

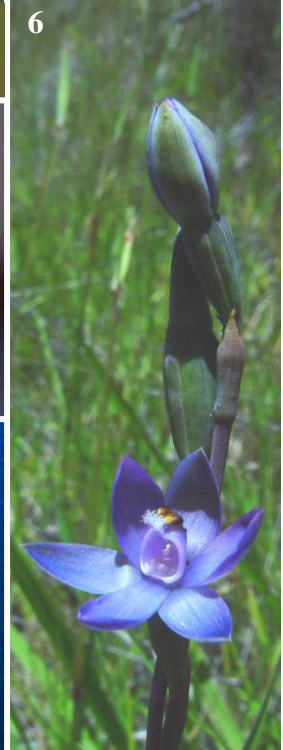


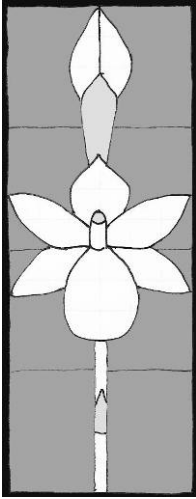
THE NEW ZEALAND
NATIVE ORCHID JOURNAL

#103



Both of the *Caladenias* above were photographed at Scott Point, Te Pahi: the one on the right is certainly *C. chlorostyla*, but what about the one on the left? It has the dorsal sepal of a *Stegostyla*.





CONTENTS: No 103

May 2007 ISSN 1177-4401

Cover

A fragrant *Thelymitra pulchella* from Kaitaia. Photo Kevin Matthews.

Editorial: Ian St George

- 2 Different forms.
Monsters, freaks, retrogrades and primitives.
Your journal by email for half the price.

Close relations: orchids like ours

- 11 *Gastrodia sesamoides*.

Original papers

- 12 *Caladenias* at Awhitu. Tricia Aspin.

Various contrivances 4

- 16 *Orthoceras novae-zelandiae*.

Elementary 12: ED Hatch

- 18 Various terrestrials 1.

Eponymous orchids: Val Smith

- 20 *Danhatchia australis*.

Historical reprint

- 22 TF Cheeseman on *Lyperanthus antarcticus* and *Caladenia bifolia*.

Notes, letters, questions, comments

- 24 Orchid Conservation International (OCI) webpage, awards.
Tricia Aspin's double-headed *Pterostylus alobula*.
Kevin Matthews's orchid discoveries.
- 25 Orchid websites. Phil Norton's Kepler Track *Pterostylis*.
The *Trans* on the Net.
- 26 *Gastrodia* "long column". Oops. Australasian Native Orchid Conference cancelled. *Australian Orchid Research* Vol. 5 just published.
- 28 Some Pacific orchids (like ours).
- 29 Western Australian Orchid Spectacular 2008.
Microtis aff *parviflora* from Central Canterbury.
- 30 *Earina aestivalis/mucronata* from Gladstone.
- 31 Irwin book imminent. Mt Hikurangi in November?
- 38 NZNOG publications for sale.

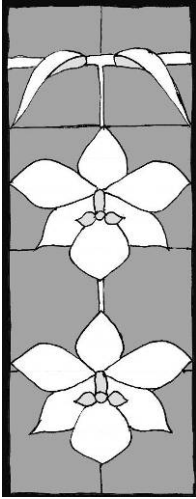
The column: Eric Scanlen

- 32 Species defined once and for all.
35 *Caladenia* "2leaf" at Kaitaia.
36 *Petalochilus calyciformis* (?)



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1. Different forms....

Figs 1 and 2 (Inside Front Cover) appear to show two forms of *Caladenia chlorostyla* from Scott Point, Te Pahi. There are two forms in the Wairarapa too, one of them pictured here (at right). The Wairarapa plants have a better defined set of marginal calli, but otherwise the two appear to be similar to the two from Te Pahi. There is of course a third, that photographed by Kevin Matthews for the cover of J102, aka *C. aff. chlorostyla*, first separated off by Bruce Irwin.

Actually, the last has greater affinities with the small version on the left IFC—with the bent-over dorsal sepal of *Stegostyla* species, and the short tepals.

I wonder how many forms of *Thelymitra pauciflora* we have in New Zealand? Jeanes considers we have *T. pauciflora* s.s., but which is it?

Fig.3 shows one form from the southern Hunuwas; **Fig.6** that from the Wairarapa. One from Kaitaia is photographed by Kevin Matthews and appears as **Fig.16**.

Fig.4 shows the column of a form I have tagged *T. aff. brevifolia* because it looks just like the



illustration of that species in Jeanes's paper.

Fig.5 shows the column of *T. intermedia* Berggr., which appears to match *T. colensoi* Hook.f.

The column illustrated in **Figs.7-9** is that of a tiny, sky blue flowered form growing on a dry bank in the southern Wairarapa, spotted by the keen eye of Pat Enright. Most were over, so we examined only a couple of columns, but we will look a little earlier in mid-november 2007.

2. Monsters, freaks, retrogrades and primitives

The Australasian orchid tribe *Thelymitreae* is composed of *Calochilus*, *Epiblema*, and *Thelymitra*. Evidence from floral structure suggests that *Epiblema* and *Thelymitra* are sister genera and that *Calochilus* is derived from a *Thelymitra* ancestor [1]. Indeed,

Calochilus robertsonii occasionally “throws back” to a peloric flower similar to that of *Thelymitra*, a form originally described as *Calochilus imberbis*.

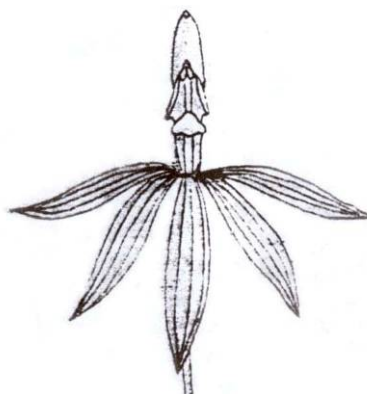


Calochilus imberbis,
detail of a watercolour by WH Nicholls.

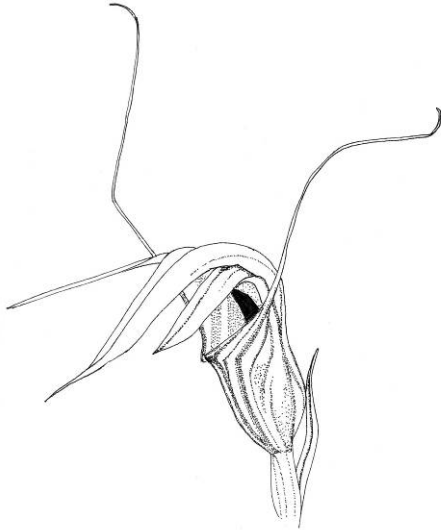
Mistakes in plant structure include **fasciations**, an enlargement and flattening of a plant structure, especially the inflorescence; **peltation**, the formation of leaf-like structures in place of perianth segments; and **peloria** [Gr: *pelos*: a monster], an abnormal regularity in normally irregular flowers [2].

Many orchid species have peloric forms, usually reversions to a primitive, more lily-like flower – the labellum or dorsal sepal

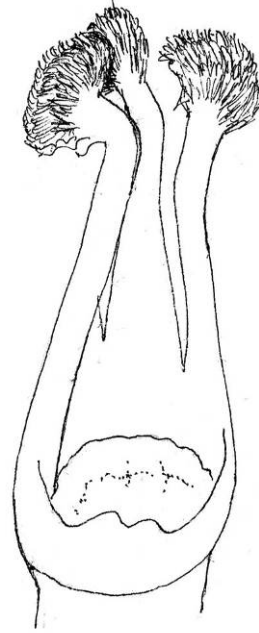
showing features more like those of the simpler petals and sepals for example. Dan Hatch wrote of *Petalochilus* in 1948, “*Petalochilus* is considered to be a local development, probably derived from an early form of *Caladenia carnea*. The undifferentiated labellum is not of itself important. The specialised labellum of the average orchid is a petal adapted to the requirements of pollination. When that function is taken over by another organ (as happens in *Petalochilus*) the labellum falls into disuse and thence into decline, reverting in this instance to its original petaloid condition. *Petalochilus* then appears to be a retrograde to *Caladenia* rather than the representative of a primitive form. Nicholls (*Vict. Natr.*, 61, 1945, 207; figs. k, l, m) has unconsciously demonstrated that *Caladenia* could give rise to such a form as *Petalochilus*. He describes a couple of teratological specimens of *Caladenia menziesii* R. Br. in which the labellum has become petaloid, although still retaining vestigial calli, and the column-wings have fused to form a cavity embracing the lower two-thirds of the column. The staminoid appendage, which distinguishes *Petalochilus* is, however, absent in these *Caladenia* specimens. *Petalochilus saccatus* is probably derived from an early form of *P. calyciformis* by a fusion of the column-wings with the staminoid appendage [3].”



Petalochilus calyciformis, a peloric form,
probably of *Caladenia chlorostyla*



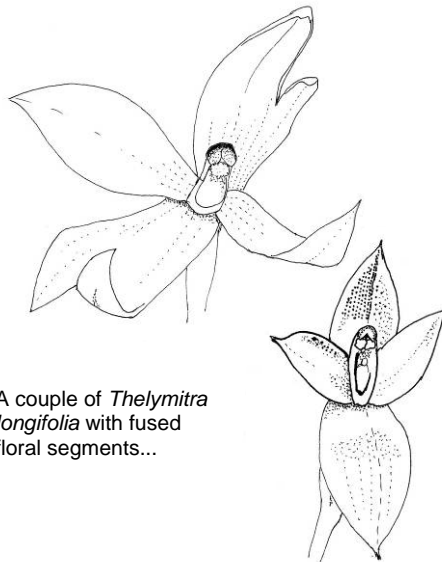
Pterostylis trullifolia "trident",
a partly unzipped flower,
reverting to an unzipped ancestral form?



