowledge of the evolutionary history of plant groups is incomplete, so at best modern systems are a judicious combination of morphological and phylogenetic systems.

Today, phylogenetics is most commonly done at a molecular level. A gene (DNA) or protein sequence is chosen based on a number of criteria. This same sequence is then determined for a number of different organisms and all the sequences are aligned to each other using a multiple sequence alignment program. From this alignment, a phylogenetic tree is created from tree building algorithms to show graphically the sequences and how they are related. There are many ways of determining evolutionary relatedness from multiple sequence alignment, including maximum likelihood, maximum parsimony, pairwise distance and others.

Phylogenetics has emerged as a leading taxonomic method. However, there is still controversy as to its validity and reliability. Since evolution is in the past, each step in the process requires certain assumptions. In addition, different methods perform different analyses and come to different conclusions. To make an analysis as valid as possible, the appropriate method must be used with the appropriate data.

Just after I wrote this, David McConachie sent me this piece by Oliver Sparrow, written for *Orchids Digest*.

“Any population has a variance associated with it. Plot any two characteristics of a species - petal width, petal length - for several dozen field-measured representatives and you do not get a point, but a blob. The issue is whether a related but potentially distinct blob overlaps or is distinct enough to make it useful to treat its members as distinct. There are three ways into this.

“The first, which I find preferable over the others, is for someone who knows the class of organism well - and these specific populations in particular - to make a judgement as to whether the way they live in the round makes them truly distinct. Essentially, is it helpful to the expert mind to separate these entities or not? And by expert, I don't mean someone adept at whisker-counting, but one possessed of an ecological expertise which asks whether the lives led by the populations makes them effectively distinct in habit, sexual transmission and role.

“The second is to apply rigor to the phenotypes. This uses principal component analysis to arrive at a tree structure.... This procedure removes - or renders formal - the human judgement of what matters.

“The third procedure uses information from the analysis of the genome and matters dependent on it. This is pretty primitive at the moment: one or more genes only, difference measured not for what it says but for how it says it. I suspect this approach will mature as understanding of the proteome evolves: that is, what turns off and on in response to which signals in order to generate a leaf, this kind of leaf, this kind of leaf with hairs....

“There is no universal way of dividing a population into sets, any more than there is one answer to the question ‘why?’ (Why is that flower red? Because Mrs Jones chose it and she likes red; because red sells best so horticulturists breed it and florists stock it; because of anthocyanin; because humming birds see red; because that is the colour worn by grooms at weddings ...).”

References

1. <http://www.pinkmonkey.com/studyguides/subjects/biology-edited/chap13/b1313501.asp>
2. Sparrow, Oliver. orchids@orchidguide.com

3. *Corybas* variations

Your editor has been taken severely to task by one member for publishing too much stuff on foreign orchids in the *NZ Native Orchid Journal*. Of course I make no apology for that: their inclusion was hardly an accident. It is only by seeing what others are doing that our own horizons are extended, only by cross-fertilisation that the possibility of new ideas and concepts is enhanced, only by tempering our own extremes in the fire of embarrassing comparison that we become objective. It's an educative process really—as much for me as for anyone. As the great Swiss educationalist Jean Piaget once said, “The aim of education is to create people capable of doing new things”.

I told my critic, “It is not the journal of NZ native orchids, but the NZ journal of native orchids, so any country's native orchids are fair subjects—but he was unmoved by such semantic cleverness.

I mentioned these discussions to another erudite member, who suggested that some time I should write a piece explaining why I included certain pieces sometimes.

Well, OK: take David Lang on the Bee orchid and the Early marsh-orchid. What those papers illustrated is how differently colour and shape variations within a species are dealt with in Britain—they are called varieties of the species, or colour forms or peloric forms. They are not seen as new taxa. Isn't there a lesson there for those who see white *Corybas* as different? for those who see *Petalochilus* as separate from *Caladenia*? Shouldn't the knowledge of what others are doing give us pause?

Or take Marilyn Light's paper on 20-year observations of a single colony of *Epipactis helleborine* in Canada. Wasn't it interesting to understand how a European orchid might reach North America? Didn't that make you think about Australian and Malaysian orchids reaching New Zealand? And isn't 20 years of detailed recorded observations of the same colony amazing? has anyone here

done that? should we? whether or not we should we surely deserve a chance to read about it.

David McConachie follows the Australian native orchid literature carefully, and he sends pieces he finds of interest for "Australian Notes". Fascinating aren't they? So similar to our orchids, that Brian Molloy once called New Zealand a botanical colony of Australia.

Why "Other islands' orchids?" to demonstrate that the high levels of endemism we find here in our orchids is a common feature of insular flora.

Next take a look at the *Historical reprint* in this issue. It was written as long ago as 1985, and it discusses the authors' difficulties in sorting out what is and is not important in differentiating taxa in Malaysian *Corybas*.

Then after that if you tell me their experience is of no value in the current New Zealand scramble to find a new *Corybas* on every "high ridge and peak", I'll make a rude rejoinder.

But I'll learn from you, too, and I'll be the wiser for our argument.

Reflect, if you will, on what an impoverished thing this journal would be if left entirely to those few NZ writers who do contribute.

If we can learn anything in isolation, think how much more we can learn if we are open to others' ideas. We live on an island but we don't have to be insular.

Unconvinced? siding with my critic? want a journal confined to NZ natives?

Pssst!! Listen, I'll tell you how to improve matters: make it unnecessary for me to hunt out material on other than New Zealand native orchids by writing for your journal. Fill it with your observations, your drawings, your field trip notes, your ideas, your questions, your photos and plants for identification. Don't worry if your writing isn't great, I can fix it: that's what an editor is really for.

The
Annual General Meeting
of the
New Zealand Native Orchid
Group
Inc.

will be held at 7pm on
Saturday 12 Dec. 2004
at the
Iwitahi Outdoor Recreation
Centre.

Agenda

1. Present
2. Apologies
3. Minutes of 2003 general meeting
4. Matters arising
5. Treasurer's report
6. Iwitahi report
7. Nomenclature policy for the Journal
8. Planning for the 25th anniversary in 2006
9. Other matters
10. General business
11. Election of officers for 2005
12. Close

In accordance with the Group's Rules of Incorporation, an AGM open to all Members is to be held between September and February; the financial accounts and minutes of the previous AGM will be available; all Members have the right to speak or to nominate Executive members; a quorum will be nine Members.

3. The New Zealand orchids: the editor's annual list of New Zealand orchid taxa

—a personal opinion, wrested from observation, discussion, plagiarism and taxonomic punch-ups

***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. NZ* 75: 369 (1945).

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

Adelopetalum tuberculatum (Col.) DL Jones, MA
Clem. & Molloy. *Orchadian* 13(11): 498
(2002).

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

Bulbophyllum exiguum as meant by Buchanan.
Trans. NZ 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. NZ I.* 27: 396
(1895).

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

***Caladenia* R.Br. Prodr. (1810)**

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

Petalochilus alatus (R.Br.) DL Jones & MA
Clem. *Orchadian* 13(9): 406 (2001).

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

Caladenia exigua Cheesem. *Trans. NZ 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 bartlettii* (Hatch) DL Jones, Molloy &
MA Clem. *Orchadian* 12(5): 227 (1997).**
Petalochilus bartlettii (Hatch) DL Jones & MA
Clem. *Orchadian* 13(9): 406 (2001).

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

***Caladenia chlorostyla* DL Jones, Molloy & MA
Clem. *Orchadian* 12(5): 223 f.1 (1997).**
Petalochilus chlorostylus (DL Jones, Molloy &
MA Clem.) DL Jones & MA Clem.
Orchadian 13(9): 406 (2001).

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

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

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

Petalochilus minor (Hook.f.) DL Jones & MA
Clem. *Orchadian* 13(9): 410 (2001).

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. NZ* 77: 401 (1949).

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

The identity of *Caladenia minor* is not clear: it may be a
synonym for *C. alata*, *C. chlorostyla* or *C. aff.*
chlorostyla: more than one is on the Type sheet.

***Caladenia nothofageti* DL Jones, Molloy & MA
Clem. *Orchadian* 12 (5): 226 f.1 (1997).**

Petalochilus nothofageti (DL Jones, Molloy &
MA Clem.) Jones & MA Clem. *Orchadian*
13(9): 410 (2001).

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

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

- Caladenia* "big pink" tagname. Some flowers have a clear two rows of calli on the labellum, others have extra calli scattered to either side of the two rows.
- Caladenia* aff. *fuscata*** a small pink *Caladenia* 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".
- Caladenia* aff. *pusilla*** a tiny pink *Caladenia* with broad oval sepals and petals, an incurved dorsal sepal and a triangular labellar midlobe grows near Wellington, Taranaki and in Northland (W.M.Curtis. *Students' Fl. Tasm. Pt. 4A*: 133 [1980]).
- Caladenia* subgenus *Stegostyla* (DL Jones and MA Clem.) Hopper and AP Br. *Australian Systematic Botany 17*: 171-240 (2004).**
- Caladenia atradenia*** DL Jones, Molloy & MA Clem. *Orchadian* 12 (5): 221 (1997).
- Stegostyla atradenia* (DL Jones, Molloy & MA Clem.) DL Jones & MA Clem. *Orchadian* 13 (9): 414 (2001).
- Caladenia carnea* R.Br. var. *minor* forma *calliniger* Hatch. *Trans. Roy. Soc. NZ (Bot)* 2: 187 (1963).
- 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.
- Caladenia lyallii*** Hook.f. *Fl. Nov. Zel.* 1: 247 (1853).
- Stegostyla lyallii* (Hook.f.) Jones & MA Clem. *Orchadian* 13(9): 413 (2001).
- There seem to be a number of taxa currently included in *C. lyallii* agg, including a small form from Iwitihi and Nelson Lakes.
- Caladenia* aff. *alpina***. Plants closer to *C. alpina* than to *C. lyallii* are in NZ See St George. *N.Z.N.O.G. J* 63: 4 (1997).
- Calochilus* R.Br. *Prodr.* 1: 320 (1810)**
- Calochilus* aff. *herbaceus*.**
- Calochilus herbaceus* McCrae *N.Z.N.O.G. Newsl.* 24: 9 (1987).
- Calochilus campestris* as meant by Hatch. *Trans. Roy. Soc. NZ* 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. NZ 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. NZ I.* 33: 312 (1900), appears not to be that of Fitzg. (1877), but argument continues.
- Chiloglottis valida*** DL Jones. *Austr. Orch. Research* 2: 43 (1991).
- Simpliglottis valida* (DL Jones) Szlach. *Polish Bot. J* 46(1): 14 (2001).
- Chiloglottis gunnii* as meant by Molloy. *Native orchids of NZ* 9 (1983), is not that of Lindl. (1840).
- Corunastylis* Fitzg. *Austr. Orch.* 2 (3): t.1 (1888) Prasophyllum alliance**
- Corunastylis nuda*** (Hook.f.) DL Jones & MA 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. NZ I.* 20: 208 (1888).
- Genoplesium nudum* (Hook.f.) DL Jones & MA Clem. *Lindleyana* 4(3): 144 (1989).
- Corunastylis pumila*** (Hook.f.) DL Jones & MA Clem. *Orchadian* 13(10): 461 (2002).
- Prasophyllum pumilum* Hook.f. *Fl. Nov. Zel.* 1: 242 (1853).
- Genoplesium pumilum* (Hook.f.) DL Jones & MA Clem. *Lindleyana* 4(3): 144 (1989).
- The *Corybas* alliance (*Corybas* Salisb.**
- Paradisus Londinensis. t.83 [1805])**
- Anzybas carsei*** (Cheesem.) DL Jones & MA Clem. *Orchadian* 13(10): 443 (2002).
- Corybas carsei* (Cheesem.) Hatch. *Trans. Roy. Soc. NZ* 75: 367 (1945).
- Corysanthes carsei* Cheesem. *Trans. NZ I.* 44: 162 (1912).
- Corybas unguiculatus* as meant by Moore. *Fl. NZ Vol II* 116: (1970) is not *Corysanthes unguiculatus* of R. Br. (1810).
- Anzybas rotundifolius*** (Cheesem.) DL Jones & MA

