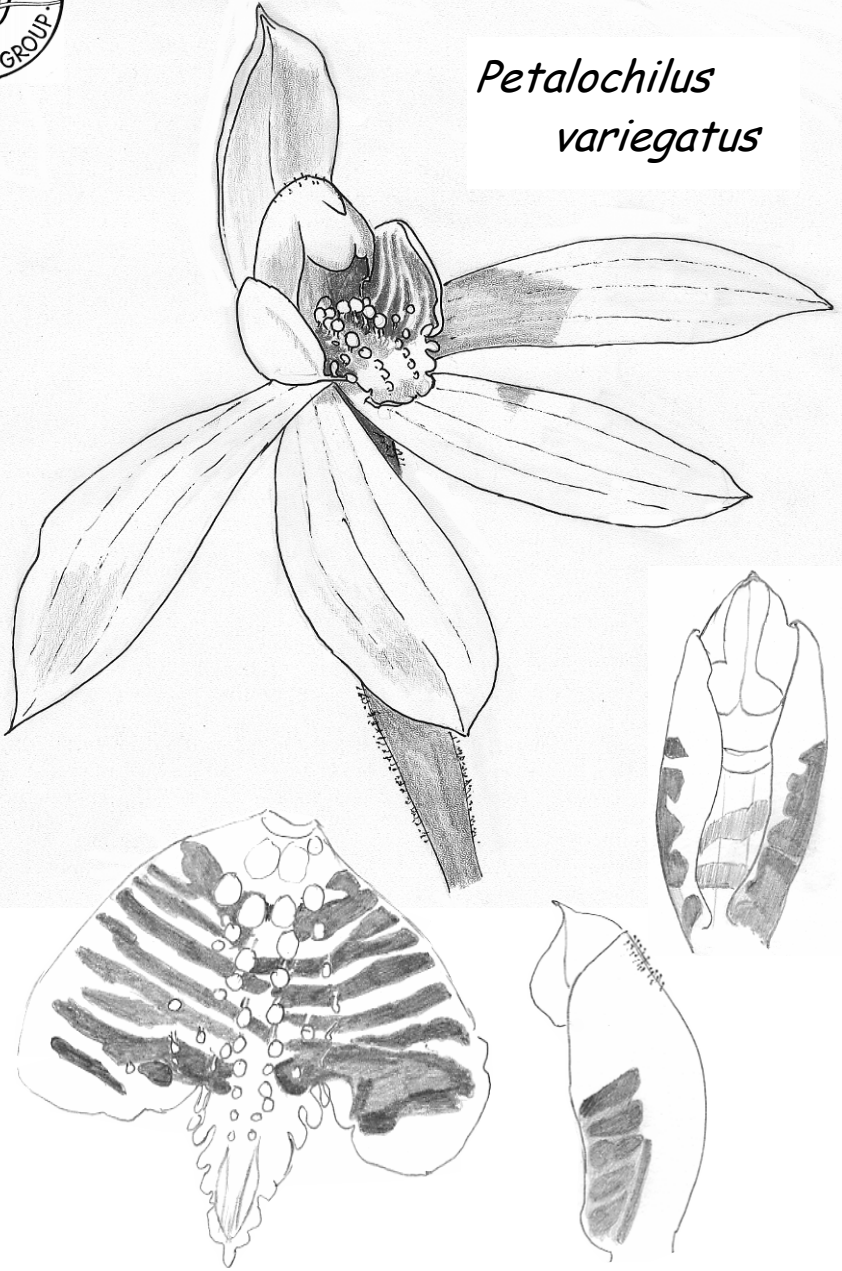




*Petalochilus
variegatus*



from the editor: Ian St George

Caladenia... and then there were none

In 1970 Lucy Moore lumped the NZ Caladenias into *Caladenia carnea* and *C. lyallii*. By 2001 we could say with reasonable confidence that NZ had eight described species of *Caladenia* and several undescribed. Now we have none.