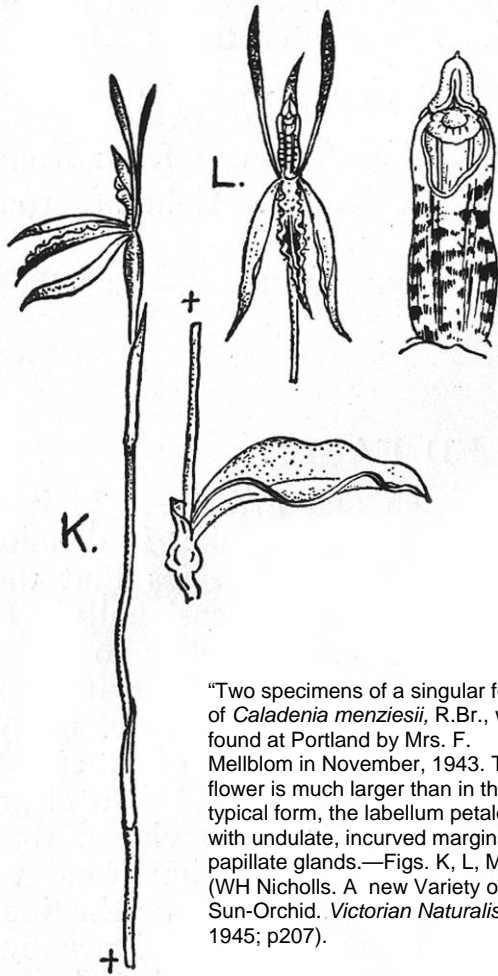
This *Thelymitra* aff. *longifolia* showed 3 clear
"column arms" (staminodal remnants) and a
large basal stigma.



The (opened-out) column of this *Thelymitra* has
reverted to a series of ragged staminodal
remnants, though the single stigma persists.



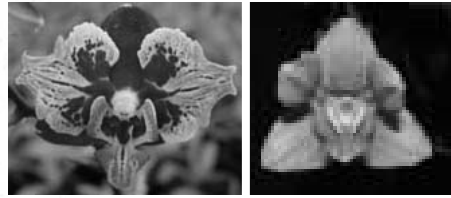
A couple of *Thelymitra*
longifolia with fused
floral segments...



"Two specimens of a singular form of *Caladenia menziesii*, R.Br., were found at Portland by Mrs. F. Mellblom in November, 1943. The flower is much larger than in the typical form, the labellum petaloid with undulate, incurved margins and papillate glands.—Figs. K, L, M." (WH Nicholls. A new Variety of Sun-Orchid. *Victorian Naturalist* 1945; p207).

The column itself may revert to a more-or-less lily-like set of stamens and carpels.

Peloria is a genetic mutation, but expression of peloria may be influenced by environmental changes or by being stressed. Peloria is not always stable, and the plant may flower normally on the next inflorescence. Sometimes the simple petals adopt the more complex structures of the labellum.



A couple of peloric cultivars with petals like their labellum

Some peloric orchids are being mericloned, bred, and marketed. In *Dendrobium* "Classic Gem" (below) and its progeny the lip has reverted back to looking like the petals. *Rhyncholaelia digbyana* var. *fimbripetala* (overleaf) has slightly fimbriated petal margins, which has given rise to a host of modern splash-petal hybrids, many having received AOS quality awards. There are many awarded splash-petal *Cattleyas*. *Phragmipedium lindenii* has a long petal in place of a pouch.



Dendrobium "Classic Gem" with its petaloid labellum.

Some orchid growers find beauty in peloric flowers, but in American Orchid Society judging, some feel that "peloric orchids that display a complete inflorescence of deformed flowers should automatically be disqualified from further consideration" [2].



Rhyncolaelia digbyana with normal petals



Rhyncolaelia digbyana var. *fimbripetala*
with partly labelloid petals



Phragmipedium lindenii with its
petaloid labellum

The ABC model of flower development was proposed when scientists found that certain genes in flowers produced effects related to these genes. By knocking out one of the genes, they discovered which coded for what. For example, when they removed the C class of genes, the plant lost the ability to produce sexual parts (stamens and carpel(s)).

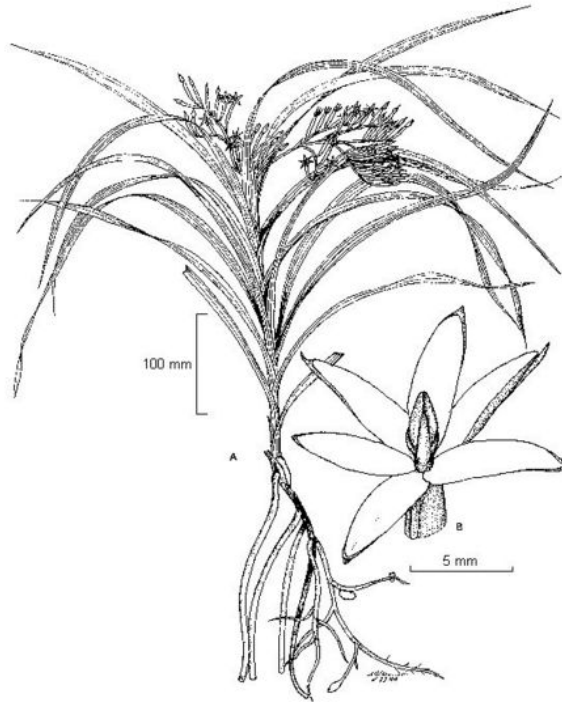
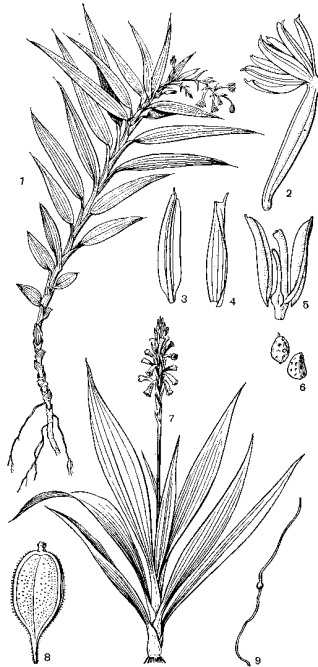
- The A gene produces sepals.
- The B gene produces nothing on its own.
- The C gene produces carpels.
- A combination of A and B produces petals.
- A combination of B and C produces stamens.

Mutants lacking the A gene will only produce stamens and carpel(s). This mutation is known as *APETALA*. Mutants lacking the B gene will only produce sepals and carpels. This mutation is known as *PISTILLATA*. Mutants lacking the C gene will produce sepals and petals, over and over again. This mutation is known as *AGAMOUS*. These mutations can occur at random in the wild or they can be artificially induced [4].

Man has cultivated the mistakes found in nature: the mistake where disk florets have become ray florets has led to the doubling of marigolds, zinnias and chrysanthemums. Some roses have stamens modified into petal-like structures. Curiosities such as the weeping pussy willow, or the contorted Harry Lauder's walking stick can now be easily obtained.

What then of Kevin Matthews's twin-leaved *Caladenias* and *Thelymitras* (pp 24-25)? I can find few references to reversion to primitive leaf (as opposed to flower) structures, but I guess that is what has happened here. Primitive orchids such as *Neuwiedia* and *Apostasia* have multiple leaves, and *Protorchis monorchis*, one of very few fossil orchids ever found, also had several leaves. So, of course, do lilies. It might be surmised then, that more than one leaf on a single-leaved plant should represent a mutation, a natural mistake, the structure reverting to the more primitive form.

Should we call these mutants species? *Calochilus imberbis* and many others have been named. A species, Eric Scanlen suggests



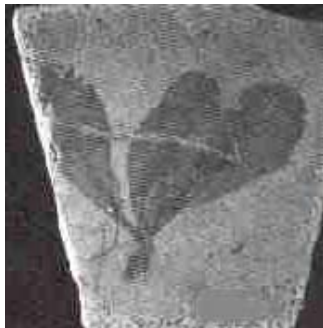
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Primitive orchids -

Above left: *Neuwiedia*

Above right: *Apostasia*

Below: the fossil orchid
Protorchis monorchis



in this issue, is a taxon following its own evolutionary path. By that definition, these would be species – even if the evolutionary path leads to extinction. Eric qualifies that: seed propagation is axiomatic to a viable species. So does “following its own evolutionary path” actually contribute any meaning helpful to the debate?

I don't think these are species. These are forms or varieties of species. I like the names *Rhyncholaelia digbyana* var. *fimbripetala*, “*Calochilus robertsonii* forma *imberbis*”, and (if it hadn't already been named *Petalochilus calyciformis*) “*Caladenia chlorostyla* forma *calyciformis*”. Lets keep it simple.

References

1. Burns-Balogh P, Bernhardt P. Floral evolution and phylogeny in the tribe *Thelymitreae* (*Orchidaceae: Neottioideae*). *Plant Systematics and Evolution* 1988; 159 (1-2 / March): 19-47.
2. <http://angrek.com/AAOS/Past/9802/Txt/Peloria.html> accessed 17 January 2007.
3. Hatch ED. *Petalochilus* Rog. and the New Zealand Forms of *Caladenia* R. Br. 1948; 77: 398-402.
4. http://en.wikipedia.org/wiki/The_ABC_Model_of_Flower_Development accessed 17 January 2007.

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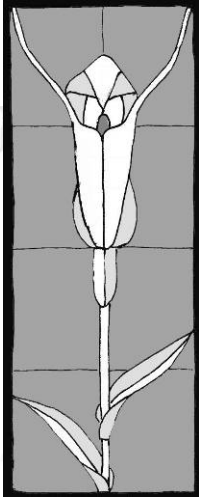
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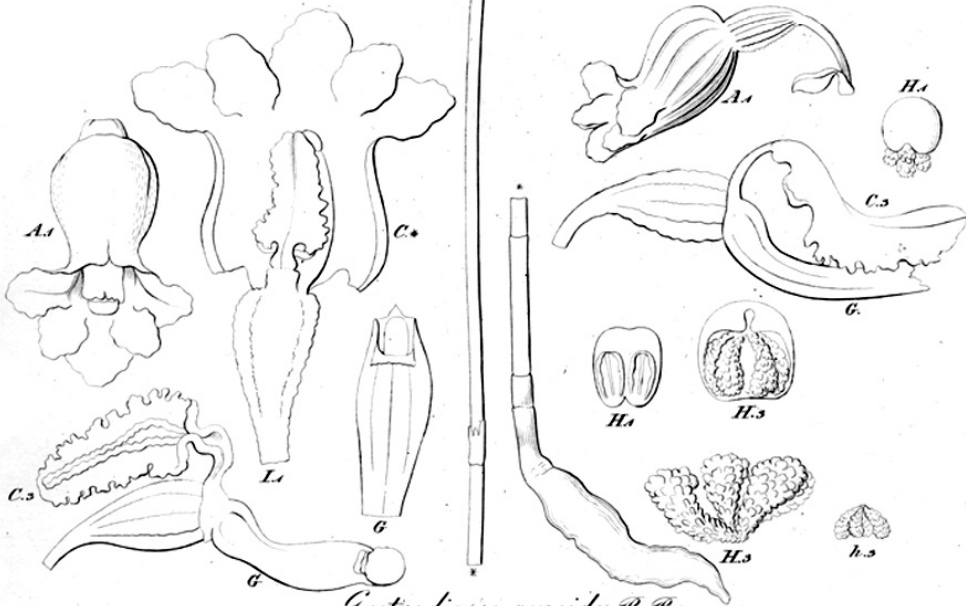


Gastrodieæ (1844)



Gastrodia sesamoides

Painted by Ferdinand Bauer,
 engraved by A Gebhardt,
 published in S Endlicher's
Iconographia Generum Plantarum
 (1838).