- Clem. *Orchadian* 13(10): 443 (2002).
Corybas rotundifolius (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
Nematoceras rotundifolia Hook.f. *Fl. Nov. Zel.* 1: 251 (1853).
Corysanthes rotundifolia (Hook.f.) Hook.f. *Handbk. NZ Fl.* 266 (1864).
Corysanthes matthewsii Cheesem. *Trans. NZ I.* 31: 351 (1899).
Corybas unguiculatus as meant by Hatch. *Trans. Roy. Soc. NZ* 75: 367 (1945), is not *Corysanthes unguiculatus* of R.Br. (1810).
Corybas cheesemanii (Kirk) Kuntze. *Rev. Gen. Plant.* 6: 657 (1891).
Corysanthes cheesemanii Hook.f. ex Kirk. *Trans. NZ I.* 3: 180 (1871).
Corybas aconitiflorus as meant by Hatch. *Trans. Roy. Soc. NZ* 75: 367 (1945), is not that of Salisbury (1807).
Molloybas cryptanthus (Hatch) DL Jones & MA Clem. *Orchadian* 13(10): 448 (2002).
Corybas cryptanthus Hatch. *Trans. Roy. Soc. NZ* 83: 577 (1956).
Corybas saprophyticus Hatch. *Trans. Roy. Soc. NZ* 79: 366 t.71 (1952), is not that of Schlecht. (1923).
Nematoceras acuminata (MA Clem. & Hatch) Molloy, DL Jones & MA Clem. *Orchadian* 13 (10): 449 (2002).
Corybas acuminatus MA Clem. & Hatch. *NZ J Bot.* 23: 491 (1985).
Corybas rivularis as meant by Cheesem. *Man. NZ Fl.* 697 (1906), and others (1906-1985) is not *Acianthus rivularis* of Cunn. (1837).
Nematoceras hypogaea (Col.) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corysanthes hypogaea Col. *Trans. NZ I.* 16: 336 (1884).
Nematoceras iridescens (Irwin & Molloy) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corybas iridescens Irwin & Molloy. *NZ J Bot.* 34: 1 (1996).
Corybas "A" tagname.
Nematoceras macrantha Hook.f. *Fl. Nov. Zel.* 1: 250 (1853).
Corybas macranthus (Hook.f.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
Corysanthes macrantha (Hook.f.) Hook.f. *Handbk. NZ Fl.* 266 (1864).
 North and South Island forms differ somewhat. Probable hybrids with insect-pollinated members of the *C. trilobus* aggregate have been reported.
Nematoceras orbiculata (Col.) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corybas orbiculatus (Col.) Molloy & Irwin. *NZ J Bot.* 34 (1): 5 (1996).
Corysanthes orbiculata Col. *Trans. NZ I.* 23: 389 (1891).
Corybas "short tepals" tagname.
Nematoceras longipetala (Hatch) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corybas macranthus (Hook.f.) Reichb.f. var. *longipetalus* Hatch. *Trans. Roy. Soc. NZ* 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 orbiculatus (Col.) LB Moore *Fl.N.Z.II* 118 (1970) is not *Corysanthes orbiculata* of Colenso.
Nematoceras pandurata (Cheesem.) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corysanthes rotundifolia var. *pandurata* Cheesem. *Man. NZ Fl.* 366 (1925) (is not *Nematoceras rotundifolia* of Hook.f.).
 This has been regarded as a synonym of *Nematoceras rivularis*, but its status remains speculative.
Nematoceras papa (Molloy & Irwin) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corybas papa Molloy & Irwin. *NZ J Bot.* 34 (1): 5 (1996).
Corybas "Mt Messenger" or *Corybas* "B" tagnames.
Nematoceras papilloso (Col.) Molloy, DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).
Corysanthes papilloso Col. *Trans. NZ I.* 16: 337 (1884).
 This has been regarded as a synonym of *Nematoceras macrantha*, but its status remains speculative.
Nematoceras rivularis (A.Cunn.) Hook.f. *Fl. Nov. Zel.* 1: 251 (1853).
Corybas rivularis (A.Cunn.) Reichb.f. *Beitr. Syst. Pflk.* 67 (1871).
Acianthus rivularis A.Cunn. *Compan. Bot. Mag.* 2: 376 (1837).
Corysanthes rivularis (A.Cunn.) Hook.f. *Handbk. NZ Fl.* 266 (1864).
Corysanthes rotundifolia as meant by Cheesem. *Man. NZ Fl.* 695 (1906), is not *Nematoceras rotundifolia* of Hook.f. (1853).
Corybas orbiculatus as meant by Moore. *Fl. NZ Vol II* 118 (1970) and others (1970-1996), is not *Corysanthes orbiculatus* of Col. (1891).
Corybas "Kerikeri" tagname. The *Corybas rivularis* complex includes unnamed taxa tagged C. "Kaimai", C. "rest area", C. "Kaitarakihui", C. "whiskers" (aka "viridis"), C. "Mangahua", C. "sphagnum" and C. "veil", C. "pollok".

Nematoceras triloba Hook.f. *Fl. Nov. Zel.* 1: 250 (1853).

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

Corysanthes triloba (Hook.f.) Hook.f. *Handbk. NZ Fl.* 265 (1864).

About 25 taxa in the *Corybas trilobus* complex are of speculative taxonomic status; they include the tiny May to July-flowering forms tagged *Corybas* "pygmy"; the later-flowering *C.*

"Trotters" (*N.Z.N.O.G. Newsl.*; 28: 10-13 [1988]), *C.* "Rimutaka" (*N.Z.N.O.G. Journal*; 58: 8-9 [1996]), *C.* "round leaf", *C.* "craigielea", *C.* "darkie", *C.* "trisept", *C.* "trihwhite", and many others, including perhaps a tetraploid form on the Chathams (Molloy *BPJ Orchids of the Chatham Islands*. DOC, 2002).

Singularlybas oblongus (Hook.f.) DL Jones & MA Clem. *Orchadian* 13(10): 449 (2002).

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

Nematoceras oblonga Hook.f. *Fl. Nov. Zel.* 1: 250 t.57B (1853).

Corysanthes oblonga (Hook.f.) Hook.f. *Handb. NZ Fl.* 266 (1864).

There are two or three taxa included in this complex. One was named in manuscript by Matthews as *Corybas* "aestivalis".

***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)**

Acianthus alliance

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. NZ 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).

Yoania australis Hatch. *Trans. Roy. Soc. NZ (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. NZ I.* 14: 332 (1882).

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

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

Earina aestivalis Cheesem. *Trans. NZ 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. NZ I.* 18: 267 (1886).

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

Earina quadrilobata Col. *Trans. NZ 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. NZ I.* 18: 268 (1886).

Gastrodia minor Petrie. *Trans. NZ 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. NZ Fl. 697 (1906), is not that of R.Br. (1810).

Gastrodia "city" appears to be a variant.

***Ichthyostomum* DL Jones, MA Clem. & Molloy. *Orchadian* 13(11): 499 (2002)**

Bulbophyllum alliance

Ichthyostomum pygmaeum (Smith) DL Jones, MA Clem. & Molloy. *Orchadian* 13(11): 499 (2002).

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

Bolbophyllum pygmaeum (Smith) Lindl. *Gen. &*

- Spec. Orch. Pl.* 58 (1830).
Bolbophyllum ichthyostomum Col. *Trans. NZ 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. *NZ J Bot.* 6: 473 f.1 (1969).**
Microtis magnadenia as meant by Hatch. in *Trans. Roy. Soc. NZ (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 Schldtl. *Linnaea* 20: 568 (1847).
Microtis viridis F.Muell. *Fragm.* 5: 97 (1866).
Microtis longifolia Col. *Trans. NZ I.* 17: 247 (1885).
Microtis papillosa Col. *Trans. NZ 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.
- Orthoceras* R.Br. *Prodr.* 1: 316 (1810)**
***Orthoceras novae-zeelandiae* (A.Rich.) MA Clem.,**
 DL 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. NZ I.* 18: 273 (1886).
Orthoceras caput-serpentis Col. *Trans. NZ I.* 22: 490 (1890).
***Orthoceras strictum* R.Br. *Prodr.* 1: 317 (1810).**
- 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).
Caleya sullivanii F.Muell. *Chem. & Druggist, Aust. suppl.* 4: 44 (1882).
Paracaleana sullivanii (F.Muell.) Blaxell. *Contr. N.S.W. Natl. Herb.* 4: 281 (1972).
Caleana nublignii Nicholls. *Vict. Naturalist* 48: 15 (1931).
- Petalochilus* Rogers. *J Bot.* 62: 65 (1924)**
Caladenia alliance
***Petalochilus calyciformis* Rogers. *J Bot. Lond.* 62: 66 t.571, 1-3 (1924).**
 Moore (1970) treated this as an aberrant form of *Caladenia*.
***Petalochilus saccatus* Rogers. *J Bot. Lond.* 62: 66 t.571, 4-7 (1924).**
Caladenia saccata (RS Rogers) Hopper & AP Br. *Australian Systematic Botany*; 17: 171-240 (2004).
 Moore (1970) treated this as an aberrant form of *Caladenia*.
- Prasophyllum* R.Br. *Prodr.* 1: 317 (1810)**
***Prasophyllum colensoi* Hook.f. *Fl. Nov. Zel.* 1: 241 (1853).**
Prasophyllum pauciflorum Col. *Trans. NZ I.* 18: 273 (1886).
Prasophyllum rogersii as meant by Hatch. *Trans. Roy. Soc. NZ* 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. NZ I.* 19: 214 (1886).
Prasophyllum patens as meant by Cheesem. *Man. NZ Fl.* (1906) is not that of R.Br. (1810).

- Prasophyllum suttoni* as meant by Hatch. *Trans. Roy. Soc. NZ* 76: 291 (1946) is not that of Rüpp (1928).
- Pterostylis* R.Br. Prodr. 1: 326 (1810)**
- Pterostylis agathicola*** DL Jones, Molloy & MA Clem. *Orchadian* 12(6): 266 (1997).
- Pterostylis montana* (Hatch) var. *rubricaulis* (Cheesem.) Hatch. *Trans. Roy. Soc. NZ* 77: 240 pl.23 (1949).
- Pterostylis graminea* (Hook.f.) var. *rubricaulis* H.B.Matthews ex Cheesem. *Man. NZ Fl.* 351 (1925).
- Pterostylis* "rubricaulis" tagname.
- Pterostylis alobula*** (Hatch) LB Moore. *NZ J Bot.* 6: 486 f.3 (1969).
- Diplodium alobulum* (Hatch) DL Jones, Molloy & MA Clem. *Aust. Orch. Res.* 4: 70 (2003).
- Pterostylis trullifolia* Hook.f. var. *alobula* Hatch. *Trans. Roy. Soc. NZ* 77: 244 pl.30 (1949).
- Pterostylis alveata*** Garnet. *Vict. Naturalist* 59: 91 (1939).
- Diplodium alveatum* (Garnet) DL Jones, Molloy & MA Clem. *Aust. Orch. Res.* 4: 70 (2003).
- Pterostylis areolata*** Petrie. *Trans. NZ I.* 50: 210 (1918).
- Pterostylis auriculata*** Col. *Trans. NZ I.* 22: 489 (1890).
- Pterostylis* "Catlins" tagname
- Pterostylis australis*** Hook.f. *Fl. Nov. Zel.* 1: 248 (1853).
- Pterostylis banksii*** A.Cunn. *Compan. Bot. Mag.* 2: 376 (1837).
- Pterostylis emarginata* Col. *Trans. NZ I.* 15: 328 (1883).
- Pterostylis speciosa* Col. *Trans. NZ I.* 22: 488 (1890).
- Pterostylis subsimilis* Col. *Trans. NZ I.* 28: 611 (1896).
- 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. *NZ J Bot.* 6: 485 f.3 (1969).
- Diplodium brumale* (LB Moore) DL Jones, Molloy & MA Clem. *Aust. Orch. Res.* 4: 70 (2003).
- Pterostylis cardiostigma*** DA Cooper *NZ J Bot.* 21: 97 (1983).
- Pterostylis cernua*** DL Jones, Molloy & MA 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. NZ* 78: 104 t.18 (1950).
- Pterostylis irwinii*** DL Jones, Molloy & MA Clem. *Orchadian* 12(6): 269 (1997).
- Pterostylis* "Erua" tagname.
- Pterostylis micromega*** Hook.f. *Fl. Nov. Zel.* 1: 248 (1853).
- Pterostylis polyphylla* Col. *Trans. NZ I.* 22: 489 (1890).
- Pterostylis furcata* Lindl. var. *micromega* Hatch. *Trans. Roy. Soc. NZ* 80: 326 (1953).
- Pterostylis montana*** Hatch. *Trans. Roy. Soc. NZ* 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. NZ I.* 47: 46 (1915).
- Pterostylis oliveri*** Petrie. *Trans. NZ I.* 26: 270 (1894).
- Pterostylis paludosa*** DL Jones, Molloy & MA Clem. *Orchadian* 12(6): 271 (1997).
- Pterostylis montana* Hatch. var. *linearis* Hatch. *Trans. Roy. Soc. NZ* 77: 243 pl.29, 2 (1949).
- Pterostylis* "linearis" tagname.
- Pterostylis patens*** Col. *Trans. NZ I.* 18: 270 (1886).
- Pterostylis banksii* Hook.f. var. *patens* (Col.) Hatch. *Trans. Roy. Soc. NZ* 75: 370 (1945).
- Pterostylis porrecta*** DL Jones, Molloy & MA Clem. *Orchadian* 12(6): 272 (1997).
- Pterostylis* aff. *graminea*.
- Pterostylis puberula*** Hook.f. *Fl. Nov. Zel.* 1: 249 (1853).
- Linguella puberula* (Hook.f.) DL Jones & MA Clem. *Austr. Orch. Res.* 4: 75 (2003)
- Pterostylis nana* as meant by Hatch. *Trans. Roy. Soc. NZ* 77: 237 (1949), is not that of R.Br. (1810).
- Pterostylis* aff. *nana*.
- Pterostylis silvicultrix*** (F.Muell.) DL Jones, Molloy & MA Clem. *Aust. Orch. Res.* 4: 66 (2003).
- Pterostylis banksii* var. *silvicultrix* F.Muell. *Veg. Chath. Is.* 51 (1864).
- Pterostylis tanypoda*** DL Jones, Molloy & MA Clem. *Orchadian* 12(6): 273 (1997).
- Hymenochilus tanypodus* (DL Jones, Molloy & M.A Clem.) DL Jones, Molloy & MA Clem.