The September 2001 *Orchadian* arrived too late to be reported in our December Journal, but it contained a paper that revised *Caladenia*, and in so doing renamed all the NZ species [A new classification of *Caladenia* R.Br. (Orchidaceae). DL Jones, MA Clements, IK Sharma, AM Mackenzie. *The Orchadian* 2001; 13 (9): 389-419].

Caladenia are divided into 13 genera, the division supported by molecular studies (DNA) and by morphological characteristics. The type species is *Caladenia flava*. The genera are -

- Caladenia** (six Australian species);
- Arachnorchis** (all the large Australian spider orchids);
- Calonema** (17 Australian species);
- Cyanicula** (9 Australian species);
- Drakonorchis** (4 Australian species);
- Elythranthera** (2 species and a hybrid);
- Glossodia** (2 Australian species);
- Glychorchis saccharata** (monotypic);
- Leptoceras menziesii** (monotypic);
- Petalochilus** (the small-flowered forms, including most of the NZ species—thus *P. alatus*, *P. bartlettii*, *P. calyciformis*, *P. chlorostylus*, *P. aff. fuscatus*, *P. minor*, *P. nothofagei*, *P. aff. pusillus*, *P. saccatus*, *P. variegatus*) - see colour, page 15.
- Pheladenia deformis** (monotypic);
- Præcoxanthus aphyllus** (monotypic);
- Stegostyla** (about 20 species in Australia and NZ—thus *S. alpina*, *S. lyallii*, *S. atradenia*) - see colour, page 16.

Plumatochilus... Simploglottis... and... ?

Dariusz Szlachetko continues to publish papers on the Australasian (and other) orchid flora. We would not wish to express an opinion, but amid accusations of plagiarism, dishonesty and general inaccuracy, and amid alliterative appellations like “the Polish pratt” and less admiring monickers, his publications just keep blossoming out. So do his new names for our genera and species. There is now a race between Szlachetko and those doing the work locally to get their material into print. Haste is not good in scientific publication, and there are bound to be mistakes.

Szlachetko has, in addition to naming *Plumatochilus tasmanicus* (see last issue), now transferred the NZ species *Chiloglottis cornuta* and *Chiloglottis valida* to *Simploglottis*. *Chiloglottis trapeziformis* remains in *Chiloglottis*.

Your view of the Journal

About a third of members answered the reader survey sent in December with the subscription account. The answers were on the whole conservative—you like the Journal pretty much as it is. Only seven would like a more lavish production, and scores for the various sections (where 1 = good, and 3 = bad) were: 1 for colour photographs; 1.1 for cover drawings, editorials, The Column, Notes, Profile of a threatened orchid, and the editor's annual orchid list; 1.2 for Original papers; 1.3 for Historical reprints and the annual Membership list; 1.5 for Other islands'

orchids and Close relations; 1.6 for Australian notes and 1.7 for the Internet. We wont be making major changes. There were no suggestions for new sections. Many made pleasant compliments – for which much thanks. A few made suggestions: “Larger format?” “Shorten The Column” “... possibly a wee bit overdone in minute differences between closely related populations!” “Annual list of abbreviations descriptions” “Coloured pictures stuck with text”.

Petalochilus variegatus (cover)