Gastrodia sesamoides R.Br.

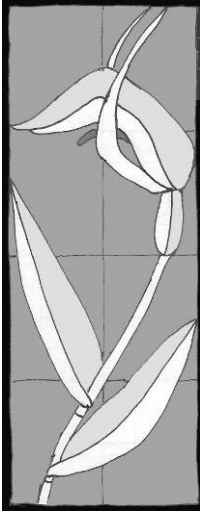
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ORIGINAL PAPERS

Caladenias at Awhitu

By Tricia Aspin



Prior to the 2004 season the only *Caladenia* species noted for the Awhitu District was the little *C. chlorostyla* and a pink flowered one found in the middle of a clay track on "Suite Ridge" in Lee's bush on 20 October 2003 which I was unsure about. This latter one was a definite pink with rounded petals and I tried to identify it by using the pictures and descriptions in the "Field guide to the New Zealand orchids". I concluded *C. bartlettii* and a phone call to Eric Scanlen convinced me that it was so. That is until the following season when a visit from Eric and Allan Ducker on 12 October 2004 found none open enough to make definite identification. That small colony and one nearby was given the probable diagnosis of *C. aff. pusilla*. A single flower was observed in the nearby "probable *C. aff. pusilla*" colony a week later and I lumped the *C. bartlettii* in with that lot. On 19 October Eric photographed and confirmed that *C. aff. pusilla* it is in the easternmost colony on "Suite Ridge" (Fig.11). In

2005 flowers were either nipped off or missed. In 2006 the tiny colony had one flower out on 17 October. The marked rounded petals which were not up-turned niggled in the back of my mind. A photograph sent to Eric has confirmed it as *C. bartlettii* s.s. (Fig.10).

During the 2004 visit from Eric and Allan another colony on "Romney Ridge" was noted as having a slightly different looking one. They put it as "maybe *C. 'nitida rosea'*" as we were unable to catch it open. In 2005 I almost struck it right but the other taller one on "Romney Ridge" was missed again and would you believe it, I missed it yet again in 2006 even though the two other *Caladenia* colonies on "Suite Ridge" still had flowers on 15 October. I was busy drooling over the orchids in Western Australia at the time when the elusive one was open! The Australian Orienteering championships lure us almost every year and despite virtually jumping off the plane on return and rushing off to try and catch the "maybe 'nitida rosea'" in flower I have always been too late. These little orchids are quite specific with flowering times. *C. bartlettii* s.s. and *C. aff. pusilla* flower at Awhitu in first three weeks of October.

A foray into Dodd's bush off Boiler Gully Road in midnovember 2005 saw the discovery of a different looking *Caladenia*. Flowers had just closed up on the two plants under kauri on an exposed ridge but there was reddish

P.13: Photographs from Awhitu

Fig.10. *Caladenia bartlettii* s.s. at Awhitu.

Fig.11. *Caladenia* aff. *pusilla* at Awhitu (photo Eric Scanlen). It looks very like the *Tasmanian Petalochilus atrochilus*—Ed.

Fig.12. *Caladenia* "kauri mauve" under kauri on an exposed spur at Awhitu.

Fig.13. *Caladenia chlorostyla* at Awhitu, three flowers on the one stem and all open at the same time.

10



13



12



11



14



15



16



maroon on the stems and backs of the dorsal sepals and both had two flowers per stem. Keen to catch it I visited on 25 October 2006 just to find buds forming. However I couldn't help noticing the *Pterostylis banksii* flowering in abundance all around so the day was not without satisfaction. A return on 1 November and two were open and seven in bud. The colour is quite different from any others I have seen (Fig.12). A delicate mauve and the petals are pointed, not at all like the rounded ones of *C. aff. pusilla*. Then again the petals are up-turned and the dorsal sepal lies tightly on to the column, similarities with *C. aff. pusilla*. Column wings are the same lime green as the dorsal sepal of *C. chlorostyla* which come into flower some three weeks later. It is possible that we have a hybrid here. Plants have a single leaf about 15cm long, somewhat hairy and the same length as the hairy stem. Most of the nine in the little colony covering a narrow eight square metres or so had two flowers per stem. All had finished by 11 November. I have tagged this *C. "kauri mauve"* for the time being and in spite of searching likely sites have been unable to find more of the same. *C. "kauri mauve"* has been observed to flower between the last week of October and the first two weeks of November.

Orchid hunts in new territory did turn up two more large colonies of *C. chlorostyla* [*C. minor*, J 99, 22]. I had revisited the Kemp Road colony on 11 November to compare flowering times with *C. "kauri mauve"*. Plants were just emerging and starting to form buds. Even so it was obvious at that early stage that most were going to carry multiheads. A later visit on 27 November showed only around 60 plants present for 2006 compared to about 200 the previous year and only one four flowered stem. A delight was one plant with three flowers out at once (Fig.13). This specimen

P.14: Photographs by Kevin Matthews

Fig.14: *Thelymitra aff pulchella*, blue.

Fig.15: *Thelymitra aff pulchella*, pink.

Fig.16: *Thelymitra aff pauciflora*.

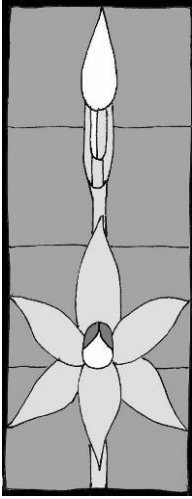
was 27cm tall, the single leaf 21cm long and there was a bract of 15mm halfway up the stem between the ground and the base of the first flower. A very faint sweet perfume could be detected. These plants are much taller than the original little *C. chlorostyla* discovered in earlier years in sheltered positions under manuka and on the side of clay tracks in Lee's bush. Flowering times are the same and an occasional two-flowered stem had been observed. Can sites cause such variation?

The second site for the multiflowered ones is at Shepherd's off Boiler Gully Road about 4.5km from Kemp Road in a straight line. Again the site is exposed to the near constant southwesterlies and under kauri with many plants (100+) spread over a gently sloping broad area of around 100 square metres. On 13 November most here were carrying two flowers per stem and many had three. Very few had one flower.

The third site found on the same day is at Roycroft's in steep kauri country. Around 3km from Kemp Road, yet again the site is exposed, this time on a narrow spur overlooking the gully leading out to Irwin's Gap on the west coast. It was a great lunch spot under medium sized kauri amid a colony of around 30 green and white *Caladenias*. I would expect there to be more in this area but time prevented further looking. The multiflowered *C. chlorostyla* flowers from the second week of November through to middecember.

All three sites have in common the fact that they are exposed to the southwesterly winds, are under kauri in fairly heavy litter where one would expect to find *Pterostylis agathicola* (of which there is no sign) have large numbers of two, three and occasionally one or four flowered stems. The dead mingimingi at Kemp Road does not feature at the other sites.

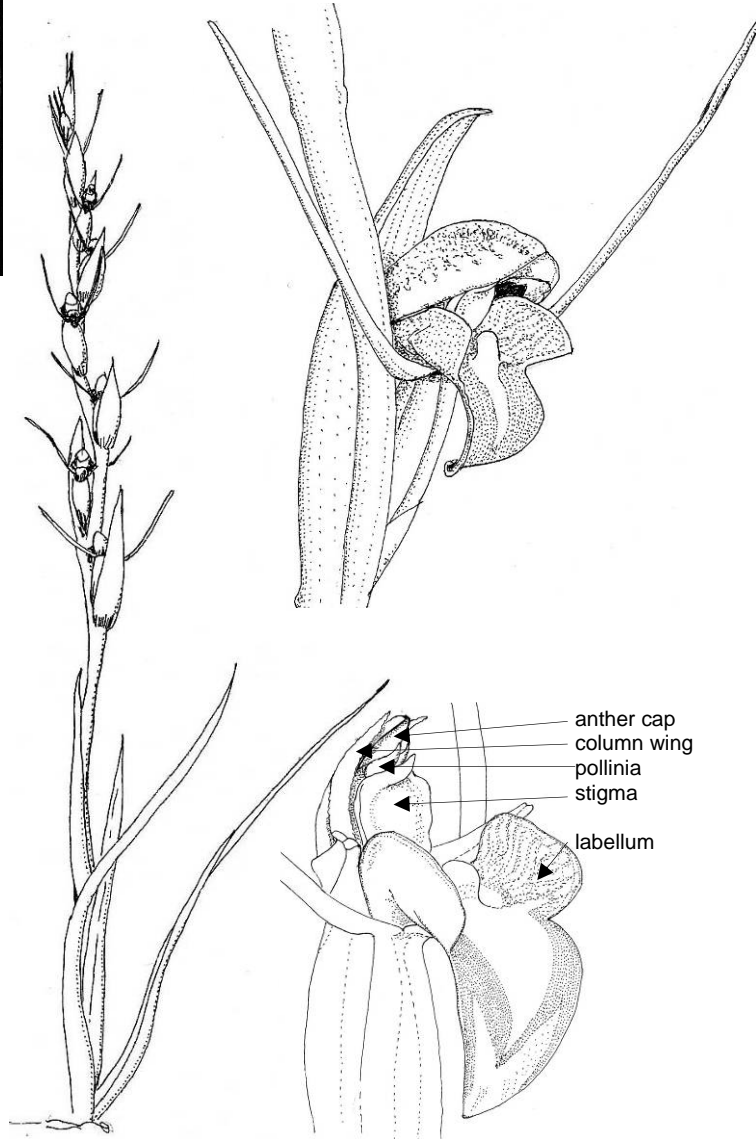
It is most interesting to read HB Matthews' letter, from Kaitaia on 17 November 1912, to TF Cheeseman (*Matthews and Son on Orchids*, pg 53) where his green-white *Caladenia* often showed four buds and sometimes had three flowers out at once.