- Austr. Orch. Res* 4: 74 (2003).
- Pterostylis cyncocephala* as meant by Moore.
Fl. NZ Vol II 135 (1970) and others (1970-1997), is not that of Fitzg. (1876).
- Pterostylis tasmanica*** DL Jones. *Muelleria* 8(2): 177 (1994).
- Plumatchilos tasmanicus* DL Szlachetko
Polish Bot. J 46 (1): 22 (2001)
- Pterostylis squamata* as meant by Hook.f. *Fl. Nov. Zel.* 1: 249 (1853), is not that of R.Br. (1810).
- Pterostylis barbata* as meant by Cheesem.
Man. NZ Fl. 683 (1906), is not that of Lindl. (1840).
- Pterostylis plumosa* as meant by Cooper. *Field guide to NZ native orchids* 51 (1981), is not that of Cady (1969).
- Plumatochilos tasmanicus* (DL Jones) Szlach.
Polish Bot. J 46(1): 23 (2001).
- Pterostylis tristis*** Col. *Trans. NZ I.* 18: 271 (1886).
- Hymenochilus tristis* (Col.) DL Jones, Molloy & MA Clem. *Austr. Orch. Res* 4: 74 (2003).
- Pterostylis mutica* as meant by Cheesem.
Trans. NZ I. 15: 300 (1883), is not that of R.Br. (1810).
- Pterostylis trullifolia*** Hook.f. *Fl. Nov. Zel.* 1: 249 (1853).
- Diploidium trullifolium* (Hook.f.) DL Jones, Molloy & MA Clem. *Aust. Orch. Res.* 4: 72 (2003).
- Pterostylis rubella* Col. *Trans. NZ I.* 18: 271 (1886).
- Pterostylis trullifolia* Hook.f. var. *rubella* Hatch. *Trans. Roy. Soc. NZ* 77: 244 (1949).
- Pterostylis trullifolia* Hook.f. var. *gracilis* Cheesem. *Trans. NZ I.* 47: 271 (1915).
- Pterostylis venosa*** Col. *Trans. NZ I.* 28: 610 (1896).
- Pterostylis confertifolia* Allan. *Trans. NZ I.* 56: 32 (1926).
- Pterostylis trifolia* Col. *Trans. NZ I.* 31: 281 (1899).
- 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. NZ 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. NZ* 82: 614 (1954), is not that of Backer, van den Brink & van Steenis (1950).
- The name *Neottia sinensis* was never used for NZ plants.
- Spiranthes "Motutangi"*** tagname for endangered Far North taxon similar to *S. australis*.
- Thelymitra* J.R.Forster & Forst.f. *Char. Gen. Pl.* 97 t.49 (1776)**
- Thelymitra aemula*** Cheesem. *Trans. NZ 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.) Rüpp & 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. NZ 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. NZ* 79: 390-1 (1952).
- Thelymitra xdentata***: a sterile hybrid of *T. longifolia* x *T. pulchella*.
- Thelymitra dentata* Moore. *NZ J Bot.* 6: 478 f.2 (1969).
- Thelymitra formosa*** Col. *Trans. NZ 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. *NZ J Bot.* 6: 477 f.2 (1969).
- Thelymitra pachyphylla* as meant by Hatch. *Trans. Roy. Soc. NZ* 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. NZ* 79: 396 pl.80 F-H (1952).
- Thelymitra longifolia* J.R.Forster & Forst.f. var. *intermedia* Hatch. *Trans. Roy. Soc. NZ* 79: 396 pl.80 J (1952).
- Was tagged *T. "pseudopauciflora"* for a time.
- Thelymitra colensoi* Hook.f. *Handbk. NZ 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.*

- NZ 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 NZ 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. NZ I.* 17: 249 (1885).
- Thelymitra alba* Col. *Trans. NZ I.* 18: 272 (1886).
- Thelymitra cornuta* Col. *Trans. NZ I.* 20: 206 (1888).
- Thelymitra longifolia* J.R.Forster & Forst.f. var. *alba* (Col.) Cheesem. *Man. NZ Fl.* 339 (1925).
- Thelymitra longifolia* J.R.Forster & Forst.f. var. *forsteri* Hatch. *Trans. Roy. Soc. NZ* 79: 396 pl.80 B-E (1952).
- Thelymitra aristata* as meant by Hatch. *Trans. Roy. Soc. NZ* 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*** MA Clem., DL Jones & Molloy. *Austr. Orch. Research* 1: 141 (1989).
- Thelymitra matthewsii*** Cheesem. *Trans. NZ I.* 43: 177 (1911).
- Thelymitra nervosa*** Col. *Trans. NZ I.* 20: 207 (1888).
- Thelymitra decora* Cheesem. *Man. NZ Fl.* 1151 (1906).
- Thelymitra* aff. *pauciflora* agg.**
- Thelymitra pauciflora* as meant by Cheesem. *Man. NZ 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. NZ I.* 20: 207 (1888).
- Thelymitra fimbriata* Col. *Trans. NZ I.* 22: 490 (1890).
- Thelymitra pachyphylla* Cheesem. *Man. NZ Fl.* 1151 (1906).
- Thelymitra caesia* Petrie. *Trans. NZ 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 purpureofusca*** Col. *Trans. NZ I.* 17: 249 (1885).
- Thelymitra* "Whakapapa": undescribed taxon from Ruapehu, may be this, or may be distinct.
- Thelymitra sanscilia*** Irwin ex Hatch. *Trans. Roy. Soc. NZ* 79: 397 pl. 81 B-E (1952).
- Thelymitra tholiformis*** Molloy & Hatch. *NZ J Bot.* 28: 111 f.1 (1990).
- Thelymitra intermedia* as meant by Moore. *Fl. NZ 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* "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. NZ Fl.* 692 (1906)
- Acianthus alliance**
- Townsonia deflexa*** Cheesem. *Man. NZ 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. NZ Vol II* 107 (1970), is not that of Hook.f. (1860).
- Waireia*** DL Jones, MA Clem. & Molloy. *Orchadian* 12(6): 282 (1997).
- Waireia stenopetala*** (Hook.f.) DL Jones, MA 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*** MA Clem., DL Jones & Molloy. *Orchadian* 12(5): 214 (1997) ***Dendrobium* alliance**
- Winika cunninghamii*** (Lindl.) MA Clem., DL 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).
- Dendrobium cunninghamii* Lindl. *Bot. Reg.* 21 sub. t.1756 (1835).
- Dendrobium lessonii* Col. *Trans. NZ I.* 45: 326 (1883).

NZNOG Mapping Scheme

by Gordon Sylvester

A few years ago NZNOG mounted a project to identify the orchid population in various parts of New Zealand. The basis was to record what orchids were found and the location and date of the finding. The majority of the information came from a small cadre of amateurs and in some instances courtesy of DoC area offices.

One of the effects has been to display just how many species would be found and also that there were, and still are a lot of orchids out there undescribed or unrecognised. Coincidentally, in about 1982 a proposal to create Ecological Regions/Districts was made, in order to formalize a few *ad hoc* local schemes.

Quite a few of our members feel that they could not properly identify all of the plants they found. Quite simply the easiest way to record any information is by looking at the flower if present and either supply a photo of the flower or try to describe the colours as simply as possible. Try and avoid designer colours. Of course if you have any of our experienced members living nearby, a polite phone call will generally get an offer of assistance.

The group will restart the mapping scheme using the existing database and information as shown in the second edition of the *Field Guide* and our *Journal*. Just because you find an orchid in a specific location, may not mean it has been recorded from that area in the past. None of us have a photographic memory or are able to recall the names of all the Ecological Districts. For example you may find four different orchids in flower while on a picnic visit with the family. A good start is to record the plants, the date, and a recognised locality.

It would also be nice to get a grid reference if you are skilled enough to do this, but not everyone can decipher this particular jigsaw puzzle of numbers. A simple location, White Pine Bush near Tongioio or Ngatamawahine clearing Urewera N.P. is fine. We generally will not know local names to a specific point but a locality will give a good clue to the Ecological District.

This project also serves to keep up to date the *Field Guide* information and is also published in our *Journal*.

What's in it for me you might ask: quite simply, helping to log our species and define their area of habitat to achieve a better understanding of our flora. Even now we cannot say with certainty that we can clearly identify the full extent or distribution of any particular genus/species. A look at any one of our journals usually shows a new record or an amendment to an existing record.

How to record the observation: simply an email if convenient or a postcard are the simplest means otherwise a letter or even a structured observation record is acceptable. Sorry verbal records are prone to error and are not encouraged.

Who to contact: Gordon Sylvester, Beach Road, Kumara, West Coast, email south-col@xtra.co.nz.

If necessary I can give you the name of a person nearby who may be able to assist in identification. Remember you are not allowed to collect plants from any Scenic Reserve, Forest Park, or National Park; please seek permission from the owners or administrators of land. Do not collect any more than three to five plants. Generally try to take a photo rather than remove a plant. If there is only a small number of plants do not remove any of them.

Some forest owners will allow entry on a permit system; you need to enquire if it is permissible to remove plants for botanical identification and recording; please err on the side of caution in all cases.

Finally get out and enjoy the environment: even a casual look around may surprise you as to what is nearby.

The science of scents – 5: specific anosmia and *Boronia* nose

The Column, disappointed in my series on scent because it had little direct reference to NZ orchids, and because it didn't mention his personal inability to smell Boronia (a form of specific anosmia), has spurred me to continue the series. I shall do so by using a number of direct quotes from the net.

Some individuals are completely unable to detect certain odours, a condition known as **specific anosmia**. An example of this applies to the inability of some doctors to smell ketones, found in the breath of patients with poorly controlled diabetes. This inability is an all-or-nothing phenomenon, with about a quarter of doctors failing to detect this smell. Anosmias such as this are usually genetic in origin. <http://www.harpers-wine.com/featuresitem.cfm?featureID=71>

It is now generally accepted that women are more sensitive to odours than men. This was confirmed by *The National Geographic Smell Survey* conducted in late 1986. Age of respondents also appears to play a major role in acuity, with definite decreases occurring past age 50. Loss of sensitivity with age is not just restricted to detection threshold levels but also to impairment of the ability to discriminate foods and odours. In addition, screening 764 laboratory employees for one or more of six anosmia types showed 3% to 47% had **specific anosmias** in various odour categories, with a general anosmia to all odors of 0.2%. 47% of respondents could not smell the "urinous" odor of one compound, 36% could not smell the "malty" odor of isobutyraldehyde, and 12% could not smell the musk Thibetolide or Exaltolide. <http://www.leffingwell.com/odorback.htm>

A minority of Europeans have **specific anosmia** for Freesia, although most Europeans report that Freesia is one of the strongest scents known to them. McWhirter concluded that inability to perceive the scent is a recessive character. Tests of 1,600 subjects showed that the frequency of the recessive phenotype was high in those of Eastern European and British Celtic descent (at about 10%) and low in those predominantly of Scandinavian, English, Dutch, and German descent (at about 4%) http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=OMIM&dopt=Detailed&mpl=dispomimTemplate&list_uids=229250

Most of us probably suffer from **specific anosmia**. Different species, and even different individuals within a species, appear to have genetic variations in their smell repertoire. Although the androstenone in boar saliva drives sows wild, only half of all humans can smell it at first sniff, according to Monell psychobiologist Charles Wysocki, who keeps a spray bottle of the substance handy. Most of the nonsmellers probably lack the genes that produce the necessary receptors, while some apparently have the right genes but for unknown reasons still don't produce enough working receptors—at least not at first. "About one-quarter of the nonsmellers can be trained to smell it," Wysocki says. "We think exposing the receptor cells to the molecules induces them to function." At any rate, our personal limitations in smell shouldn't necessarily be regarded as a problem, contends Wysocki. They are simply part of our genetic individuality. He, for one, actually likes the smell of skunk. "I may have an anosmia for some of its offensive compounds, and what remains of the odour is pleasant," says Wysocki. "I roll down the windows of my car to capture it." http://www.starsandseas.com/SAS%20Physiology/Neurology/Realm_Chemical.htm

Insensitivity to single odours, called **specific anosmia**, has been repeatedly reported in the literature. The main question of the present study was whether olfactory sensitivity is inducible in subjects with specific anosmia. For this reason the olfactory sensitivity of women with specific anosmia to the volatile steroid androstenone was investigated by threshold measurements twice: before and after repeated odour exposure. Androstenone is a compound that contributes to human body odour and is found at a higher concentration in male axillary sweat than in female sweat. The results show that olfactory perception of androstenone could be induced in more than 80% of the odour-exposed anosmics. <http://www.psyjournals.com/abstracts/hh/zea/1999/01/body-zea4601053.html>

Male inbred mice were tested for relative odourant sensitivity using a conditioned aversion technique and odours classified as primary or complex for humans. Two strains of mice appeared to be less sensitive to the primary odourant isovaleric acid than were seven other inbred mice. The genotype may provide an animal model of a **specific anosmia** as characterized among humans. Wysocki CJ, Whitney G, Tucker D. Specific anosmia in the laboratory mouse.

Gas chromatography/olfactometry (GC/O), commonly used to identify odour active chemicals in extracts and headspaces, can present a subject with pure odourants in precise doses. Because of the precision of the dose delivered by GCO and its ability to examine scores of chemicals in a single test it is an ideal tool to study differences in human subjects. Normal olfactory acuity measured as thresholds is usually defined as responses less than two standard deviations from a population mean or the mean of the most sensitive group in a bimodal distribution. Further deviation is then defined as **specific anosmia**. The objective of this research is to formulate a standard odourant mixture that can be used to test individuals for specific anosmia. Friedrich, J.E. and Acree, T.E.

Formulation of a standard odourant mixture to test human sniffers for specific anosmia. <http://www.nysaes.cornell.edu/fst/faculty/acree/lit/acree135.html>

It seems that 12-13% of all people have **specific anosmia** to the odours that are linked to peatiness in Scotch whisky. This means they either can't smell them, or identify the smell as something totally inappropriate. Tests were done using phenol (the medicinal/TCP characteristic of Islay malts), and Oil of Cade, a wood-smoke condensate which provides smokiness. A lot of Cade-anosmics say they smell mouldy-mustiness, which is actually very different from wood smoke. Perhaps those whisky drinkers who turn up their noses at Islay malts in fact cannot detect the gorgeous phenolics, or think their Islay dram tastes of a mouldy old apron. The really sad cases are those who can taste peatiness, but don't like it. Perverse, I call them - in fact they are probably the sort of people who enjoy the flavour of nuts. Reference: Burtles, Sheila M. 1990: Fundamental problems encountered when evaluating Scotch whisky by sensory methods. *Proceedings of the 3rd Aviemore Conference on Malting, Brewing and Distilling*. Institute of Brewing, London: pp 253-265.

Specific anosmia and parosmia are widespread phenomena even amongst perfumiers. There are differences in odour discriminatory abilities between the sexes and the powers of perception fall off with increasing age. ... descriptions of odour are subjective. Hedonistic appraisal, like or dislike, and judgements of intensity of specific odour characters, can be influenced by previous events and other factors.

STOP PRESS

The Nobel Prize for medicine has just been awarded to Linda Buck and Richard Axel for their work on the sense of smell. Read it at <http://fastart.nature.com/news/2004/>

Nematoceras “Pollok” – a new find for Awhitu

By Tricia Aspin

Isn't it perplexing how time, other commitments and sometimes pure supposition can turn spasmodic observations into lengthy and somewhat impatient waits – sometimes as long as another season or two? The latest exciting find for the Awhitu Peninsula stemmed from the frustration of taking something for granted. Now, one thing that has been learned is that one shouldn't take anything for granted – not in the orchid world anyway!

Ian and Pixie Craig's bush at Pollok is an interesting site offering several of the more unusual plants to be found on the peninsula. The Craigs farm large bulldozes and the steep nature of the terrain allows for some disturbance by the cattle without causing much damage to the vegetation.

While botanising in March 2003 I found orchid leaves on two damp cliff faces in the native forest and noted that they looked like *Nematoceras macrantha*. Expectations of *N. macrantha* in flower during a later visit in October left me really braced-off after finding all flowering finished and quite a lot of seed set. If this was definitely not *N. macrantha* then maybe it could be one of the *Nematoceras rivularis* aggregate here. None had been noted for Awhitu before.

Eager not to miss the crucial 2004 time of flowering the next visit to Pollok was at the beginning of July. There were many leaves with flower buds. Some emerging leaves were coiled like an ice cream cone. I had not seen this before. Most were little leaves that simply become bigger leaves. Flower buds were pre-

sent (the “ice creams”) in many of the coiled leaves.