1885 William Colenso described *Caladenia variegata* from Norsewood (see Historical reprint in this issue).

1906 Cheeseman included it in his concept of *C. minor*.

1949 Hatch included it in his concept of *C. carnea* var. *minor*.

1970 Moore included it in her concept of *C. carnea*.

1988 Max Gibbs mentioned a tall pink caladenia in his Iwitahi report to the Journal.

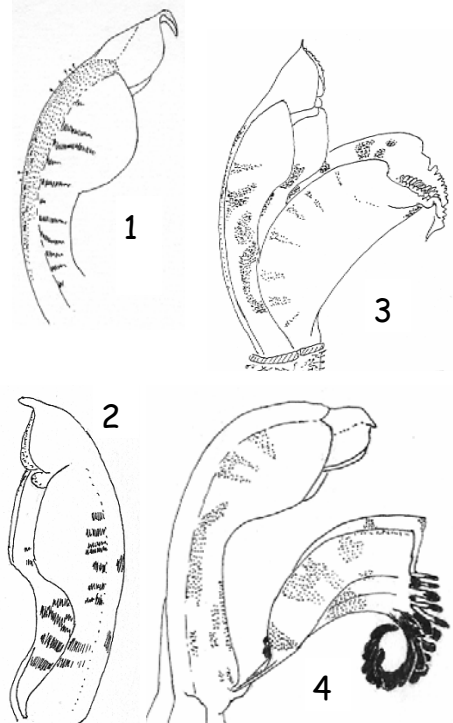
1997 Eric Scanlen tagged the Iwitahi plant “big pink”.

1999 Scanlen recognised that the “smaller glands scattered on each side” described by Colenso were present on the labellum of “big pink” and that other features also matched. He stated the two were identical. Most of us now agree.

Later Scanlen went on to claim the absence of the smaller calli scattered on each side signified a different taxon—one he tagged *C. aff. variegata*. Another pink caladenia quite common in Otago appears to be similar, but also lacks the scattered calli: it was illustrated on the cover of J67.

2001 Jones & colleagues (see first editorial) reclassified caladenia and in doing so renamed *C. variegata* as *Petalochilus variegatus*.

P. variegatus and the Otago *P. aff. carneus* are illustrated in colour, page 15. There are, I think, differences in the column wings (I have only examined one flower of *P. variegatus*). Colenso wrote the column was “winged throughout”, and the column I examined indeed showed quite an even width to the column wings, whereas the columns of *P. alata*, *P. minor*, *P. bartlettii*, *P. aff. carneus*, as well as those of the NZ *stegostyla*, are wide above, but narrow about half way down—see diagrams below and on cover.



The columns of
Petalochilus alatus (1), *P. aff. carneus* (2),
Stegostyla lyallii (3), *S. atradenia* (5).

population studies: 2 — from Waite S, Hutchings

MJ. The effects of different management regimes on the population dynamics of *Ophrys sphegodes*. In TCE Wells and JH Willems. *Population ecology of terrestrial orchids*. SPB Academic Publishing, The Hague, 1991, pp161-75.

If we want to conserve populations of threatened orchids we can base our activities on intuition and experiment – but that runs the risk of causing the extinction of the population. Because we fear that outcome we may not manage small threatened populations actively – but passive efforts at conservation are also risky: populations may decline without warning, and without the cause being discovered. One way to find a rational management regime is to analyse the age structures and the flux of individuals through the populations of threatened species, by regular population censuses. This study reviews earlier reports by the same authors of a population of the Early Spider Orchid, *Ophrys sphegodes* and goes on to propose a matrix model to predict the likely success of different management strategies.

In the last 50 years the range of the Early Spider Orchid has declined greatly in Britain. It grows on ancient chalklands, and a 20 sq.m. plot in its largest remaining population has been mapped every May (flowering season) since 1975.

The first ten years of observations showed that, after they have emerged, plants can enter a dormant underground state, normally lasting no more than two years, and may later emerge again. Half the population was dormant in any one year, later censuses revealing their re-emergence. Plants emerge as a rosette in autumn. Less than 5% of above-ground plants propagate vegetatively each year, so survival depends on recruiting new plants from seed. After first emergence few plants survive more than 3 years. They flower in the first year (i.e. there is no juvenile above-ground stage), and well over half the seed production comes from plants in the first or second year of flowering. Thus a series of years without recruitment would cause a rapid decline.