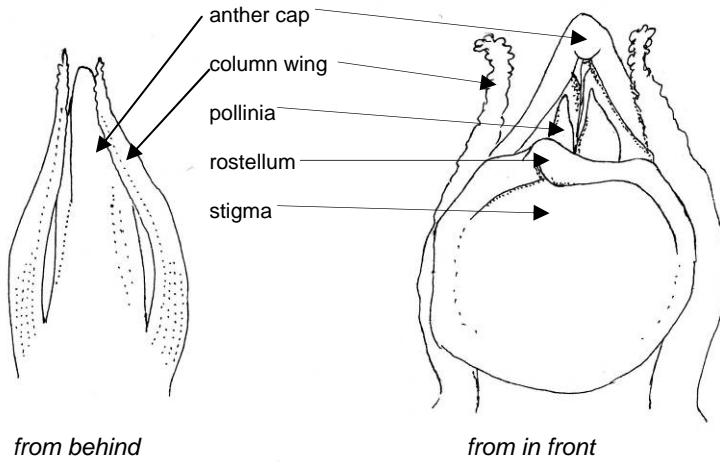


VARIOUS CONTRIVANCES

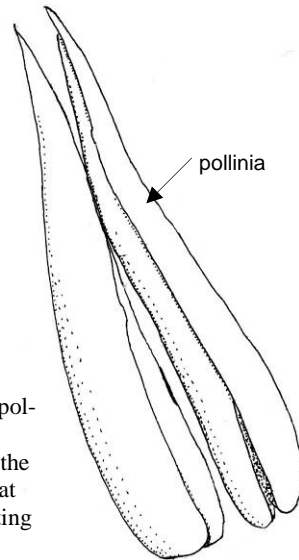
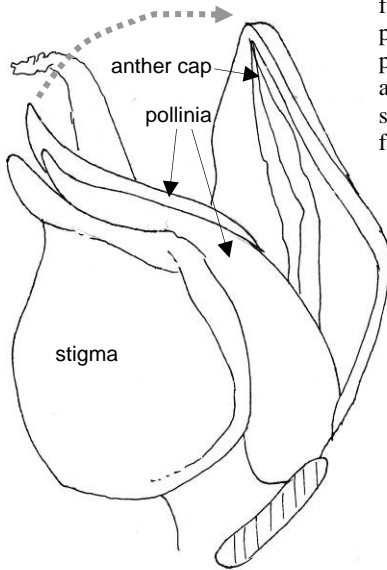
The New Zealand terrestrial orchid flora is unique because most can self pollinate: the various contrivances by which the New Zealand orchids are fertilised by themselves are recounted here.

4. *Orthoceras novae-zeelandiae*





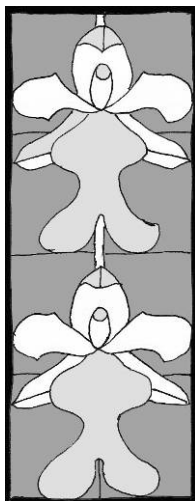
Bruce Irwin noticed that although the stigma faces directly away from the anther cap and pollinia, and that the two are separated by a prominent rostellum, when he tried to pull the anther cap backward, the pollinia remained stuck very firmly to the back of the stigma. In fact they were stuck by penetrating pollen tubes,



indicating that *Orthoceras novae-zealandiae* can be self-pollinated from behind the stigma.

Actually, it would be very hard for an insect entering the flower to come into contact with the pollinia through that small triangular opening framed by the prominently jutting two sides of the anther cap and the rostellum.

O. novae-zeelandiae may be an obligate selfer.



12. Miscellaneous terrestrials 1.

Drawings by Bruce Irwin and Ian St George

Acianthus (sharp flower – the subulate points to the lateral sepals).

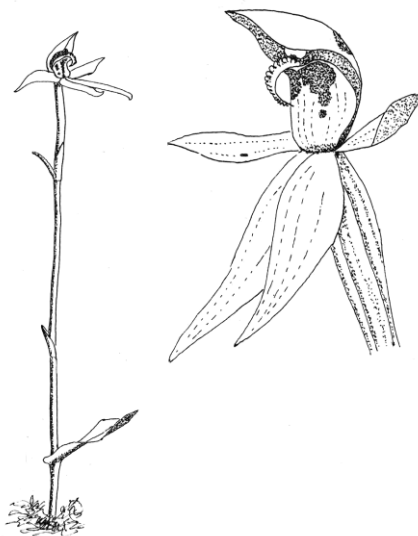
1: *Acianthus sinclairii*

(Dr Andrew Sinclair. Naval surgeon; Attorney General and Secretary to Governor Fitzroy. Collected many new plants from the Auckland district.)

Small plant with several flowers and a single, sessile, acuminate leaf.

Distribution – endemic – Kermadec Is., Three Kings Is., North, South, Stewart, Chatham Is.

Flowers – June-August – insect pollinated.



Adenochilus

(lacking the lateral calli on the midlobe of the labellum) A small genus allied to *Caladenia*, with one species in Australia and one in NZ.

2: *Adenochilus gracilis*

(slender). Plant with long-petiolate leaves rising from the creeping rhizome, and a sessile, ovate leaf halfway up the flower stem.

Distribution – endemic – North, South, Stewart and Chatham Is.

Flowers – November-February – self pollinated.



Aporostylis

(to be uncertain about the nature of the column).

3: *Aporostylis bifolia* (2-leaved)

Related to *Caladenia* – the plant has 2 leaves, glabrous or hairy, the lower leaf larger than the upper.

Distribution – endemic – North Id., from Mount Moehau, (Coromandel Range) southwards; South, Stewart, Chatham, Antipodes, Auckland and Campbell Is.

Flowers – November-February – insect pollinated.

Caleana

(George Caley – Australian botanist who assisted Robert Brown).

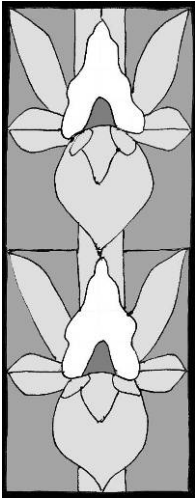
4: *Caleana minor* (smaller – than *C. major*).

A very odd little plant, with the labellum mounted on an irritable claw which flips the labellum completely over when an insect alights on it. In profile the open flower has an uncanny resemblance to a flying duck.

Distribution – Australia – Tasmania, Victoria, New South Wales, Queensland. New Zealand – North Id., Kaitaia 1898-1912; Rotorua/Waiotapu 1890-1924, and after an interval, in 1982. These possibly represent 3 separate trans-Tasman arrivals.

Flowers – October-December – insect pollinated.





EPONYMOUS ORCHIDS: VAL SMITH

Edwin Daniel Hatch (1919-) *Danhatchia australis*

Edward Daniel (Dan) Hatch, an accountant by profession, became New Zealand's foremost orchidologist of the 20th century. His father was born in Nicaragua, where his grandfather was vice-consul for the Mosquito Coast. Dan, the third ED Hatch, was born in London in 1919, spent the first few years of his childhood in Salisbury, and came to New Zealand with his parents in 1922. His father was familiar with the swamps of Central America, and gravitated to Laingholm as the wildest place he could find. Dan still lives there, on the Manukau coast at the foot of the Waitakeres, in the midst of native bush.

As a child Dan was acquainted with botany – his father's friend, James Hunter, was a friend of Cockayne's, and from the age of 14 Dan took a keen interest in plants. He got into orchids by chance, when he was stationed at Waiouru in the early 1940s. Ostensibly deer-stalking with friends at weekends, he constantly rode away on his army issue bike and botanised the tussock. He found seven orchids not in Cheeseman's *Manual of the New Zealand Flora*

and sent specimens to DSIR at Wellington for identification. They didn't know them either, and referred him to HMR Rupp in Sydney. A result of that contact was their joint paper on the transtasman orchids, including a description of *Aporostylis bifolia*, which is still valid. Hatch then set out to describe all the New Zealand orchids.

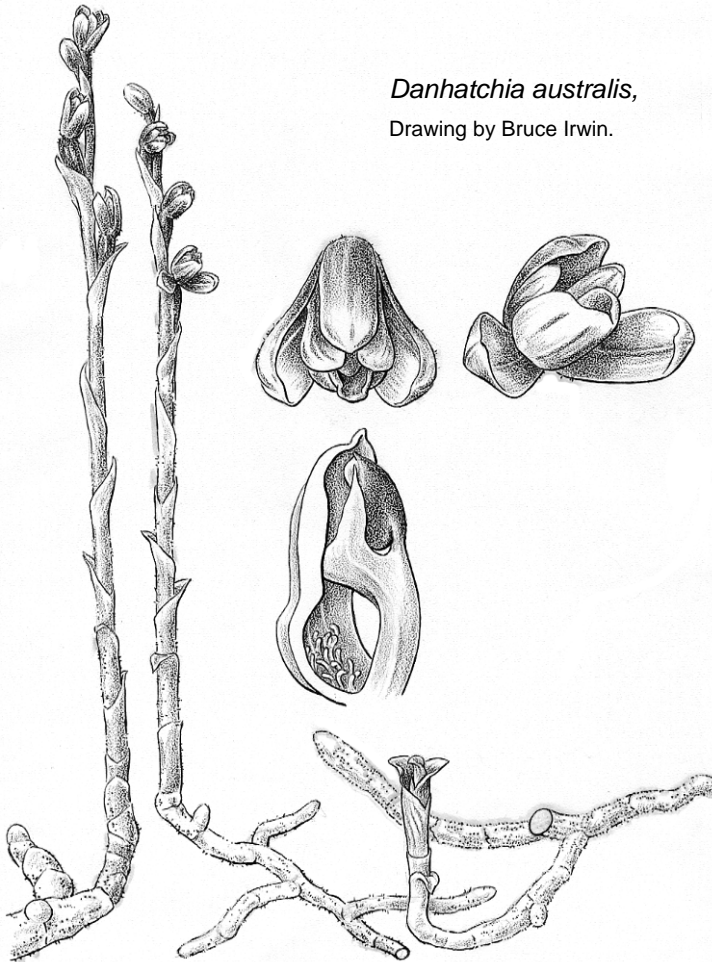
He did this from 1945 to 1963 in a series of nineteen papers, illustrated mainly by his father, for the *Transactions of the Royal Society of New Zealand*. In his booklet *Auckland's orchids* (1950) he did his own drawings. *Round the year with the orchids of Auckland*, a month by month account of flowering times and brief descriptions of local species, was published as an Auckland Botanical Society bulletin in 1951. In a *New Zealand Gardener* magazine article, *Native orchids – beautiful, anti-social, uncultivable*, he shared his knowledge, enthusiasm and concerns with enthusiasts less scientifically minded.