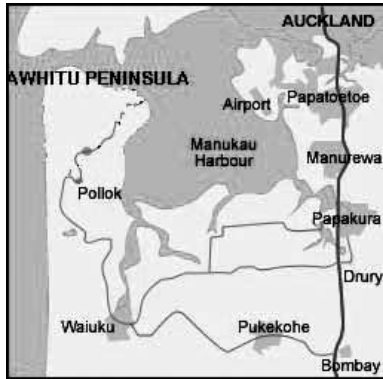
19 July and Eric Scanlen and Allan Ducker joined the site visit. The south-facing sandstone cliff never dries out in summer and has constant seepage. It was a wet winter and they wondered if there would be a waterfall to contend with – not so! The flowers were still not advanced enough to make a conclusion but it certainly seemed to be a *N. rivularis* form. Several smaller and less advanced colonies were found nearby.

Stella Christoffersen joined us on 10 August and we found the colony in full flower. (Figs.8, 9, 10 p43, & drawings pp22, 23). There were lots and lots of jaunty little fellows pertly staring straight at us from their perch. The largest colony of about 4 square me-

tres had quite a dense covering of orchids. Approximately 50% of leaves had flowers. Eric and Allan had not seen one like this before. It is similar to *Nematoceras* “Kaimai” but there are differences. In between showers, the photographers captured images on film and videotape while the women checked out the seven smaller, nearby colonies. A rough estimate would be around 1500 plants in total.

Eric's photographs reveal little prickles all over the labellum apron and scores of little slanting ridges further inside (to give pollinators a firm foothold?) plus a green stripe leading down to the column. The labellum curling back on all the apron margins is unique. Compare the section with Bruce Irwin's excellent comparative drawings of the *N. rivularis* aggregate in J.86:16-19.

Specimens were sent to Dr Brian Molloy for DNA testing. To Brian it also appears to re-



semble *N.* “Kaimai” to some extent, but also *N.* “whiskers” [J63:8,9 & J86:19] and the tentatively named *N.* “aff. iridescens” [J89:7,8 & Fig. 11]. Because it is not a good match for any of these it will be subject to further critical examination.

Specimens were also lodged with Ewen Cameron at AK.

Bruce Irwin received some specimens and has produced very fine detailed drawings of the same. He feels that his drawings show clearly enough that it is distinct from any known species and from any presently tag-named. I am most encouraged by his comments.

Being thoroughly enthused, my husband Wayne and I have made further forays. Wayne’s great interest is the kauri (*Agathis australis*) and we are always eager to spot showings of these. We are familiar with much of the Awhitu district and several searches produced likely sites but no orchids. I developed a hunch that we needed to look to the south of Pollok.

After some prompting, Stella remembered a waterfall area at Kohekohe which she had visited to photograph and paint about 12 years ago. On 9 September Stella pointed her nose in the right direction and led me to the grotto on Colin and Dorothy Hood’s property. There is a large sandstone cliff forming a natural amphitheatre with a waterfall cascading over the highest part. It is a beautiful spot but no orchids were showing. The cliff continues up and around the north side of the watercourse, becomes moss covered where there is seepage and is open to good light before disappearing into a mass of kiekie (*Freycinetia banksii*). A scramble up over the slippery sandstone boulders and “Hey Stella, you’re a whizz, we have it!”

This *N.* “Pollok” colony of about 18 square metres sported more than 1000 plants with an estimated 80% of leaves with a flower at this time. What a sight! With so many, you really do feel as though they are staring at you. There were even many little glow worm threads visible in the fissures of the sandstone.

Several flowers were past their best and already the ovaries were swelling.

Specimens were sent to Brian and Bruce for comparison and were confirmed as being the same.

In the meantime, Eric informed Peter de Lange of the find enclosing his photographs. While being involved in the excitement of the birth of a new baby son, Peter found time to recall having found something similar at Glen Murray in 1985, also on a south-facing wet sandstone cliff. Specimens sent to Brian had it reported as *Corybas orbiculatus* as was the convention of those days.

Coupled with Brian’s and Bruce’s comments the recording of this orchid, in two different places on the Awhitu Peninsula and the probable third at Glen Murray, must give weight to the fact that it is indeed a separate species. For the time being, I have pleasure in adding *Nematoceras* “Pollok” to the list of Awhitu orchids.

Now for a mention of some others.

More finds at Craig’s include the first sighting of *Ichthyostomum pygmaeum*. The fact that it is growing on pohutukawa (*Metrosideros excelsa*) out on an otherwise bare ridge top and exposed to the westerly gales straight off the Tasman Sea is quite extraordinary. Others have since been spotted in the forested area but also on tall old pohutukawas exposed to the winds. A fairly large branch felled by the gales and sporting a carpet of *I. pygmaeum* shows this orchid is indeed a tough one.

Winika cunninghamii also has a preference for pohutukawa as the host tree in this area. These plants too seem quite happy to cop the strong winds. Both of these epiphytic orchids have been elusive with only two *W. cunninghamii* previously discovered (one in Mata-kawau Reserve and one at Shepherd’s in Boiler Gully Road).

During Eric’s and Allan’s 19 July 04 look at Craig’s, we noted *Diplodium alobulum* in full flower, one colony forming a carpet at the base of a large pohutukawa and the other hap-

Lateral sepals 3cm, almost parallel and very upright, barely stouter & longer than petals

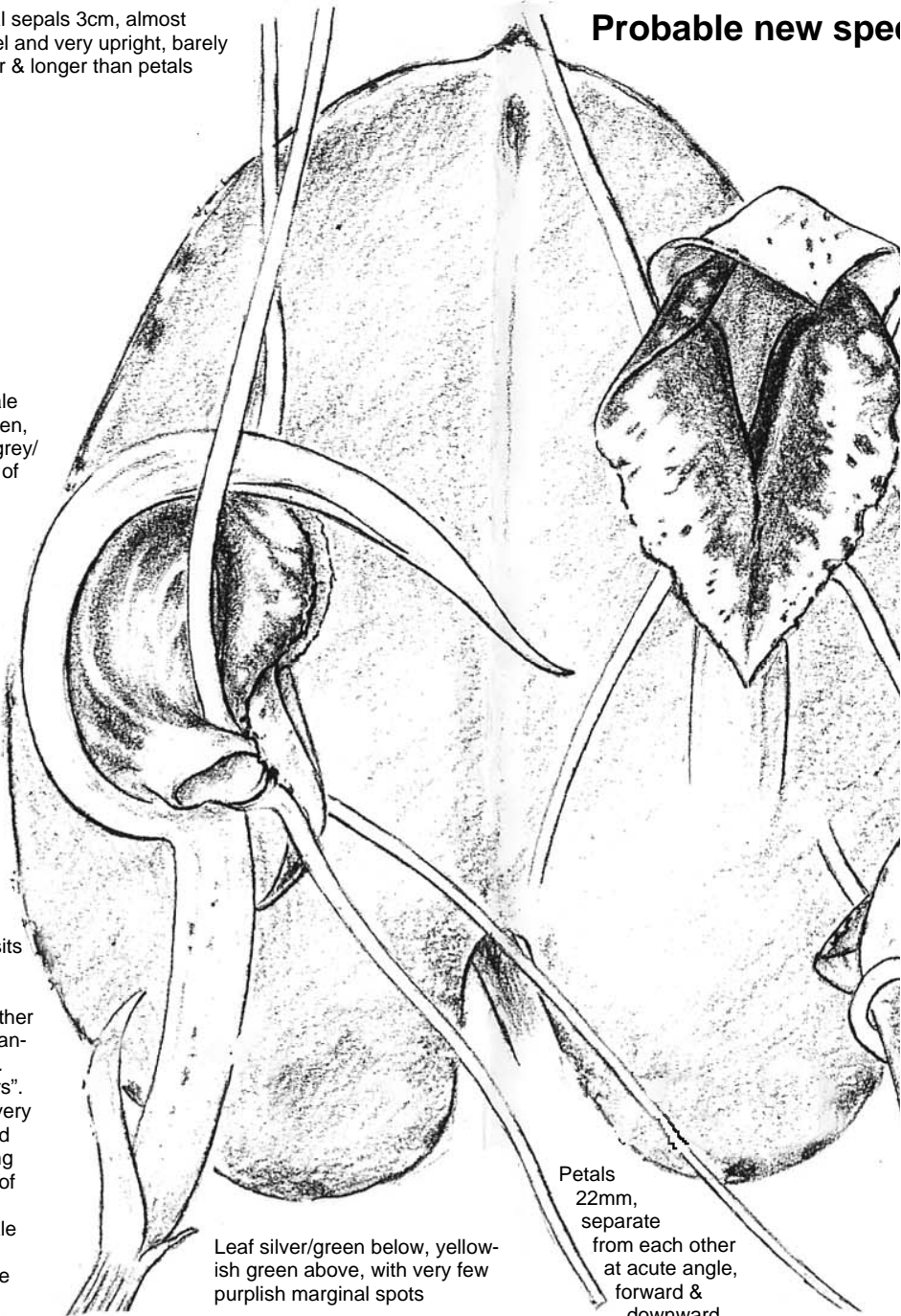
Probable new species

Dorsal sepal pale grey/green, though grey/crimson of labellum shows through.

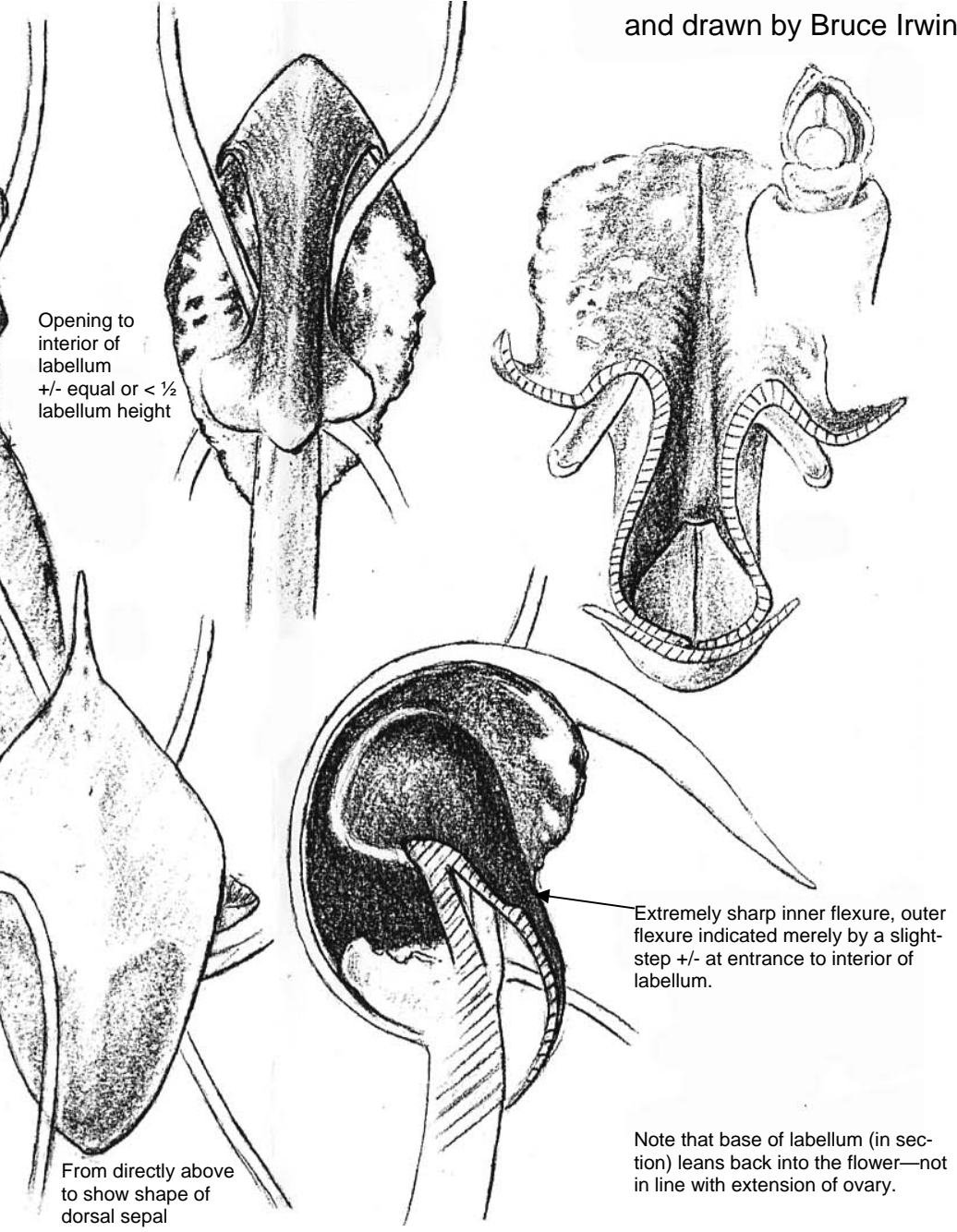
Flower sits on long slender ovary rather in the manner of *C.* "whiskers". Auricle very large and projecting forward of ovary. Bract pale green. Peduncle pinkish.

Leaf silver/green below, yellowish green above, with very few purplish marginal spots

Petals 22mm, separate from each other at acute angle, forward & downward



Species of *Corybas rivularis* agg. collected by Tricia Aspin 10 Aug 04
and drawn by Bruce Irwin



Opening to interior of labellum +/- equal or < 1/2 labellum height

Extremely sharp inner flexure, outer flexure indicated merely by a slight step +/- at entrance to interior of labellum.

From directly above to show shape of dorsal sepal

Note that base of labellum (in section) leans back into the flower—not in line with extension of ovary.

pily growing amongst native grass (*Poa pusilla*). There was also a small *Nematoceras triloba* agg. colony with several seed capsules and a solitary flower. First appearances suggested a *N. "pygmy"* taxon but after close observations Eric has these comments.

"It would seem that the little *N. triloba* agg. flower is *N. 'tribrive'*, although why it was flowering a month early is a mystery. *N. 'tribrive'* does look a bit like *N. 'pygmy'* ... But the node is well above the sheathing bract and its hang-dog dorsal sepal gives the show away. Cf. J89:29, bottom of the page. Comparing longitudinal sections of the two flowers is fairly convincing although my razor blade missed the exact centreline on Craig's so missed the pocket in the side of the labellum cleft. All *N. triloba* and *N. macrantha* seem to have pockets but this one is characteristic of *N. 'tribrive'* from the Bridal Veil Falls and from Pukapuka Track in the Hunuas. ... If it is *N. 'tribrive'* I'd be rather pleased because then it would have shown up in three well separated places which should consolidate it as an established taxon."