From 1975-79 the site was grazed by cattle, when the population deteriorated rapidly, deaths exceeding recruitment every year. In 1980 cattle were replaced by sheep, and that year sheep grazed throughout the flowering season and severely damaged the population. From 1981 sheep have continued to graze, but have been removed for three months while the plants flower and produce seed; since then the population has more than recovered.

The timing and intensity of grazing and the grazers used are clearly critical. Vegetation must be kept short to limit competition from more vigorous species and to allow seeds to fall to the soil's surface and new plants to emerge successfully. Summer grazing must be avoided as it kills flowering plants and prevents seed set. Intensive winter grazing may also increase the mortality of emergent rosettes. Cattle damage the shallow soil and increase the mortality of the underground plant parts in it by causing compaction and erosion; they expose the soil surface to invasion by weeds. The moderate disturbance by sheep appears to favour the survival of *O. sphegodes*.

The authors have devised a series of mathematical models for transition probabilities, mortality rates of plants in different states, population projection matrices and elasticity matrices. Interested readers should consult the original paper.

Successful management of *O. sphegodes* must promote flowering, seed setting and recruitment from seed, as well as reducing the mortality of flowering plants, increasing the recruitment of dormant plants, and increasing the probability that dormant plants will emerge and flower. There are lessons here for people caring for populations of New Zealand terrestrial orchids.

the column: Eric Scanlen

1: Te Paki pilgrimage

Ian St George enquired about the possibilities of a field trip to the far north around 27 October. The Te Paki magnet thus drew a dedicated field party to catch up on the elusive *Petalochilus* (was *Caladenia* [1]) after a tantalising storm-bound attempt last November [J78 p35].

Wed 24 Oct. A handy rendezvous at a reserve at Waiwhiu picked up a large colony of *Corybas* “whiskers” (Coatesville style [J79 p18]) right down to the water’s edge of the large stream by SH1, north of the Dome. It flowered profusely on a flood battered rock outcrop yet the under-storey had been swept bare, 2m above present water level. Across the stream, a sombrero sized colony of round leafed *Corybas* had spent flowers stuck on the leaves like black shadows. What is it? Next year perhaps! *C. oblongus* s.s. (no dark calli on the disc) and seeding *Acianthus sinclairii* galore, were spotted too.

At White Hills above Kaeo, two forms of common-old *Thelymitra* aff. *longifolia*, “plonkers” as Graeme Jane called them, had Gary Peniall’s camera flashing. Margaret Menzies focused on a part open *T. pulchella* (with yellow fimbria) but the Column misguidedly reserved his camera for Te Paki. However, closed *T. aff. ixioides*, *T. intermedia* and *T. aemula* showed up plus seeding *T. carnea*. *Petalochilus bartlettii* [1] were all in seed capsule, so early! The Column groaned about his prime target for the trip.

Next stop, Lake Ohia, flooded, well back into the tea-tree where one closed *Thelymitra* “darkie” attracted undue attention. The clasping bracts are green, giving a purple, green broken line appearance. Good recognition trait. At Tahanga Rd lake access, twins Glyn Wren and Margaret scoured the shore fruitlessly,

then found by the car, a bright pink *T. aff. pauciflora* with an orange column - ie lacking the cyanin altogether, according to Ian.

Takeaways at Waitiki Landing were followed by an early night for most of the travel-weary devotees.