In 1987 he was honoured by an Auckland Botanical Society invitation to give the Lucy Cranwell lecture; he spoke about *The small green orchid*. Two orchids are named for him, elusive *Danhatchii australis*, and a sun orchid *Thelymitra hatchii*. In 1988 his contribution to the study of New Zealand orchids was recognised by his election to Fellowship of the Linnæan Society. He is one of five Honorary Life Members of the New Zealand Native Orchid Group. Inevitably he had his critics, but he also made many good and loyal friends. In a guest editorial in the *New Zealand Native Orchid Journal* on the occasion of his 80th birthday, he said that he was interested, ignorant and wanted to know. In the process of his learning, he wrote well over a hundred scientific papers, and became the major contributor to the present day knowledge of New Zealand orchids.

He is now 87, and continues to contribute regularly to the *Journal*.

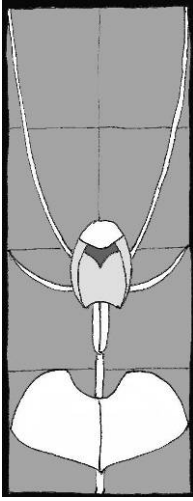
Danhatchia australis,

Drawing by Bruce Irwin.



Danhatchia australis (Hatch) Garay & Christenson. *Orchadian* 11(10): 470 (1995)

An endemic New Zealand genus of one species. A rhizomatous, leafless epiparasite, associated with nikau and/or taraire, and lacking chlorophyll, though occasional chloroplasts in the cells of the leaf-bracts suggest that the species has evolved from a normal green-leaved plant. The stems are pinkish to dark brown with several colourless leaf bracts. It flowers from December to February, and the flowers rarely open, but when they do they remain open for 2-3 weeks. The sepals and petals have conspicuous cream-coloured tips. The plant was initially thought to be a species of the Japanese genus *Yuania* but is now recognised as a monospecific New Zealand genus. Hatch's first specimen was collected by E. Kulka from Waipoua River on 28 January 1955: "A single dried specimen, plucked at ground level and a little past full bloom...."



HISTORICAL REPRINT

— from TF Cheeseman's *Illustrations of the New Zealand Flora*, Vol. II, Government Printer, 1914. Drawings by Miss Matilda Smith, engraved by John Nugent Fitch.

LYPERANTHUS ANTARCTICUS AND CALADENIA BIFOLIA.
 FAMILY ORCHIDACEÆ] [GENERA LYPERANTHUS, R. BR.
 CALADENIA, R. BR.

Lyperanthus antarcticus, Hook. f. *Fl. Antarct.* ii, 544; *Cheesem. Man. N.Z. Fl.* 687.

Caladenia bifolia, Hook. f. *Fl. Nov. Zel.* 247; *Cheesem. Man. N.Z. Fl.* 689.

Chiloglottis Traversii, F. Muell. *Veg. Chath. Is.* 51.

Chiloglottis bifolia, Schlechter in *Engl. Bot. Jahr.* band 45, p.383.

Lyperanthus antarcticus was first discovered in the Auckland islands in March, 1840, by Lieut. Le Guillon, a member of Admiral D'Urville's exploring expedition in the "Astrolabe" and "Zélée." In November of the same year Sir J. C. Ross, in the "Erebus" and "Terror," also visited the islands; and Sir J. D. Hooker, who accompanied the expedition, obtained imperfect specimens of the plant. All that Hooker could do in the first volume of the "Flora Antarctica" was to allude to the plant under the heading "dubii generis"; but an examination of Le Guillon's specimens enabled him to refer it to the genus *Lyperanthus*, and in the supplement to the second volume he consequently described it under the name it still bears. In 1863 it was collected by Sir James Hector and Mr. Buchanan in the interior of Otago. Since then it has been found to have a wide distribution in subalpine districts from the Tararua Range southwards to Stewart island and the Auckland islands. In New Zealand it is most common between 2,500 ft. and 4,000 ft. elevation, but it descends to sea-level in Stewart Island.

Lyperanthus antarcticus differs from the type of the genus in the upper sepal being much broader and more hooded, in the less spreading sepals and petals, and in the shorter and broader column, but the differences are not sufficient for generic distinction. According to Dr. Schlechter, the genus is confined to Australia and New Zealand, and is limited to four or five species. The New Caledonian plants formerly placed in the genus he now refers to *Megastylis* (see *Engl. Bot. Jahr.* vol. 45, 384).

Caladenia bifolia was also first collected on the Auckland Islands, imperfect specimens having been gathered thereon by Sir J. D. Hooker in 1840, and referred to in the "Flora Antarctica" under the heading "Caladenia No. 5." A few years later it was collected in Otago by Dr. Lyall, and on the Ruahine Range by Mr. Colenso. Subsequent exploration has proved that it is by no means uncommon in montane and subalpine districts from Rotorua and Taupo southwards to Stewart Island; it is also found in the Chatham Islands, Antipodes Island, and the Auckland Islands. It ascends as high as 4,500 ft. on the Nelson mountains, but descends to sea-level in the Chatham Islands and Stewart Island.

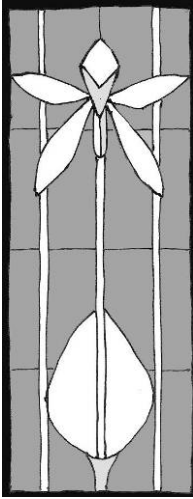
Caladenia bifolia is a somewhat anomalous member of the genus, its habit being precisely that of *Chiloglottis*, to which it has been referred by Baron Mueller, and more recently by Dr. Schlechter. But, as I have pointed out in the Manual, it wants the essential character of the wings of the column produced into two lobes behind the anther. In this respect the student should compare fig. 9 of the accompanying plate, showing the column of *Caladenia bifolia*, with fig. 4 of Plate 198, representing the column of *Chiloglottis cornuta*. On the whole, I am still of opinion that the species is best placed in *Caladenia*.



PLATE 197A. *Lyperanthus antarcticus*, drawn from specimens collected on the Auckland Islands by Mr. B. C. Aston. Fig. 1, front view of flower; 2, side view of same; 3, lip, showing the longitudinal lamellæ; 4, side view of column; 5, front view of column.

PLATE 197B. *Caladenia bifolia*, drawn from specimens collected in the Mount Arthur Plateau, Nelson, at an altitude of 4,000 ft. Fig. 6, side view of flower; 7, front view of flower; 8, lip, showing the two lines of calli; 9, column.

NOTES ETC



Dr Michael Fay, Chair of IUCN Orchid Specialist Group, emailed, "A brief note to let you know that our webmaster Graham Smith has made quite a lot of changes and updates on the **Orchid Conservation**

International webpages (including new trustees etc.). If you would like to see what these changes are, visit <http://www.orchidconservation.org/>. He will now begin to make changes to the OSG site, so watch this space.

Fig 1 in J101 is a double headed *Diplodinium alobulum* from Wattle Bay, photo by Tricia Aspin. My apologies Tricia—I lost the reference to the photographer when my computer suffered its health problem—Ed.

Orchid Conservation International Awards for 2006. The OCI Trustees announced awards for orchid conservation projects for 2006; among them were:

Epiphyte orchid distribution and population dynamics on a disturbance gradient in Andean cloud forests, proposed by Ana Maria Benavides Duque and Angela Patiño, will be carried out in an area of the world that is particularly orchid rich.

Johnson Bridgwater of WildShare International has been awarded funding to assist with an *Orchid Conservation Program in the El Cielo Biosphere Reserve*, for establishing a botanical garden, arboretum and herbarium in the El Cielo Biosphere Reserve in Mexico.

Khaled Hamdan at the American University of Beirut has been awarded a start-up grant for his project *Towards a Sustainable Orchids Monitoring Program in the Shouf Reserve* in The Lebanon. The flora of The Lebanon has not been revised or updated since the 1960s and the status of orchids, similar to most plant species, remains unchecked.

Kevin Matthews "Thought you would enjoy the attached pix... of these fragrant variant *Thelymitra pulchella* from near Kaitaia" (Cover, Fig.14, 15). He sent the photograph (Fig.16) of *Thelymitra* aff. *pauciflora* in middecember. Kevin emailed again (15 Jan 07), "Attached are pix of flowers which were taken on the same two-leaf *Thelymitra* plant (e.g. Fig.17). I have over twelve two-leaf *Thelymitra cyanea*, with four having progressed through to flowering. The others will probably, at this late stage, bear no fruit. I'm fairly sure that those without flower are *T. cyanea* because they are within the same colonies. There is no notable difference in flower from the single leaf form, but it is worthwhile recording that these *Thelymitra* do occur with more than one leaf. The two-leaf *Thelymitra* flowers have well formed pods and I believe they will produce viable seed. It would be interesting to see the plant form from this seed. I have found other two-leaf *Thelymitra* associated with variant *Thelymitra pulchella*. Just for something different today I found a 3-leaved *Thelymitra* (illustrated below) with a very short peduncle and a single flower that most likely failed to mature. I have it marked for

the new season flowering period. I also have a few two-leaved *Thelymitra* at Lake Ohia which I discovered after they had flowered and I also intend to follow up on them next time round. I'm going to have to invest in a GPS - I've got bits of plastic tied on trees all over the place for markers!"



A three-leaved *Thelymitra* from Kaitaia

At www.endemia.nc/plante/fiche.php?code=119 is a list of the **New Caledonian orchids** and photographs of interest to us – look at their *Corybas*, *Caladenia*, *Pterostylis* and *Thelymitra* for instance. (Figs. 22-25).

At www.orchidspng.com is a similarly interesting site for **Papua-New Guinea orchids** (Figs. 26, 27).

At [www.dpi.vic.gov.au/CA256F310024B628/0/EE0B8B99D36A3051CA25725F000639D3/\\$File/Timor+flora.pdf](http://www.dpi.vic.gov.au/CA256F310024B628/0/EE0B8B99D36A3051CA25725F000639D3/$File/Timor+flora.pdf) is a list of **plants in Timor** Forest Park. Among them (surprisingly to me at least) are four *Caladenia*, *Calochilus robertsonii*, *Cyrtostylis reniformis*, *Microtis unifolia*, *Pterostylis nana* and another *Pterostylis*, and six *Thelymitra*—and some dinkum Aussies: a *Diuris*, a *Glossodia* and a *Cyanicula*.

At www.publish.csiro.au/samples/Orchid%20Key%20for%20web/html/AustralianOrchidNameIndex.pdf is a full **list**

of the names of Australian orchids by Dr Mark Clements and Mr David Jones, published in 2006, updating their Catalogue of Australian orchidaceae. *Australian Orchid Research* 1989; 1. Promised soon is Vol. 5 of that series, *New names in Australasian orchidaceae*. See p.26.