Further to the sometimes flummoxing *Nematoceras triloba* aggregate, last season saw two or maybe even three different taxa turning up. Specimens of the *N. "pygmy 1"* type flowering May/June in at least two relatively widespread sites (Matakawau Reserve at "Seat Junction" and "Outback" at Lee's) were sent to Brian Molloy for testing on 10 June 03. He commented that this taxon is quite different to *N. triloba* in the strict sense as well as other taxa within the complex and it seems to be the first to flower - June in this area through to August in the Nelson District.

There is *Nematoceras "tridodd"* flowering in August in at least three different sites (Dodd's Reserve, Lee's and Matakawau Reserve). These were first noted in 2001 [J81:22] and 2003 [J89:22-29]. Ian Dodd, a former NZNOG member, recognised the differences with this taxon in his reserve many years ago and sent specimens around but was told it was just a form of *Corybas trilobus* (which of course it is). Maybe with the renewed interest

in the *N. triloba* agg. we will see his suspicions confirmed.

Eric says *Nematoceras "trijuly"* seems to show three forms. *N. "trijuly 2"* grows 20 metres west of *N. "pygmy 1"* at Matakawau Reserve, Seat Junction (drawing, J89 top left P27) and flowers later. Lee's *Nematoceras "trijuly 3"* was featured in J85:14 and again a year later from the same colony - drawings J89:27, left centre and left bottom and J89:29, photo at top right. Subtle similarities; subtle differences; all worthy of further detailed study.

Too often I am in Australia orienteering among their much more rampant displays of ground orchids when I know that back home our own little beauties are probably also in flower. It took two years to time it right for the flowering of a certain *Petalochilus* species here. There are a few plants in Lee's on a sunny clay track (Suite Ridge) and last 20 October, instead of unpacking the bags, I headed out for a look. Two were in flower. Not greenish-white like *Petalochilus chlorostylus* which occurs in the vicinity, but pink and the whole plants were slightly larger. With the help of the *Field Guide* and a phone call to Eric, the conclusion is that it is *Petalochilus bartlettii* - another for the list.

Nearby *Thelymitra carnea* was also in flower on this day, a bit later than the first recording on 10 Oct 01. This site sports only a few plants and the species hasn't been spotted elsewhere on the Awhitu Peninsula. No doubt they will be around. I just haven't found them yet!

Acknowledgements

Many people have contributed something to this article for which I am most grateful. They include; Ian and Pixie Craig, Colin and Dorothy Hood, landowners; my friend Stella Christoffersen and also Allan Ducker, sharing of knowledge on field trips; Bruce Irwin, drawings and comments *N. "Pollok"*; Peter de Lange, an interesting revelation from the past; Dr Brian Molloy, comments *N. "Pollok"*; Eric Scanlen, comments, observations, sharing of

knowledge and photographs from field trips; Sid Smithies, photograph; my husband, Wayne, always supportive of my wanting to skive off orchid hunting.

Awhitu Orchids as at August 2004

Acianthus sinclairii, *Chiloglottis cornuta*, *Corybas cheesemaniae*, *Cyrtostylis oblonga*, *Danhatchia australis*, *Diplodinium alobulum*, *Diplodinium brumale*, *Diplodinium trullifolium*, *Drymoanthus adversus*, *Earina aestivalis*, *Earina autumnalis*, *Earina mucronata*, *Gastrodia aff. sesamoides*, *Ichthyostomum pyg-*

maeum, *Microtis unifolia*, *Nematoceras macrantha*, *Nematoceras* “Pollok”- the first found of the *N. rivularis* agg., *Nematoceras triloba*, includes the taxa under study (*Nematoceras* “pygmy” forms 1 and 2; *Nematoceras* “trijuly” forms 2 and 3; *Nematoceras* “tribriva”[?]; *Nematoceras* “tridodd”), *Orthoceras novae-zeelandiae*, *Petalochilus bartlettii*, *Petalochilus chlorostylus*, *Pterostylis agathicola*, *Pterostylis banksii*, *Pterostylis cardiostigma*, *Singularybas oblongus*, *Thelymitra aemula*, *Thelymitra carnea*, *Thelymitra longifolia*, *Thelymitra aff. longifolia*, *Thelymitra aff. pauciflora*, *Thelymitra tholiformis*, *Winika cunninghamii*.

Characters of *Nematoceras* “Pollok” noted by Bruce Irwin (dwgs pp22, 23)

The flower shares characters of several other forms including *C. rivularis* s.s. and *C. “whiskers”* but shows other characters which set them apart from those species.

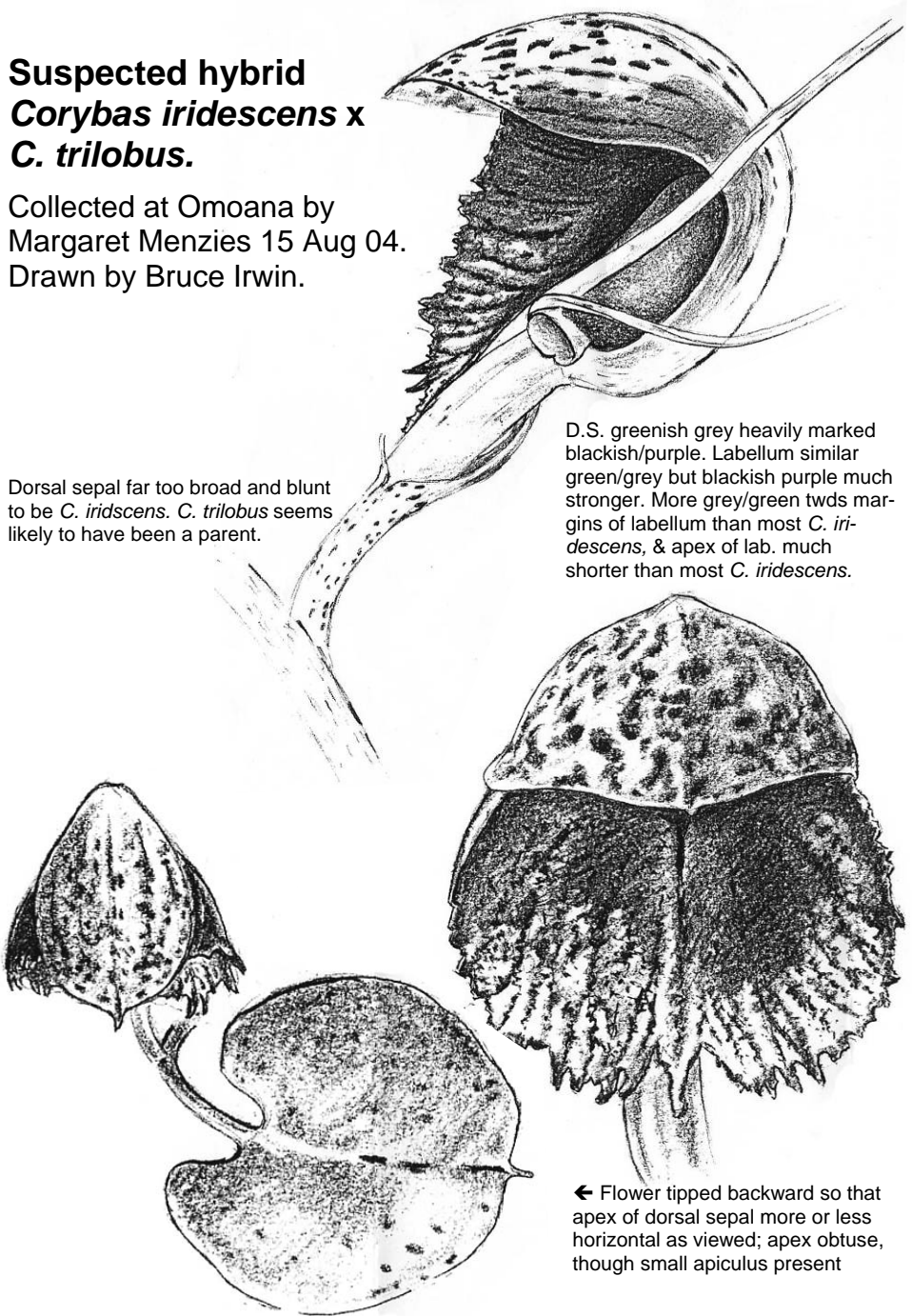
1. The flower is very small, perhaps due to an unfavourable situation.
2. Lateral sepals are very upright – nothing unusual but the lateral petals are unusual in that they are very strongly down-pointing and facing almost straight ahead.
3. Shape of labellum very like *C. iridescens* s.s., but very narrow, barely wider than the dorsal sepal. Margins below opening to interior form a triangular apex (about 50 degrees), no apiculus.
4. The front edge of the large (usually forward-pointing) auricle, projects beyond the ovary.
5. Entrance to interior, low on labellum and very narrow.
6. Unusually wide purplish bands extend from interior onto “apron” of labellum.
7. As seen from the side, the back of dorsal sepal is almost circular (as in *C. “whiskers”*).
8. Flower from behind forms an elongated diamond.
9. Ovary as long as flower is tall resulting in a “leggy” appearance as often seen in *C. “whiskers”*.
10. Even the column is unusual. The viscid disc obscures about half of the pollinia, only a small basal portion of it covered by the top margin of the stigma.
11. The longitudinal section is especially interesting. The base of the labellum rises as is usual from the front edge of the ovary but is inclined noticeably inward. The inner flexure is exceptionally sharp (bent through more than 150 degrees). The outer flexure is virtually absent, marked only by a narrowing of the section immediately inside the entrance. The apical portion curves downward and inward to touch the front edge of the ovary.

Suspected hybrid
***Corybas iridescens* x**
***C. trilobus*.**

Collected at Omoana by
 Margaret Menzies 15 Aug 04.
 Drawn by Bruce Irwin.

Dorsal sepal far too broad and blunt
 to be *C. iridescens*. *C. trilobus* seems
 likely to have been a parent.

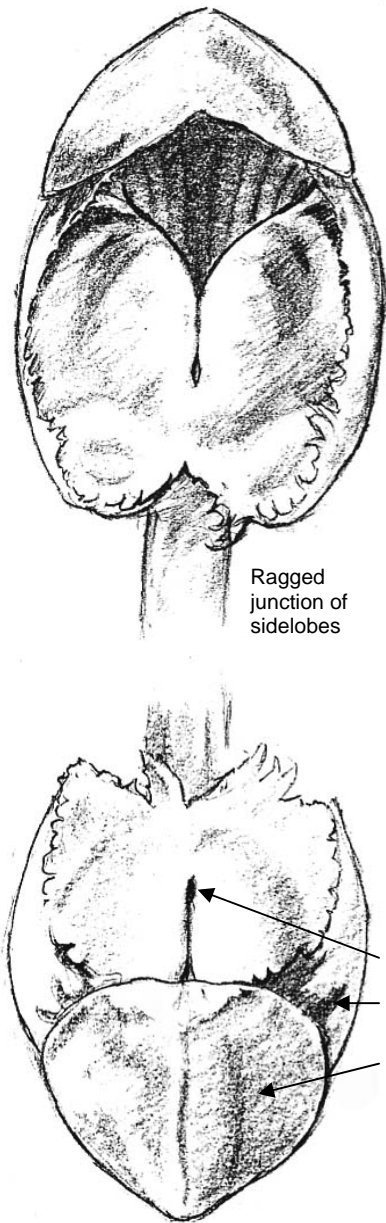
D.S. greenish grey heavily marked
 blackish/purple. Labellum similar
 green/grey but blackish purple much
 stronger. More grey/green twds mar-
 gins of labellum than most *C. iri-
 descens*, & apex of lab. much
 shorter than most *C. iridescens*.



← Flower tipped backward so that
 apex of dorsal sepal more or less
 horizontal as viewed; apex obtuse,
 though small apiculus present

Tiny *C. trilobus* (?*C. hypogaea*?)

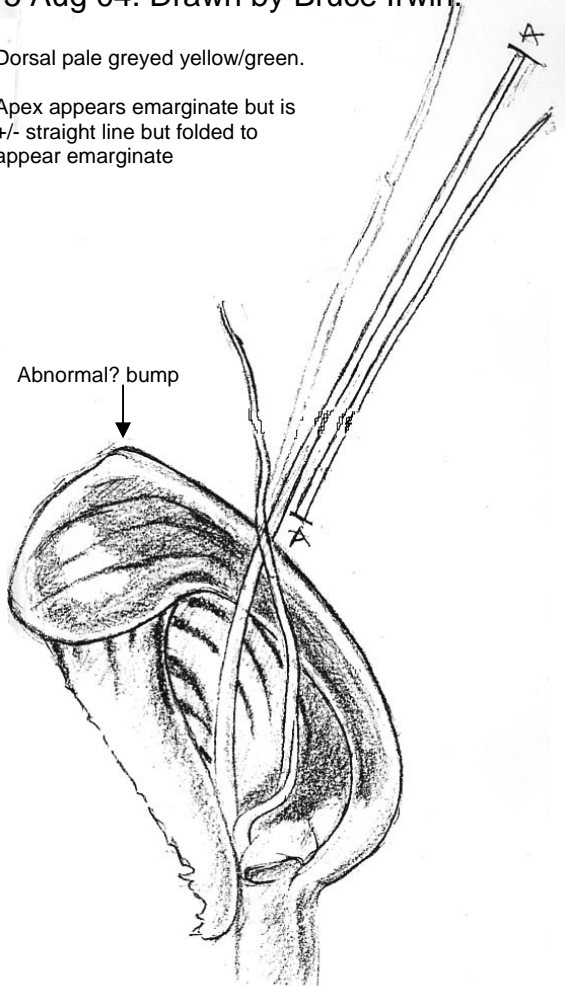
Coll. by Margaret Menzies 15 Aug 04. Drawn by Bruce Irwin.



Dorsal pale greyed yellow/green.

Apex appears emarginate but is +/- straight line but folded to appear emarginate

Abnormal? bump



Ragged junction of sidelobes

"Drainage hole" in midline of labellum

Side/frontal lobe of labellum

Dorsal appears purplish green/grey because colour of labellum shows through.