Thur 25 Oct. Rubbish Dump Hill looked good with the strong pink *T. aff. longifolia* [J62 p12] in bud at the entrance, for the first time in 5 years! But the rest was disgusting. The same “burnt-off” flower spikes on the “plonkers” predominated as last year, dashing Bruce Irwin’s hopes for a good selection. Close inspection showed it to be more like a rust or canker than the late frost blamed then. Four black seed capsules on *T. matthewsii* spoke of a reasonable season for them. Allan Ducker emerged disconsolate from Doug McCrae’s drain-in-the-tea-tree spot for *Calochilus* aff. *herbaceus* saying, “Anyone who can find one, is better than me.” The Column, always ready for a challenge, climbed in and found one, if only in bud. “Does that mean that I am better than you?” he asked Allan who was lost for words for fully 10 seconds. Bev Woolley had to see *Pterostylis tasmanica* but they were all in seed. So was *Petalochilus bartlettii*. The nearby *P. aff. fuscatus* colony had either buds or seed capsules. *T. aemula* in the swamp below was — you guessed it — closed. So nine dejected Noggers headed for the trusty Shenstone Block and soon encountered numerous *P. minor* (was *Caladenia minor* [1]) and a worshipful open, *P. “speckles”* (Fig. 11, see box) in the *Calochilus* Area. Cameras sprouted in all directions and relief spread huge smiles all around. Up Allan’s Track, *Pterostylis tasmanica* in seed caused more long faces; why was this season so early? Lunch at the Pink Track site of *P. “speckles”* where only buds showed out of the square of marker

sticks. Is this another orchid to go dormant for a year or two after flowering? Across the track though, Gary spotted a wondrous *P. aff. fuscatius* s.s. (see box) just opening. Huge excitement and another queue of photographers with the Column bringing up the rear and threatening anyone that damaged it. Back along Pink Track to Ron Maunder's *Pterostylis tasmanica* site — in the gorse — where one fresh specimen, received a hero's welcome. The lateral petals had spread allowing a view of the white cilia on the column structure (**Fig. 12**). Home via Fri 1 [J69 p27] where a black capsuled *Thelymitra matthewsii* had a still-green corkscrew seedling alongside. This year, the *T. "sky"* colony [J74 p17] (which had all white flowers last year, and all sky blue the year before) had both white and blue spikes; closed of course. They may never open here unless the tea tree is thinned. Tubers for both probably occur here but they only flower when conditions suit. Conditions suit the whites in some years and the blues in others but this year's seemed to suit both. Any advances on this hypothesis? The robust blue *T. intermedia* [J65 p17] has never shown again on Shenstone's *Petalochilus*(?) Track (and has never been reported open!) but was now found on Shenstone Track. Bruce and the Column and later Ian St George, maintained that it was different from the usual, slender, bluish mauve [J74 p18]. That *T. aff. sanscilia* [J78 p35] was present (closed!) and was only a form of *T. sanscilia* according to Bruce who primed Dan Hatch to describe it. It seems the split need not go right down the back of the post anther lobe and it often has a small crop of cilia on the column arms. But "sans cilia" is French for "without cilia". *T. sanscilia* with cilia gets sillier and sillier! Closed *T. "darkie"* and *T. "rough leaf"* were also seen. On the homeward trek, Bev dropped to the track with a gasp, not exhausted but examining some slender gastrodia in bud, mid wheel-track. Not *G. minor* but two common or

garden, *G. aff. sesamoides*, under stress.

Bev and some helpers cooked a fine dinner in the lunchroom, well received. Instead of dessert, Bruce and Graeme picked on the Column's finding that *Petalochilus chlorostylus* was in reality *P. minor* (see box). They argued that since Hooker's type sheet had mostly *P. alatus* on it (his error) and one only *P. minor* and since he did not designate a type specimen, the name *P. minor* was invalid.

The Column maintained that one specimen on the type sheet hadn't been named so, only it could be the type specimen hence it was indisputably *P. minor*. Fitch's drawing was strong supporting evidence but no, B&G reckoned the drawing was inadmissible as evidence. (Both sides might be right; both species are now recognised by David Jones et al. (David's drawing [1] of *P. chlorostylus* has hooked marginal calli; Fitch's [J72 p1] are straight.) What would a field trip be without a good argument? No quarter was given, the debate waxed furious and put everyone in a great humour for a good night's sleep.