Phil Norton (Blenheim) walked the Kepler track between Christmas and New Year. Among the usual orchids in the area he was interested in this *Pterostylis* (**outside back cover**). "Having read the comments in your field guide I am interested in your opinion as to whether this is the *P. australis* as discussed there. It certainly has shorter leaves than I am used to in this region and the dorsal is not as extended. The plants varied in size from about 150mm to 250 mm high. I did not see any of what I would consider typical *P. banksii* amongst the various groups...." Well, I think it's the same plant that I saw at Fox Glacier car park in January 2005, and the same as that illustrated by Eric Scanlen from Southland [in J91 p11], and labelled by him as a *P. banksii* x *australis* hybrid—Ed.

The **Trans** (The *Transactions and Proceedings of the New Zealand Institute*, and the *Transactions of the Royal Society of New Zealand*) **are now digitised and available on line!** The Royal Society (known as the NZ Institute before 1933) was established in 1867 to coordinate and assist the activities of a number of regional research societies including the Auckland Institute, the Wellington Philosophical Society and the Otago Institute. These societies often did not have the means to publish the papers that were presented to them or maintain a written record of their activities. The NZ Institute was set up to remedy this through the publication of a single volume of transactions and proceedings on their behalf: the papers from one year were published in the following year. Now you have easy access to the orchid papers of Colenso, Hatch, Cheeseman, Buchanan, Moore, Thomson, Petrie, Berggren and others. There is a separate file of the published

illustrations. The digitisation project has been carried out by the National Library in consultation with the Royal Society. The original volumes are from the collections of the Alexander Turnbull Library. Go to <http://rsnz.natlib.govt.nz/volume/> for a full set. This is a marvellous asset.

The yellow and brown colour form of *Gastrodia* “long column” was flowering at Barton’s Bush in Upper Hutt in late January.



Oops! Eric Scanlen emailed that **Ernie**, of “Ernie’s orchid” [J100] is almost certainly RH Matthews’s second son, Ernest Crowther Matthews – i.e. not his nephew, EW Matthews as I had surmised. There were four

Ernest Matthews alive at the time but the Ernest William Davis Matthews snr. family (RHM’s brother, wife and 14 children) were not interested in the orchids.

Oopsie again! If you were planning to attend the **6th Australasian Native Orchid Conference and Show in Brisbane** on 29 August to 2 September 2007, don’t: it has been cancelled.

Volume 5 of Australian Orchid Research has just been published: “New taxa of Australian Orchidaceae” and it is of marginal interest to NZ orchidophiles. There are five major papers, all authored by David Jones with various colleagues.

- 1: Fourteen new taxa of Orchidaceae from northern and eastern Australia and two new combinations from New Guinea. Mostly tropical genera, none shared with NZ.
- 2: Towards a revision of the *Thelychiton speciosus* group.
- 3: Miscellaneous new species of Australian Orchidaceae. Jones describes 24 new species in *Arachnorchis*, nine new *Calochilus* species (none of them in NZ), a new *Chiloglottis*, a new *Corunastylis*, seven new *Pterostylis*, and a range of others.
- 4: Towards a revision of *Bunochilus*. This is the multiflowered group of *Pterostylis*, typically that were once known as *Pterostylis longifolia*.
- 5: Fourteen new species of *Prasophyllum* from Eastern Australia. Well, who knows which of these might be in NZ?

Plates page 27

Fig.17: *Thelymitra cyanea* from a two-leaved Kaitaia plant: photo Kevin Matthews.

Fig.18: *Waireia stenopetala* from Campbell Is. Photo Val Smith.

Fig.19, 20: A white form of *Singularlybas* from Auckland Is (photo Val Smith), similar to Eric Scanlen’s *S.* “Greymouth” [J100: Fig.22].

Fig.21: A more familiar *S. oblongus* from Campbell Is (photo Val Smith).





Western Australian Orchid Spectacular 2008

Following the success of Western Australian Orchid Spectacular & Conference 2005, there have been calls to “do it all again”.

The Western Australian Orchid Spectacular 2008 will be held between 25 and 29 September 2008, a long weekend with Monday 29 a public holiday.

The Perth Royal Show and the Kings Park Wildflower Week are on at the same time. Mark the date on your calendar.

Speakers who have confirmed their attendance so far are Dr. Henry Oakeley of the UK, Roberto Agnes of Aranda Orquideas, Brazil, Dennis Kao of Ching Hua Orchids, Taiwan, Brian Gerhard of Down Under Orchids, NSW. More speakers will be added to this list.

Plans are afoot to repeat the Orchid Tours of Perth and the Southwest. These were received with rave reviews by all the participants in 2005. Again, there will be limited spaces, so book early!!

For any queries or questions, please write to, the Secretary, PO Box 4076, Alexander Heights, WA 6064, or email waos@inet.net.au.

Plates page 26 Some Pacific orchids

Fig.22: *Corybas neocaledonicus*. Photo Remy Amice. From www.endemia.nc/plante/fiche.php?code=119.

Fig.23: *Thelymitra longifolia*. Bernard Suprin. Ibid.

Fig.24: *Earina floripecten*. Jean Jacques Villegente. Ibid.

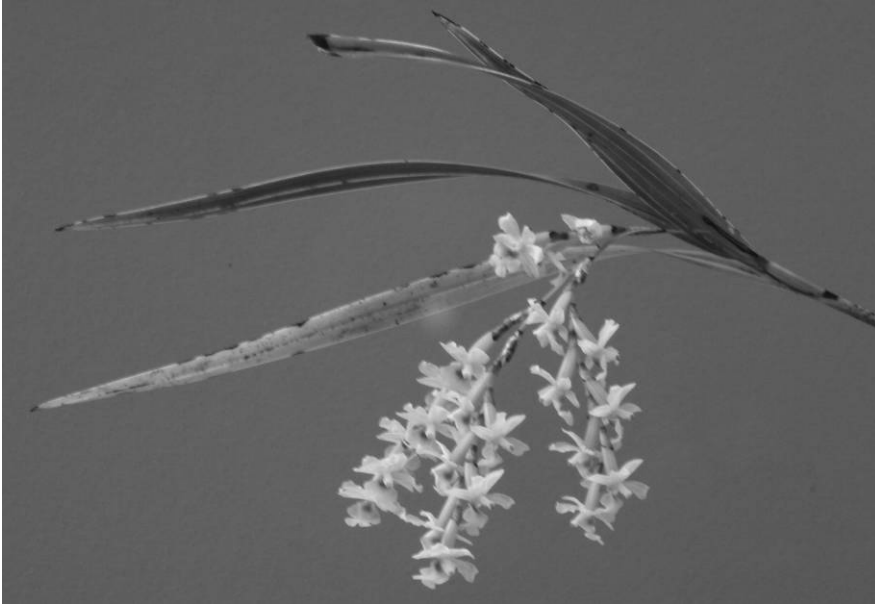
Fig.25: *Drymoanthus minimus*. Jean Jacques Villegente. Ibid.

Fig.26: *Corybas* sp. Papua-NG. Wolfgang Bandisch. From <http://www.orchidspng.com>

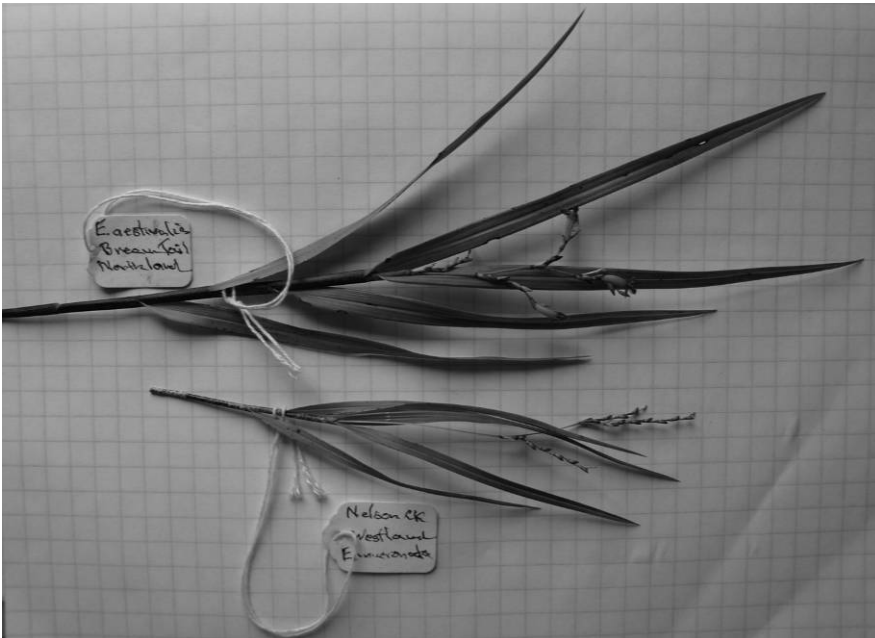
Fig.27: *Pterostylis caulescens*. Ibid.



This *Microtis* was flowering at the roadside between Waiiau and Kaikoura, near the Mt Lyford skifield turnoff. It is similar to the late-flowering “*Microtis* aff. *unifolia*” from Gladstone in the Wairarapa, illustrated in the second edition of the *Field guide*.



I sent the above specimen, flowering at Gladstone in the Wairarapa, in early February, to Brian Molloy. He identified it as the late flowering form of *Earina mucronata*, distinct from *E. aestivalis*, which he identifies by the size and shape of the leaves (longer and wider). He sent several specimens, two of which are photographed below.



IRWIN ON ORCHIDS

The orchid drawings of a genius, gathered together in about 750 pages, in a single volume, limited edition, each copy signed by the artist.

Meticulously collated and annotated by
Brian Tyler.

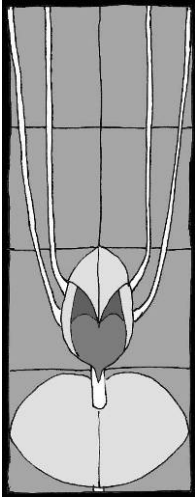
If you would like to reserve a copy, contact
Brian Tyler
(4 Byrd St, Levin,
bandj.tyler@xtra.co.nz)

Publication is likely to be June, and the cost about \$150.

A field trip to Maunga Hikurangi in November?

Paora Brooking, Ngati Porou Tourism Coordinator, advises that the Hikurangi Hut (situated at about 1050m above sea level) is \$15/person per night. It is 3-5 hours tramp from carpark to hut and 2-3 hours from hut to summit. The hut has comfortable bedding for 8 although larger groups do manage to fit as long as they are ok with doubling up (a couple of air beds would probably be required). The hut is a basic hut with communal bunks with mattresses, running water and wood stove. It is advised that you take gas cookers for cooking as well as utensils (there are a few utensils). There is also an outside toilet. Other accommodation - Eastenders farmstay is about 45km from base of mountain. The Ruatoria Hotel is about 35km from the mountain (these are the only places that can house larger groups apart from the motor camps and motels based in Hicks Bay and Te Araroa (about 60 km from Hikurangi). Most other tracks and Native reserves in the region come under the care of the Dept of Conservation.