Flower tipped backward so apex appears horizontal, from viewpoint directly above, apex +/- straight line.

historicalreprints

Lessons on *Corybas* taxonomy

From the introduction to John Dransfield, J. B. Comber and G. Smith. A synopsis of *Corybas* (Orchidaceae) in West Malesia and Asia. Kew Bulletin 1986; 41 (3): 575-613.

Corybas is a remarkable genus of largely terrestrial orchids comprising about 100 species found from South China and India to New Zealand and the Subantarctic and Western Pacific Islands. All species are small and inconspicuous from a distance; plants consist of a single underground tuber and a single leaf subtending a single flower. Although inconspicuous from afar, plants are often extraordinarily beautiful when examined closely and have a special jewel-like quality. Structurally the flower is remarkable for the elaboration of the dorsal sepal and lip which together form a tube with an expanded mouth; the lateral sepals and petals vary between long tentacle-like structures and almost invisible threads; the lip usually bears two spurs. Everyone who has written about *Corybas* has waxed poetic over the charm of these “botanical jewels”.

Unfortunately differences between taxa of *Corybas* which are strongly manifest in the field, tend to disappear in spirit material and dried pressed specimens are very difficult to interpret. Add to this the facts that some taxa are very widespread (e.g. *C. carinatus*) whereas others are known from one collection only (e. g. *C. vinosus*) and that two or three taxa may be found growing together, and there arises a great potential for confusion.

This paper arises from the frustration experienced in trying to identify species of *Corybas* from Peninsular Malaya, followed by the realization that names used in Malaya were applied to taxa quite different from the taxa in the type country. Further, during the last ten years we have been able to accumulate a series of colour transparencies which, more successfully than any other method, have recorded the habit and colours of the flowers and shown distinctions, where none were originally thought to exist. Finally during fieldwork in West Malesia in 1977 during our spare time, we found an extraordinary abundance of *Corybas* and so it was possible to study variation between populations. Originally it was our intention to prepare a paper giving field notes and illustrations of the species of *Corybas* known to us in the Malay Peninsula and Java, and to describe the species thought by us to be new. However, as might be expected, it has not been possible to prepare such an account in isolation—we have thus considered all species in the West Malesian and Asian region as well as those we know in the field in Sumatra, Java, Borneo and Malaya. Obviously no satisfactory account of the genus can be prepared without monographic treatment; a monograph of the species east of Wallace’s Line has recently been undertaken by Dr P. van Royen and we hope that our work will complement his. We believe that field experience is essential in interpreting species in this genus. If in monographic work some of our new species prove to be synonymous with previously published taxa, we hope at least that our descriptions, spirit material, colour photographs and line drawings will be sufficiently clear and unambiguous to allow synonymy to be established easily. Confusion will still occur in the genus until the early, often inadequately, described and illustrated species have been refound.

Some of our conclusions are of a preliminary nature; we are conscious of erring on the side of over description, especially in the complex of *C. pictus*, but we feel it important to record the variation and disjunctions we have observed in the field. Unfortunately we have not been able to locate types of all species, but in our account we have indicated all instances where uncertainties of identity remain; when species have previously been well-described and illustrated, we have not duplicated the description, confining ourselves to new or poorer described or confusing taxa.

Hunting for *Corybas* is an exciting pastime. After some experience it is possible to predict

where the orchids occur, and we have had the satisfaction of finding new taxa in otherwise well botanized localities. Often two neighbouring mountain peaks will carry completely different species of *Corybas*; sitting exhausted on the summit of a peak in Borneo or Sumatra and looking at high ridges and peaks leading off in all directions, we have often imagined the wealth of new records and taxa that must be waiting to be discovered. Furthermore no *Corybas* spp. have been recorded for Thailand, Vietnam, Laos or Cambodia, yet there must surely be species there. So we expect that as mountains are explored, new records and new taxa will be discovered and, we hope, greater appreciation of variation will be built up.

Diagnostic characters

During our investigations of *Corybas* we have found certain characters to have been particularly useful in separating taxa and so it seems important that these should be discussed in some detail.

Leaf. Although there is great variation in leaf size and even in shape within populations, some leaf characters are of diagnostic importance. The coloration of the venation is usually consistent, and presence or absence of crystal bundles, visible as white dots, seems to be consistent and useful. Undulation of the leaf margin is variable but its absence is usually diagnostic.

Lateral sepals and petals. Relative size, orientation and presence or absence of connation are of great value.

Dorsal sepal. Shape, coloration, and presence or absence of keels are of importance; however, in some species even within populations, the overall shape may be variable.

Lip. Coloration and papillosity are useful features. One character to which we have given great emphasis is the shape of the throat and the related presence or absence of swellings at the mouth of the throat. We have found few useful characters apart from coloration in the spurs. Characters of the lip margin which have proved to be useful are the orientation and the nature of the denticulation.

Flower posture. In a few species the flower seems more or less consistently to be reflexed.

Fruit. Fruit is too rarely correlatable with flowers, but even when it can be correlated, we have found no features of diagnostic value.

Brian Tyler writes that *Nematoceras iridescens* emerges from the ground as the ice-cream cone that appears typical of other members of the *N. rivularis* group. His photographs prove it:

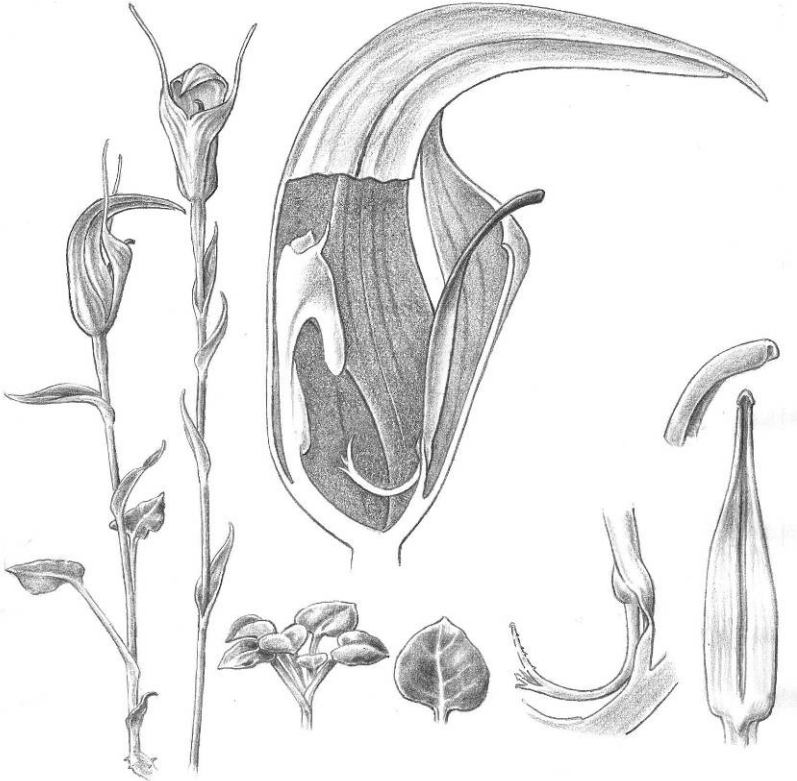


elementary yedhatch

1: Winter-flowering greenhoods

- drawings by Bruce Irwin

There is a group of four small, winter-flowering greenhoods in New Zealand, allied to the Australian *Pterostylis obtusa*



1: *Pterostylis* (winged column) *alobula* (without a little lobe in the sinus of the lateral sepals)

Plant with 3 growth forms –

- a: a juvenile rosette of petiolate, trowel-shaped leaves
- b: an intermediate flowering form, with petiolate, trowel-shaped leaves at the base of the stem, and sessile, bracteate leaves towards the top
- c: a mature flowering form with only sessile, bracteate leaves scattered up the stem

Labellum narrowed in its upper half, with a slightly swollen, truncate or crenulate tip. Sinus of the lateral sepals without a protruding central lobe

Distribution – endemic – North Is from the Three Kings and Poor Knights Is. southward, in scrub and light forest. South Is Sounds/Nelson and south to North Canterbury

Flowers – June-August – insect pollinated.

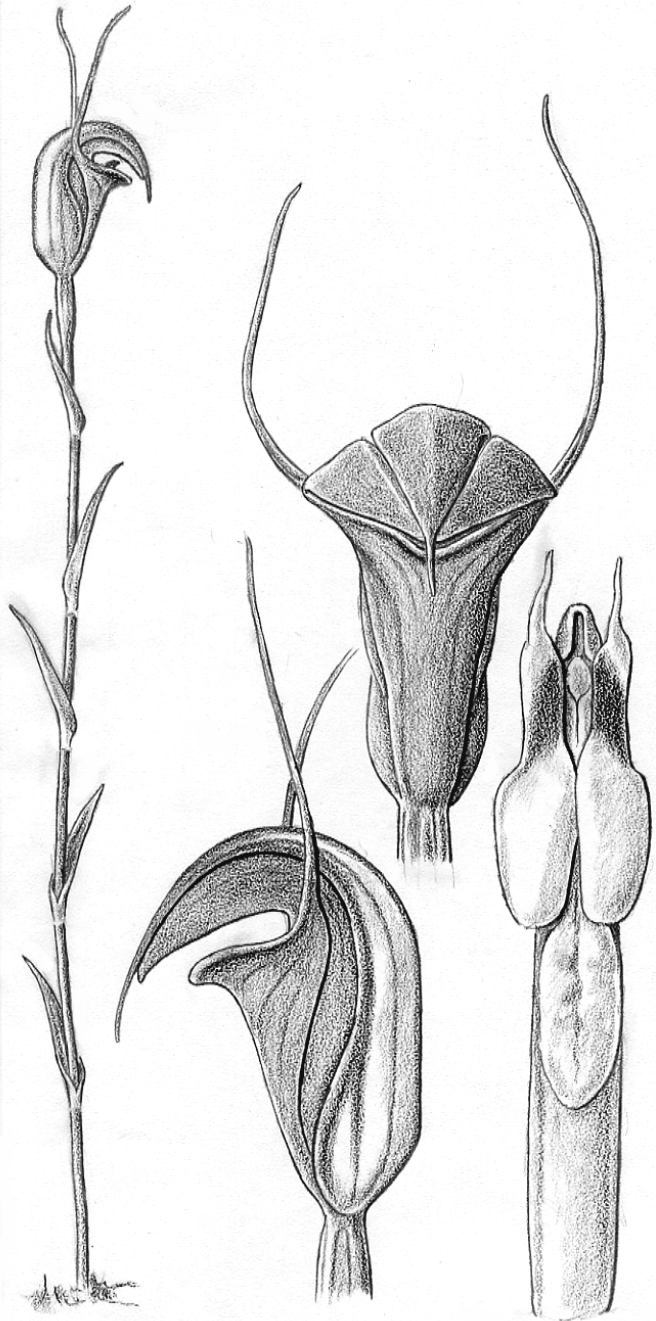
2: *Pterostylis alveata*

(the protruding lobe in the sepal sinus).

Plant with juvenile rosette, and sessile bracteate leaves scattered evenly up the stem

Distribution – Australia – Victoria, New South Wales, New Zealand – northwest Nelson

Flowers – June-July – insect pollinated





3: *Pterostylis brumalis* (wintry – the flowering season)

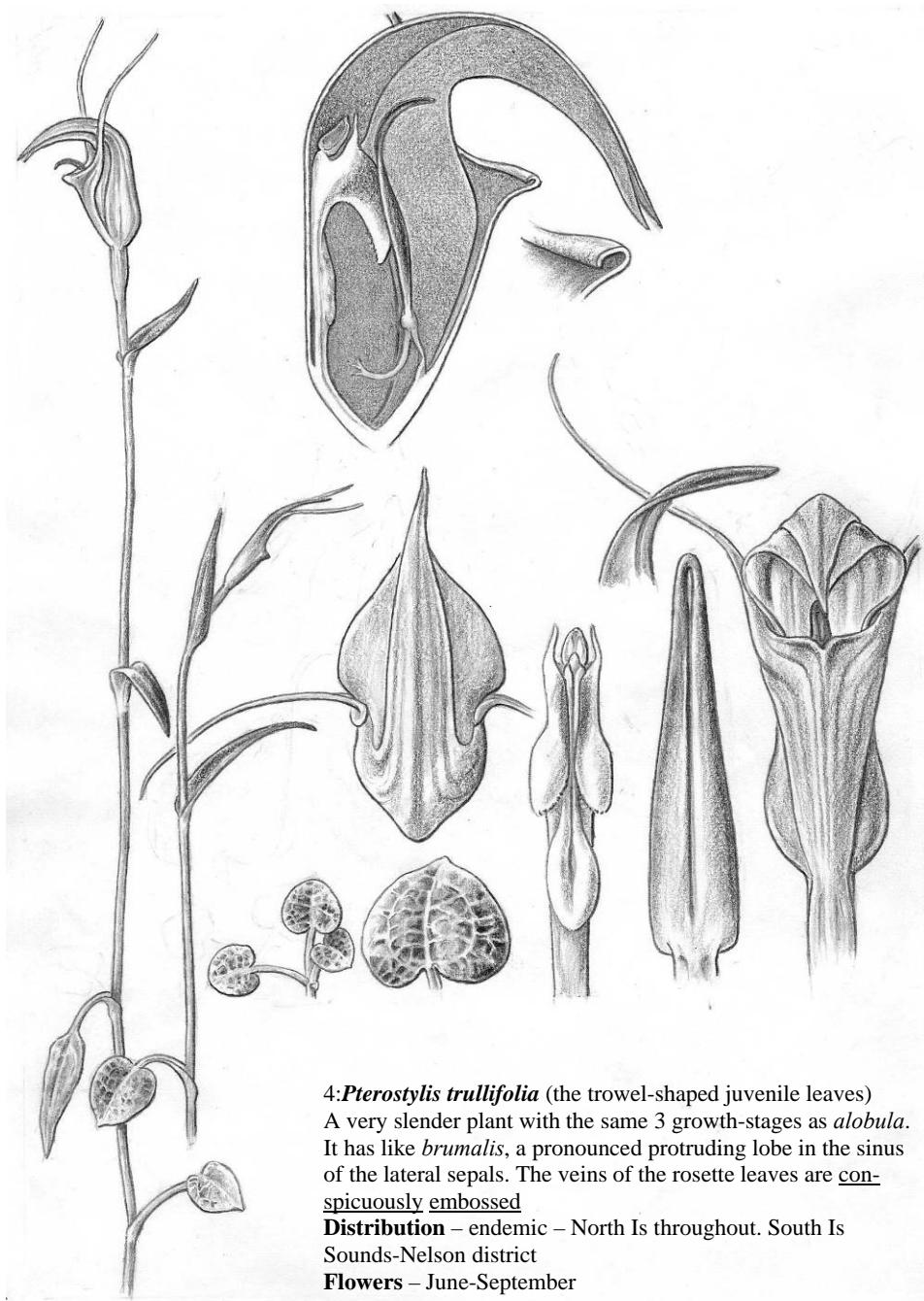
Unlike *alobula* and *trullifolia*, *brumalis* has no intermediate growth-stage. It begins with a juvenile rosette and the relatively broad, sessile stem-leaves tend to be bunched towards the top of the stem. The dorsal sepal is strongly incurved, with the petals held horizontally, giving the flower a distinct cobra-hooded appearance. The sinus of the lateral sepals has a very prominent protruding lobe.