If you are interested in discussing how best to approach this under-botanised region in November, contact
Ian St George by 1 October:
istge@rnzcgp.org.nz.



THE COLUMN: ERIC SCANLÉN

1. Species defined, once and for all?

Checking through the index for Journals 1 to 101, the Column stalled on key word entry, “species define” with no less than nine entries because this basic precept of biological science still eludes clear definition, ever since the absolute species expectation, inherited by Linnaeus, fell from favour as Darwinism became the darling of the scientific community. Let’s have a look at these nine entries and see if a clear definition can thus be gleaned.

J54:23 June 1995. Bob Bates, [1]

The term “species” is applied to any group of genetically isolated organisms sharing the same gene pool. Individuals within species all look similar and breed freely with each other. They do not normally interbreed with members of other species: it’s not that they can’t, it’s just that they don’t, under normal circumstances because of a combination of the following — geographical isolation, different flowering times,

different pollinators, sexual incompatibility (from mechanical, chemical or genetic barriers).

Bob’s definition of differing species can thus be summarised in the phrase which the Column has used before: *Different species are taxa following different evolutionary paths.*

Bob had been campaigning since 1981 [J40:10] to get some six (reduced to five, J79:30) South Australian taxa of *Linguella* (was *Pterostylis*) *nana* agg., recognised as distinct. They all had minor structural differences but principally, the four bulleted reasons above ensured that these taxa remained isolated so Bob held out against stolid conservatism that they should be different species. His five tagnamed taxa are covered principally in J37:21; 40:10; 49:26; 79:30; 84:12 and 88:26. The five do not include Hoffman & Brown’s nine *L. aff. nana* variants from southwestern Australia [2]. Even in 2002, David Jones and Mark Clements, using DNA and morphological criteria [3], recognised only one *Linguella nana* among a total of four only Aussie *Linguellas*, however David Jones’ 2006 text [4] recognises about 30 *Linguella* taxa, all but five unnamed. So it would seem that in the intervening four years, Bob’s well researched plea for basic species definition is now being taken seriously.

J56:28 September 1995, Dr. C. Bower, [5]

(Species are) groups of actually or potentially interbreeding populations which are reproductively isolated from other such groups.

Dr. Bower goes on, “Although somewhat technical, this definition stresses reproductive isolation which means that, if two closely related orchid variants cannot interbreed because they are reproductively isolated, they are different species.”

Dr. Bower and Bob Bates are “singing the

same song” it would appear but for different reasons: the former re an increase in *Chiloglottis* species from five in 1987 to 29 in 1995 and the latter because of tardy recognition of at least five South Australian *Linguella* aff. *nana* taxa.

J68:13 September 1998, Bruce Irwin. [6] first quotes B.D. Jackson [7] from 1928;

(A species is) *the aggregate of all those individuals which have the same constant and distinctive characters.*

Then Bruce quotes from a 1963 Chicago publication [8] which stated, “A species is a population of individuals that are more or less alike and are able to interbreed and produce fertile offspring under natural conditions.”

But neither is clearly definitive especially for Bruce who was then well known for defining eight of the *Nematoceras rivulare* agg., (J47:8 & J55:24), three reviving early descriptions (*N. longipetalum*, *N. rivulare* s.s. & *N. orbiculatum*) but only two others of the eight have been recently described from his work (*N. papa* & *N. iridescens*) because, we are told, the other three look too similar as herbarium specimens (J79:16). So Bruce wrote his own definition as...

“A species is a group of individuals which may show minor variations among themselves. There may be quite considerable variation between their extremes but individuals within the group exhibit a more or less smooth transition between those extremes. There should be a distinct gap between the group and members of any other species in the genus.”

Still not an absolute definition and it clouds the distinction between similar species such as *Pterostylis australis*, *P. banksii* and *P. patens* which have often been reported as transitioning from one to the other in adjacent colonies, [Nsltr 23:11; J70:6; 78:15; 79:3]. Bruce elaborates in his article on some of his definition’s perceived shortcomings, in particular, self pollinating species and spontaneous creation of polyploids; i.e. *Drymoanthus adversus* with $4n = 76$ chromosomes being almost certainly an

autotetraploid derivative of the diploid, *D. flavus* with $2n=38$ chromosomes. Bruce favoured “subspecies and varieties” [pers. comm. 4 Dec. 2006] to cover isolated taxa that Bates, Bower and the Column would prefer as species.

J79:30 June 2001, Doug Bickerton, [9] introduces allozyme electrophoresis for gene analysis and differentiates among some of Bob Bates’s *Linguella* aff. *nana* species but doesn’t get into species definition.

J79:33 June 2001, Henrick Pedersen [10] also delves into genetics and states—*Species are designated taxa complying with the biological species concept in a modern, botanically focussed sense. In addition to mutual reproduction isolation they are distinguished by basically different genome compositions — a fact that can be utilised when assessing the rank of allopatric (from distinct areas) taxa. It is tentatively suggested that autotetraploid taxa should be treated as co-specific with their diploid progenitors. [i.e. D. adversus = D. flavus, what?]*

Henrick’s spin in “the biological species concept in a modern, botanically focussed sense” fogs his definition and his opinion that autotetraploids be classified the same as the diploid parent seems to be a result of identification problems with multiple *Dactyloriza* orchid species in Europe. See J93:38 for an update.

J91:4 June 2004, an anonymous contributor to the web, puzzles over yellow shafted and red shafted flicker birds hybridising in eastern North America and he or she writes, *The definition of a species is that individuals belonging to one species shouldn’t be able to mate easily and produce vigorous, reproducing offspring with individuals belonging to another species.*

The contributor is clearly not versed in orchids where species and genera interbreed quite vigorously when given the opportunity but, like flicker birds, interbreeding is less common in nature where diversity is championed.

J98:19; February 1998 & J100:14 August 2006, Dr. Graeme Jane sets out the requirements of the International Code of Botanical Nomenclature for describing a species including the brief Latin diagnosis etc. but doesn't deal with the crucial issue of what defines a distinct species in the first place.

Discussion

Did we get a clear definition of "species" after considering all these learned attempts? The answer can only be, not quite but nearly. One of the major stumbling blocks has been the attempts to define a species instead of the difference between species. The Column's contraction of the Bates/Bower definitions, that ***Different species are taxa following different evolutionary paths***, is submitted as the key to deciding which are distinct species and which are not although this still leaves the decision to the taxonomist's personal opinion and that must be conditioned by what referees are asking for these days in the way of morphological differences, DNA checks and chromosome numbers. So similar looking taxa will still remain classified as one species, won't they? Also, taxa may need a millennium or two of trivial mutations and adaptations to show enough morphological and/or molecular differences to clearly separate them.

Bruce Irwin [J100:18] mentioned a good test case with two such close taxa in *Thelymitra* "darkie" and *T.* "Ahipara" both with $4n=60$ chromosomes. Bruce opined that they were actually one species. Well, *T.* "Ahipara" is paler in colour in stem, bracts and tepals but otherwise it is very similar morphologically to *T.* "darkie". However, there are differences which could have evolved over the millennia; e.g. *T.* "Ahipara" prefers wet lake sides (but still grows on tracksides at Albany Scenic reserve) and thrives on seasonal inundation but *T.* "darkie" avoids the inundation. *T.* "darkie" flowers do open, if rarely, from mid October to early November whereas *T.* "Ahipara" is cleistogamic i.e. self fertilising without opening (except in a steaming car boot J67:24) but reaches maturity later in mid November [11]. The Bates/Bower/Column

definition of species difference, would class these two taxa as distinct. Molecular confirmation of one stance or the other would be of some distinct interest.

Some of the possible contrary arguments mentioned above are discussed here including—

1. ***Self pollinating species***. These are mostly fall-back self pollinators, e.g. *Thelymitra longifolia* which still open their flowers to attract the more successful evolutionary process of cross pollination whenever possible. For example, occasional crosses are purported to have occurred, with *T. longifolia* as one parent, such as the amphidiploid (doubled chromosome J68:28) hybrids *T. decora*, *T. hatchii* and *T. pulchella*, according to Molloy and Dawson. In addition, the rare successful mutations in self pollinators that have occurred over the millennia (from DNA transcription errors, damage from cosmic rays due to cataclysms in the galaxy etc.), produce slightly different colonies in numerous areas. These do not gain the advantage of cross fertilising out the weaker genes but the differing colonies would still compete for territory. Some must gain ascendancy (although never as speedily as with cross pollinating species) as separate taxa such as *T. aff. longifolia* (insect pollinated and steadily depositing putative parent *T. longifolia* from the far north), *T. purpureo-fusca* Col., Bruce's subalpine *T.* "Whakapapa" and numerous other lesser variants at present all lumped as *T. longifolia*.

2. ***Polyploidy***. Successful natural polyploids such as tetraploid *Drymoanthus adversus*, which is notably more successful and more widespread than putative parent and diploid, *D. flavus*, is also structurally different and prefers a distinctly different habitat. They are indubitably following different evolutionary paths thus should surely retain the right to distinction. Hexaploids (6n chromosomes) are rarer but Dan Hatch hypothesises that *Thelymitra* "trough leaf" (Fig. 31) with $6n=84$ chromosomes, is an hexaploid hybrid of diploid *T. aff.*

pauciflora ($2n_p=26$) and tetraploid *T.* “darkie” ($4n_d=60$). This gives base numbers $n_p=13$ and $n_d=15$, thus $n_p+n_d=28$ and $3 \times 28=84$ chromosomes as for *T.* “rough leaf”. The arithmetic is right but some molecular confirmation would be of notable interest. In any case, polyploid *T.* “rough leaf” is a quite distinct taxon on a different evolutionary path from its putative parents so it is definitely a candidate for specific status just like the amphidiploids.

3. Similar appearance of herbarium

specimens or the rumoured reason for continued non-recognition of three of Bruce’s *Nematoceras rivulare* agg., doesn’t add up. Bruce’s immaculate drawings clearly show internal structural differences which would show in sectioned specimens even when pressed or in spirits. Bruce reminded the Column (pers. comm. 4 Dec.2006) that he didn’t ever “claim that they were specifically different.” However, there are clear distinctions even if whole flowers deformed by the pressing could look similar. But taxonomists are no longer wedded to the hallowed herbarium specimens when modern transport and methods can whisk live specimens around the world (with CITES approval!) before they wilt and photography can easily show the living differences.