This species is confined by a mycorrhizal association to the immediate vicinity of the kauri, and has never been found away from it.

This is the only NZ *Pterostylis* to my knowledge with a distinctive mycorrhizome. The oblong-cylindrical tuber, densely covered with minute root-hairs, lies on the surface beneath the litter, and produces usually 2 trowel-shaped leaves on long petioles, and several rhizome-internodes with terminal node-tubers

Distribution – endemic – North Is from Te Pahi south to the Coromandel Ranges

Flowers – April-July – insect pollinated



4: *Pterostylis trullifolia* (the trowel-shaped juvenile leaves)
 A very slender plant with the same 3 growth-stages as *alobula*.
 It has like *brumalis*, a pronounced protruding lobe in the sinus
 of the lateral sepals. The veins of the rosette leaves are con-
spicuously embossed
Distribution – endemic – North Is throughout. South Is
 Sounds-Nelson district
Flowers – June-September

notesetc

Pollination ecology of four epiphytic orchids of New Zealand, by Carlos A Lehnbech and Alastair W Robertson recently appeared in *Annals of Botany* 2004; 93: 773-781 www.aob.oupjournals.org. The abstract is reprinted below...

Background and aims In New Zealand epiphytic orchids are represented by four genera and eight species. The genera *Earina* (three species) and *Winika* (one species) are the most conspicuous and widespread. These are likely to be some of the southernmost distributed genera of epiphytic orchids in the world.

Methods To identify the pollination strategies that have evolved in these orchids, hand-pollination treatments were done and floral visitors were observed in several wild populations at two areas of southern North Island (approx. 40°S). Pollen : ovule ratio and osmophores were also studied and the total carbohydrate content of the nectar produced by each species was measured.

Key results *Earina autumnalis* and *Earina mucronata* are self-compatible, whereas *Earina aestivalis* and *Winika cunninghamii* appear to be partially self-incompatible. All four orchids are incapable of autonomous selfing and therefore completely dependent on pollinators to set fruits. Floral visitors observed in the genus *Earina* belong to Diptera, Coleoptera and Hymenoptera and to Diptera and Hymenoptera in *W. cunninghamii*.

Conclusions Contrary to many epiphytic orchids in the tropics, the orchid/pollinator relationship in these orchids is unspecialized and flowers are visited by a wide range of insects. Putative pollinators are flies of the families Bibionidae, Calliphoridae, Syrphidae and Tachinidae. All four orchids display anthecological adaptations to a myophilous pollination system such as simple flowers, well-exposed reproductive structures, easily accessed nectar and high pollen : ovule ratios.

This paper demonstrates another unique quality of NZ orchids' adaptation to an insect-poor environment. Not only are they the greatest self-pollinators in the world, but when they are insect-pollinated they are not fussy. No exclusive orchid/insect co-evolution pollination syndrome here—Ed.

John Neufeld wrote (1 August), "I am a member of an organization in Manitoba Canada that appears to be similar to your own. We are called Native Orchid Conservation Inc. Our web site is www.nativeorchid.ca. I will be visiting your fine country this year for about 3 weeks starting at the beginning of December. I would love to see some of your native orchids when I visit. Is there any information you can give to me about the native orchids of New Zealand, and where they might be found. I would be happy to reciprocate if anyone is interested in the **orchids of Manitoba**.... Here our peak orchid season is drawing to a glorious close. We have had a very strange summer in our Province. It started off as the wettest and coldest summer ever. The orchids though late, have bloomed magnificently. Ten members of our group, including my wife Chris and I, recently completed a trip to the north part of our Province near Churchill Manitoba. This is just below the Arctic circle. You may have heard of it, as they advertise themselves as the polar bear capital of the world. In Manitoba we expect to host a group of international native orchid lovers that have an annual conference. Their name is Native Orchid Conference and we expect them to have their annual meeting in our province next July. Perhaps some ambitious New Zealanders would like to attend? We could show you a wonderful time! And you could meet other lovers of native orchids from around North America and even Europe. I have never been to one of their conferences yet. This year they meet in North Carolina in a week or two *I hope John can join us at Iwitahi—Ed.*

Pohutukawa Post, summer 2003, carried a piece by Scott Kusabs, ARC Park Ranger, Hunua Regional Park: **Have we found the missing link?** A recent expedition in the Hunua Regional Park involving Southern Sector Park Rangers and local orchid enthusiasts Eric Scanlen and Phil Mitchell have located populations of the orchid species *Nematoceras triloba*.

Although this is not a rare species, there are two different varieties or taxa *Nematoceras* “Rimutaka” [J82:16] and *N.* “Triceps” [J76:40] within the species. These populations are alongside the very popular Wairoa Loop track and can easily be overlooked by the untrained eye. Three specimens of both taxa were collected to be sent off to orchid expert Brian Molloy in Christchurch for studying to ascertain whether the two taxa are different species. DNA sampling in Canberra will be used to help with this diagnosis. If indeed they are different species they will need to be renamed and described. *We are not sure what (or who) the expression “missing link” refers to – Ed.*

Situated in the province of West Java in the south of Jakarta, Indonesia, Cibodas Biosphere Reserve is an example of an ecosystem in the humid tropics undergoing strong human pressure. The Gunung Gede-Pangrango National Park constitutes the core area of the biosphere reserve. It includes twinned volcanoes and mountainous rain forests with many Javan endemic species.... The impact of various human activities on the core area is growing due to tourism development and increasing population density in the surrounding areas. Shortage of fuelwood and income force local people to collect wood and nontimber forest products in the core area.... Major habitats & land cover types: lowland rainforest; montane/sub-montane rainforest characterized by *Podocarpus* spp., laurels (*Litsea* spp.), oaks (*Lithocarpus* spp. and *Quercus* spp.), chestnut (*Castanopsis* spp.)

and *Schima wallachi*; sub-alpine or elfin forest with *Ranunculus* spp., *Viola* spp., *Vaccinium* spp. etc; grass plains dominated by Javan edelweiss (*Anaphalis javanica*) and with gentian (*Gentiana quadrifaria*), terrestrial orchid (*Thelymitra javanica*) and bramble (*Rubus lineatus*). E-mail tnngp@cianjur.wasantara.net.id.

The Magazine of the Queen Elizabeth II National Trust, Issue 59, December 2003, reported on a **new kowhai species**: “*Sophora molloyi* is ‘as tough as old boots’ and like its namesake Brian Molloy, hardy in all extremes of weather. In 2001 Dr Peter Heenan of Landcare Research and Peter de Lange of the Department of Conservation named five new species of kowhai, including the one named after Brian Molloy. *Sophora molloyi* has evolved to grow on harsh and inhospitable sites on dry, exposed headlands around Cook Strait, Kapiti Island, and parts of the lower North Island.”

Gordon Sylvester found *Pterostylis trullifolia* and *Acianthus sinclairii* at Rarangi just out of **Blenheim E.R. 39** 14 Jul 04 in flower.

Mycorrhiza: Grant, CD; Koch, J. 2003. Orchid species succession in rehabilitated bauxite mines in Western Australia. *Australian Journal of Botany*. 51(4):453-457. Twenty-three orchid species were recorded in Alcoa’s permanent vegetation-monitoring plots in unmined and rehabilitated jarrah forest. Of these, 22 were identified in the unmined jarrah forest and 20 were recorded in rehabilitated areas of between 1 and 31 years old. Three species (*Cyrtostylis ovata*, *Lyperanthus serratus* and *Prasophyllum elatum*) were only recorded in the unmined forest and one species was only recorded in rehabilitated areas (*Diuris carinata*). The overall density of native orchids in the forest was 13,755 plants/ha, 10 times greater than the density in rehabilitated areas (1381 plants/ha). The

Earina autumnalis. Syntype of *Epidendrum autumnale* Forst. f., in Moscow: see http://herba.msu.ru/pictures/mw_type/monocot/orchididae/index.html. Johann Forster, George's father, noted in his diary on 28 May 1773 (Dusky Sound) "After dinner I went ashore towards the new watering place in our new Anchoarge & found a very fine *Epidendrum* in flower, which spread a very agreeable smell".



most abundant species in the forest were *Cyrtostylis robusta*, *Caladenia flava*, *Pterostylis nana* and *Thelymitra crinita*, all with densities greater than 1000 plants/ha. The most abundant species in the rehabilitated areas were *Microtis media*, *Disa bracteata* (an introduced species), *Caladenia flava*, *Pterostylis nana*, *Diuris longifolia* and *Pterostylis vittata*, all with densities greater than 60 plants/ha. In rehabilitation older than 10 years, the density of orchids increased to 2685 plants/ha. Burning in rehabilitated areas resulted in large increases in orchid densities. It is believed that orchid colonisation of rehabilitated bauxite mines is dependent on symbiotic mycorrhiza, which are in turn dependent on development of an organic litter component in the soil.

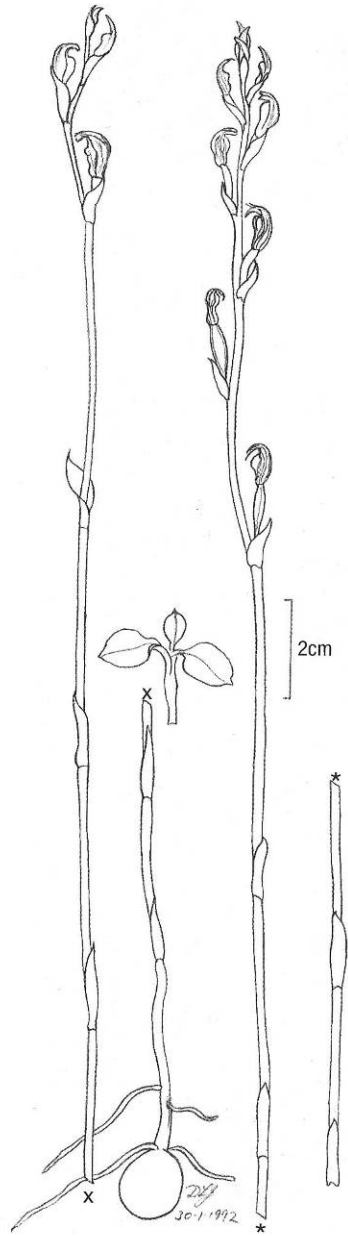
Rare orchid zone blasted, reported Danny Rose in the *Hobart Mercury* on 8 September 2004, “The Snug Greenhood orchid, which is listed as an endangered species and found only in Tasmania, is known to grow in the Blowhole Valley of the Southwest Wilderness World Heritage Area. State Government spokesman Craig Martin confirmed yesterday the orchids were growing in the area where 13 holes were blasted recently to create water catchments.” *Pterostylis atriola* DL Jones 1998 is listed as endangered.

This followed an allegation by Greens leader Peg Putt. “The Snug Greenhood is only found in Tasmania, in six small sites,” Ms Putt said. “One of which is in the Blowhole Valley and they could have blown it up.”

Snug greenhood is endemic to Tasmania and is confined to six small sites on Snug Plains, where it occupies less than 10 hectares. The total number in existence has been estimated at 100. The Blowhole Valley population was first seen in 1992 and has not been seen again despite searches nearly every year since.

Mr Martin said the explosions would not hurt the orchids, and the subsequent controlled burnoffs would actually help it to regenerate. Indeed Tasmanian orchidologists Hans and Annie Wapstra have written that most plants grow on the edge of forestry tracks, though they are absent from adjacent suitable habitat suggesting that the Snug greenhood favours a high degree of disturbance to proliferate.”

Genuine concern or political headline grabbing? All is not always as it seems.



Pterostylis atriola,
drawn by David Jones

In July a 70 year old Peruvian orchid grower was sentenced to 21 months in **prison for smuggling internationally protected wild orchids** into the United States, hidden among legal nursery-raised plants. Manuel Arias Silva pleaded guilty to one count each of smuggling, conspiracy and filing false customs statements. He admitted shipping 2,050 orchids, including an endangered species of *Phragmipedium* or tropical lady slipper orchid, worth \$45,500. Arias had been one of only three Peruvian growers with permission to cultivate endangered and newly discovered orchids. Nursery-raised varieties can be exported from Peru with government permits, but he was accused of shipping wild plants, which are considered seriously endangered in the wild and are protected by international treaty. The plants were shipped from 1999-2003 to dealer George Norris of Houston. Norris also pleaded guilty. The investigation was based on a tip that Norris was selling endangered species on the Internet.

Orthoceras is a prehistoric cephalopod related to the modern day squid, cuttlefish, and octopus. It dates back to ~350 million years ago. Fossils are found in the Sahara Desert, Morocco. **Microtis** is a mollusc which produces the common “thumbnail” shell. It is also a genus of hamster-like rodents.
The botanical and zoological nomenclatures are separate—Ed.