Conclusion

With DNA analysis now in the ascendancy, one can only hope that our top world taxonomists can agree upon a definite and indisputable definition of species difference from molecular studies. Perhaps an agreed mean nucleotide difference between specified genes for plants of like chromosome counts? Just think of all the host of new classifications such a decision would deliver to us!

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2. *Caladenia* “2leaf” at Kaitaia

Kevin Matthews found two *Caladenia*-like leaves on one plant, at his farm near Kaitaia on 5 Sept 06 and emailed pix to the Column even before a bud had emerged. This was only two days before he spotted the leaf and shovel shaped, translucent spathe on *Petalochilus calyciformis*(?) plants (following article). But the twin leaves were emerging from a tubular spathe, (or sheathing bract, as Colenso described it) at 90° to each other, covered sparsely with fine hairs, slightly veed and with 4 red ribs below. The Column replied, patiently, that *Caladenia* have only one leaf but Kevin knows his *Caladenia* leaves and kept a close watch on developments. A peduncle emerged seemingly painstakingly slowly, first displaying opposite paired bracts then four *Caladenia*-like swelling buds,

covered in red glands like *C. aff. chlorostyla* but with red midribs at the base of each sepal. Kevin had of course hunted around and had found a few more of these unheard of plants in another area, just to prove that number one wasn't an isolated freak. Finally four distinctly *Caladenia* flowers burst forth in opposite pairs (**Fig. 30**) displaying a double-plant form of mutation, no doubt to *C. aff. chlorostyla* to which it bears a close resemblance.

How do the flowers differ? *C. "2leaf"* has the red bases to those dorsal sepal midribs and white tipped disc calli, not yellow, it has the green stem of one form of *C. aff. chlorostyla* but the three red ribs to the green ovary of the red stemmed form, sepals are obtuse, canoe-prow and the dorsal sepal clings to the column in fresh flowers much as in *C. aff. pusilla*. These characters are well displayed on the cover of J102 remembering that this plant had only a solitary leaf and bract but did have the requisite four flowers. The fact that there are more of these two leaved plants does infer that they are seed propagating because *Caladenia* do not normally spread vegetatively, do they? Just to complicate matters, *C. aff. chlorostyla* is growing nearby and several in-between plants have flowered, all with slightly different flower, leaf and bract arrangements with flowers numbering 1-4. They are most likely hybrids between *C. "2leaf"* and *C. aff. chlorostyla*. *C. "2leaf"* is quite sparse on the ground so it is interesting to speculate that its unusual genetic makeup may finally be eclipsed by this putative back crossing with parents and hybrids unless it displays some cryptic dominant characters that will let it increase as a separate taxon in the age old ways of evolution.

C. "2leaf" is the first unusual orchid taxon that Kevin has found that neither of his relatives, RH & HB Matthews reported around 100 years ago. There is another of Kevin's, a two leaved, long stemmed, late flowering *Thelymitra* that may rival one of RH Matthews', a colony of short stemmed, two leaved *Thelymitra* which also flowered late on 5 January 1903 [1, p38]. The Column didn't know what to think about two leaved

Thelymitra when compiling that booklet any more than Kevin's two leaved *Caladenia* on 5 Sept 06. However, the truth has proven stranger than fiction and Kevin's colony of eight two leaved *Thelymitra* will undoubtedly be the subject of another paragraph when it finally flowers.

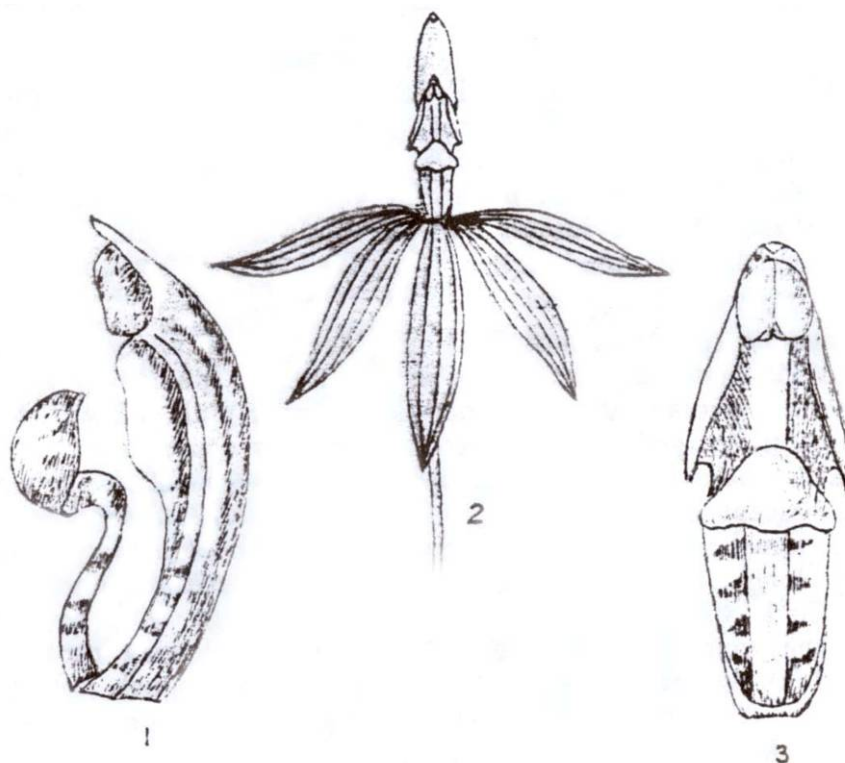
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3. *Petalochilus calyciformis*(?)

Kevin Matthews has apparently rediscovered *Petalochilus calyciformis* as you can see in his **Fig. 28** but the flower had not fully opened when he took this photo on 18 Dec 2006. A day or two later a frontal storm wrecked it and there were no more to be found in the vicinity.

This Kaitaia orchid may well be the one discovered by Henry Blencowe Matthews (Blen) who described the buds enthusiastically to T.F. Cheeseman on 14 Oct 1912 as, "...one variety of *C. minor* (*Caladenia* aff. *Chlorostyla*) when in bud, looks precisely like the new find. ... the buds are very much larger, a greenish yellowish brown colour and more curved ...". Cheeseman, the top New Zealand botanist of the time, regarded this orchid genus with its ordinary petal instead of a fancy labellum, as a "freak" and caused Blen's "sod to fall back in the furrow all the way along" as he replied. This is a well recorded historical incident which you can read about in *Matthews and Son on orchids* [1]. Australian taxonomist, Dr. R.S. Rogers, to whom Blen eventually sent specimens, had no qualms about describing this and another of Blen's, as a new genus, *Petalochilus* [2] and accompanied the description of *P. calyciformis* with the diagram in Fig. B. Notice the, "linear appendage with sigmoid flexure, furnished with a little cup at the apex, erect in front of the column." as Rogers described it. This is thought to be the complex bulge (**Fig. 28**) yet to separate from the column as the flower opens. Kevin assures us, there is no fancy labellum. Other features of



R.S. Rogers' drawing of *Petalochilus calyciformis* made from specimens sent by H.B. Matthews:
 1. Column from side showing appendage; 2. front view of flower (the artist has represented the labellum too long); 3. Column from the front showing appendage.

Rogers' description for leaf, bracts and ovary, fit the specimen well and his, "Segments of the perianth ... pubescent-glandular on the outside" is quite apt.

The similarity with *Caladenia* aff. *chlorostyla* makes one suspect that this is a mutant form which does seem to have survived for at least 100 years. Most new species arise from mutations so Blen's 1912 colonies which were clearly seed dispersed thus viable, gave no obvious reason to deny *P. calyciformis* specific status.

Neither Blen nor Rogers mentioned the spathe (or sheathing bract as Colenso described it for *Nematoceras hypogaeum*) at the base of the peduncle. This translucent shovel shaped affair (Fig. 29) showed up at

Kevin's farm on *P. calyciformis*(?) as long ago as 9 Sept 2006 and had Kevin and the Column guessing for the next three months waiting impatiently for the flower to open whilst the peduncle extended. Fig. 28 is as near as it got.

Bruce Irwin had less luck with his probable find of the other species, *P. saccatus* back on 29 Sept 1997 at Scott Point [Journal 65:14, Dec. 1997]. The bud had been bitten off by a grub but revealed itself under his dissecting microscope as you can see in his drawings in J65. Several subsequent visits by field parties have found Blen's *Caladenia* "nitida rosea" at Bruce's site but no further sign of *Petalochilus saccatus*. Blen's and Rogers' genus continue to tantalise us but put you money on it, Kevin's site will be closely watched next year!

By 1919 Blen found that the whole *Petalochilus* habitat that he knew, had been cleared of tea-tree for agriculture, as he reported to Dr Rogers [2] and those quite prolific plants were taken to be extinct thereafter. However, despite Bruce finding that solitary bud in 1997, the historic name of the “extinct” genus was used by David Jones et al [3] in 2001, as required by the ICBN rules, for one of several genera split from *Caladenia*.

The question is, what will happen in the renaming drama, if the original *Petalochilus* genus now resurfaces as seems entirely likely?

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Inside back cover

Fig. 28: *Petalochilus calyciformis*(?) bud just opening at Kevin Matthews' farm in Kaitaia on 18 Dec 2006. Note the red glands on sepal outers and callus mid column looking distinctly like the yet-to-emerge appendage described by Dr. R.S. Rogers for this species.

Fig. 29: The shovel shaped translucent spathe with green mid-rib which first drew Kevin Matthews' attention to *Petalochilus calyciformis*(?) on 9 Sept 2006 and from which the bud was just emerging. This unusually showy orchid spathe, was at first thought to be part of the inflorescence.

Fig.30: *Caladenia* “2leaf” at Kaitaia. See also cover of J102. **Photos Kevin Matthews.**

Fig. 31: Doug McCrae's *Thelymitra* “rough leaf” from Scott Point 6 October 2000. Points of ID are the orchid pink colour, a yellow post anther lobe with two teeth at each side, the reddish brown saddle behind and of course the rough leaf, like 100 grade sand paper but only for the first rub. Dan Hatch did some arithmetic on its phenomenal 84 chromosomes and suggests it could be a trebled hybrid of *T.* “darkie” ($4n=60$ so $n_d=15$) and *T.* aff. *pauciflora* ($2n=26$ so $n_p=13$) thus $n_d+n_p=28$ and $3x28=84$ as for *T.* “rough leaf”.
Photo Eric Scanlen.

Outside back cover

An unusual *Pterostylis* from Fiordland, photo Phil Norton, Kepler Track (see p.25).





Phil Norton's *Pterostylis* from the Kepler track (p.21)