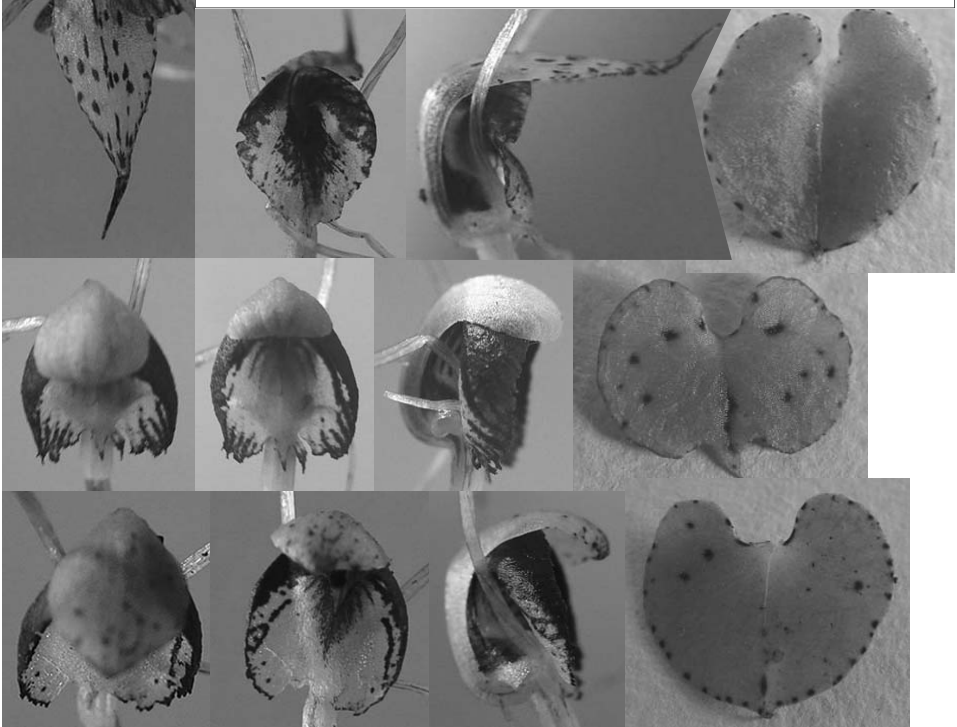
A correspondent to *Orchid Digest* wrote, “...**one should be very careful identifying orchids from pictures**, especially so when these are lacking in pertinent details.... Plants vary, not only at a regional level but also at population level.... The genus *Dactylorhiza* belongs to a taxonomist’s worst nightmare. For various reasons there is still a lot of confusion about the exact species boundaries within this genus (the species count hence varies from ~22 to ~ 80, depending on whom you ask), and added to

this comes the fact that several species easily hybridise in several directions, resulting in local hybrid swarms which phenotypically vary according to the location. It appears that especially in Northwestern Europe and the Alps this genus is going through a stage of active evolution and adaptive radiation, which may well be in response to rapidly changing environmental conditions. Not only do populations show a strong tendency to form local ecotypes (which in some cases, with only some 20-30 km in between them, may look like they’re entirely different species), it has also been shown that stable species have arisen as a result of hybridisation (and in some cases hybridisation followed by subsequent chromosome doubling) or by autotetraploidisation. In several cases these ‘derived’ species and forms inhabit narrowly delimited habitats from which other members of the genus are absent. *Dactylorhiza sphagnicola* for instance, which inhabits ultra-acid raised sphagnum bogs in northwestern Europe in which no other dactylorhizas occur, is proven to be a tetraploid hybrid of *Dactylorhiza fuchsii* and *D. incarnata*, while the Eurosiberian *D. maculata* seems to be a stabilised autotetraploid of *D. fuchsii*. ... It is because of all this that I often think it funny when yet another tropical species has been described because of a slightly different staminode or oddly twisted sepals or whatever. Plant species vary, as do we, and therefore one has to be careful when assigning names, especially so when all that is at hand is a picture.”

There is a lot we can learn by reading about the orchids of other countries. 1. Bruce Irwin’s drawings in this issue of a small Nematoceras hypogaea show how carefully even that plant must be positioned if one is to assess the shape of the dorsal sepal from a picture. 2. I am sure N. triloba forms local ecotypes. 3. We know several Thelymitra are stable hybrids. 4. I still wonder if autotetraploidy explains the huge double-flowered Singularitybas oblongus I jokingly dubbed “C. quadriplex”. 5. I would bet that Pterostylis “hybridises in several directions resulting in local hybrid swarms”—Ed.

September 18 found Tony Silbery, Pat Enright and me, looking for *Nematoceras longipetalus* in Lowes Bush, now a DOC reserve, near Masterton. It's the orchid I drew for the cover of J83: longer than wide leaf, tiny apiculus, plain green; long pointed tip to dorsal sepal (Figs 13, 16). It was in full flower again this time: I was down, wet-kneed, taking photographs when Pat called out that he found a *N. aff. trilobus* in full flower a couple of metres away; it was *N. hypogaea* (Figs 7, 14, 17): kidney shaped leaves, wider than long, heavily marked with brown, with a big apiculus; rounded dorsal sepal, frayed labellar edge. "Gosh," he remarked cynically, "next thing we'll find hybrids." Then, "Hello, here's something different." Indeed it was—a colony, geographically between, and structurally between, the two species: 50 or so plants thriving with **hybrid** vigour; very similar to Bruce Irwin's drawing of the *N. iridescens* x *N. aff. triloba* (?) hybrid in this issue (page 26). The Masterton plants are shown in Figs 15, 18): short pointed dorsal sepal, leaves round with a big apiculus, marked with brown. Pat Enright described the habitat: "*N. longipetalus* grows in reasonable light usually around pools of ponded water that would probably dry out somewhat in summer. *N. hypogaea* grows in less wet conditions on the forest floor as does the putative hybrid which is actually growing on a tree root. The main tree species is poe kahikatea with scattered swamp maire and pukatea red young *Coprosma robusta* (1m high) and young hangehange with the tree fern *Dicksonia squarrosa* common. *Pneumatopteris pennigera* is also common in the area. The area is near the edge of the bush reserve hence has fairly good light."

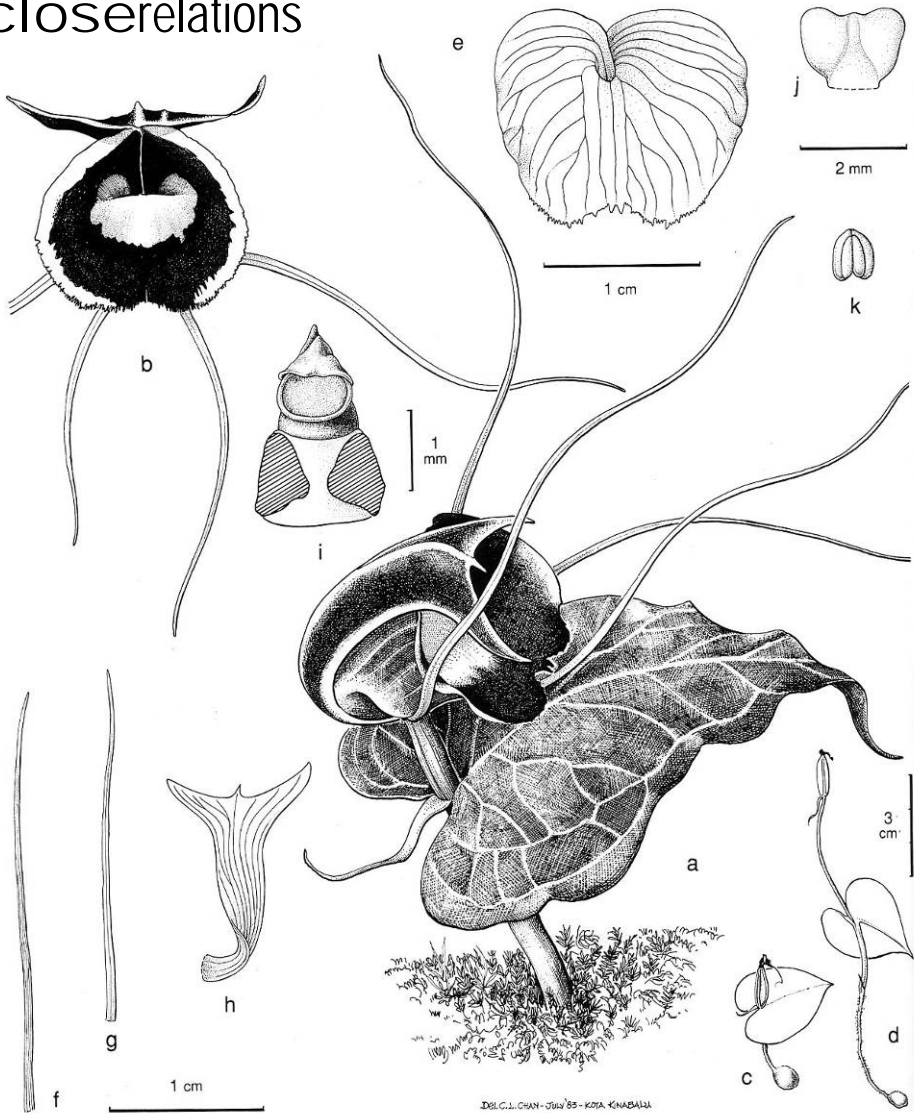
Photographs below show top, front and side views of flowers, and leaf. **Row 1:** *N. longipetalus*; **Row 2:** *N. hypogaea*; **Row 3:** putative hybrid, *N. longipetalus* x *hypogaea*.



Trevor Lewis wrote from Nelson, “Cathy Jones suggested I send you these photos of *Corybas trilobus*. I took them on our Nelson BotSoc field trip on Sunday 19th September. These were the only *Corybas* we found that day, and were about halfway up Saddle Hill (locally known as The Doubles), Nelson. I have also included a photo taken in November 2003 in beech forest in the Lower Wangapeka area. We called this *Corybas trilobus* but I note in hindsight the leaf shape in particular is somewhat different.” —*I think the first two are Nematoceras triloba s.str.—a September flowering plant, similar to N. hypogaea, but without its ragged labellar margin (“margins nearly entire” Hooker wrote in the original description), and with a rounder leaf. The third looks very like the putative N. “Trotters” x N. macrantha hybrid found by Pat Enright (and tagged N. “mactaiapos”) flowering in November at two separate sites in the Wairarapa (see J81 p43, J82 p16), though the leaf is more trilobate here—Ed.*



closerelations



Corybas pictus. drawing by CL Chan, Kota Kinabalu, July 1993. Fig.20 from Chan CL, Lamb A, Shim PS, Wood JJ. *Orchids of Borneo. vol 1*. Sabah Society and RBG Kew, 1994.

A terrestrial colony-forming herb up to 70mm tall, on mossy rocks and mossy banks and on the mossy boles of tree ferns and trees, in deep shade on hill and lower montane forest on ultramafic and sandstone soils. Sumatra, Java and Borneo. *Weird shaped dorsal sepal—Ed.*

***Gastrodia* “Owhango”**

Gary Penniall's *Gastrodia* “long column” setting no seed at Urenui [J92:29] set the Column's sluggish grey-matter in motion re the Owhango taxon [J67:21; 91:18] which also set no seed, in Feb 1998. Close comparison between colour slides of Gary's and the Column's from Owhango and the South Island [J91:17-23] showed the external flower characters, at the same stage of growth, to be practically identical throughout. In particular, tepal venation layout, with notable forking at the vein tips, was the same from Invercargill to Urenui. Labellum and column tips look the same and olive green, golden knobbed perianths are common to all non sun burnt flowers. Jan/Feb flowering time is the norm as is the elusive perfume from only newly opened, pendant flowers. Owhango plants have only inner detail and early perfume to be checked. No seed set, in either exposed (Invercargill) or semi shaded plants (Urenui & Owhango) was a common factor so the Column could no longer see any reason to exclude the Owhango plants from *Gastrodia* “long column” s.s. It is possible that seed set only requires cold conditions hence deep shade in the south and unusually cool weather plus deep shade in the north.

Dot Cooper's *Gastrodia* “long column black” [J91:18,19] still has a tenuous hold on separateness but that over-mature black from Cape Farewell, [J91:18] growing in a colony of *G.* “long column” s.s. does make one think. Perhaps this is another unpollinated phase of the multi-faceted *G.* “long column”? Weekly observations with temperature readings, by *Boronia* smellers, of one or more colonies, from bud to dehiscence are really needed to be quite sure. Any volunteers?

Distribution north of Urenui is also a question mark for this southern denizen. Just who recorded it where, in ER 10, Coromandel and ER 3, Te Pahi [Field Guide] is now unclear. Any readers familiar with *G.* “long column” in these areas, please contact the Editor with any

recent finds and some basic details of the plant's characters. Their similarity with the earlier flowering *G.* aff. *sesamoides*, also long columned, has been an identification confusion ever since Donald Petrie's 1893 error at Otira [J91:18]. At least Petrie published his thoughts and got these two taxa under discussion even though both still remain botanically unclassified 111 years later.

Waireia stenopetala

Jan Kelly of Wanaka emailed details and husband Errol's excellent photo (**Fig. X**) of yellowish green, slightly over-mature, *Waireia stenopetala* from Flagstaff Hill Dunedin. Jan's Mum, Jean Merrilees, a long-time member of the Otago Alpine Garden Group, was showing them the Flagstaff attractions at Christmas 1984. Where have all the red/brown stripes gone from the dorsal sepals? All us Jaffas and other North Islanders please note that, according to the Editor, "*W. stenopetala* tends to vary continuously from green to heavily mottled — the last get photographed because they are more attractive." He's right; all of those that the Column can find in publications have mottled reddish brown stripes so feast your eyes on Fig X to see what many of them really look alike. They were growing on the SE side of the Pineapple track. Also in the vicinity was a lovely, rich flower field of, *Bulbinella angustifolia*, *Celmisia lyallii*, *C. gracilentia*, *Helichrysum bellidiodes*, *Brachyglottis* sp., *Thelymitra pulchella* and *Aporostylis bifolia*. Note the floral bracts on the Editor's pic of *W. stenopetala* in the Nature Guide and J83:28, from the same Flagstaff hill, and those on the Enderby Isle plants (J60:20) also Bald Hill in Southland (J91:15). They are all long on the bottom flower, shortening towards the top of the spike whereas the possibly different taxon on Campbell Isle (J83:28) had short top and bottom floral bracts Who is going to Campbell Isle to check it out?



Nematoceras "Pollok" (see p19) ↗↘
Fig.11: *N. aff. iridescens*, Southland ↙





Fig.12: *Wairea stenopetala*,
Flagstaff, Dunedin (see p42)

Lowes Bush Masterton:
Nematoceras longipetalus,
N. hypogaea and possible
hybrid (see p. 39)

Figs 13-15: habitat shots
Figs 16-18: individual
plants.
See also **Fig.7**, p2.