Friday 26 Oct. Te Hapua Road, handy to Waitiki Landing, turned out some exciting *petalochilus*, always near the top of south facing banks. Passers by saw determined NZNoggers swinging from tea-tree butt to tea-tree butt along the top of the bank for 1km, but hardly gave them a second glance. They're used to us now. *P. aff. fuscatius* got their midlobe, basal, marginal, calli (BMCs) seriously counted in an attempt to elucidate the taxa. Some had one BMC, erect and prominent (*P. "speckles"*) but most had three BMCs, jutting out. It seems that *P. "speckles"* is consistently different in this respect from *P. aff. fuscatius*.

Gael's *Calochilus aff. herbaceus* [J77 p25] at the Spirits Bay turn-off was having a dormant year. Te Hapua's old tip had browned-off *Thelymitra aff. longifolia* as at RD Hill. Meanwhile, Allan and Gary had done a blitz on Papawiri Hill where nothing of note showed up. Now they made time on

the Earth Wall Track because they had to leave on Sunday. The other 7 “did” the road fence at EW Track for *C. herbaceus* but drew another blank. Conditions didn’t suit it this year so perhaps it will sprout next year or remain content as a tuberous parasite on its pet fungus. After lunch in the sun at Te Hapua beach, Papawiri Hill was tackled — reluctantly — after Allan’s “nothing of note” but it was Ian’s rendezvous so we went. A dazzlingly blue *Thelymitra aemula* (Fig. 13) with one floret open in the sun (the Column’s first in 6 years) caused a flurry of cameras. Off in the tea-tree, a fine colony of *Calochilus herbaceus*, spotted by Bev, had a similar effect. Bulging buds on *T.* “rough leaf” promised to open later so sticky fingered identifiers were threatened if they disturbed a single tepal! Ian arrived, disturbing the Column’s blissful nap at the top of the hill especially when our Convenor said he’d opened the odd sun orchid on the way up!! It didn’t matter; the day had cooled by then and even the *T. aemula* had shut again. *T. aff. longifolia*, *T. intermedia*, *T. sanscilia*, *T. pauciflora* and the curious *T. aemula-tholiformis* [J77 p25] were all there closed. Some few *Petalochilus aff. fuscatus* were open. Not bad for “nothing of note” but eight careful observers will always beat two speeding eagle eyes. *Orthoceras strictum* [J78 p35 & Fig. 14] of last Nov. was absent but *O. novae-zeelandiae* were about in early bud.

Ian was keen to see the highlights of the Shenstone Block so the Column ushered him around the 4½kms including Prime Site where the few *T. matthewsii* sites sighted, were mostly empty! But capsuled plants were often seen outside the marker sticks. Ian had to see the Shenstone during his brief visit and we truly weren’t getting out of dinner cooking—which the girls had completed beautifully just as we got back. Catherine Beard arrived with Aunty Anne Fraser in a smart rental car, to complete the field party of 12.

Sat 27 Oct. A 5:30am rise for a Scott Point expedition, drew some complaints from those revellers who had clumped up and down the verandah around midnight. Tough! But ten orchiders felt it prudent to be off Ninety Mile Beach, 2 hours before the 10:15am tide: and did so, despite being weighed down by the Column’s legendary porridge. The *Petalochilus saccatus* site [J65 p14] was scoured fruitlessly again so Scott Point’s *Petalochilus* (was *Caladenia*) Track was sought with signal success. Open *P. bartlettii*, in both green and red stems, were scattered between tiresome *P. aff. fuscatus*. They could be identified from 2m away; *P. bartlettii* is a cerise shade, *P. aff. fuscatus* is redder. Another 3 flowered *P. aff. fuscatus* was found [cf J77 p24] but flowers open one at a time. The similar Aussie *P. fuscatus* is single flowered. *P. bartlettii* had its troughed midlobe inspected for BMCs. The norm was two, some few had one and two but none here had Dan Hatch’s diagnostic zero [J78:32].

A track-side *P. aff. fuscatus* (Fig. 14) displayed its 3 marginal calli nicely. Lunch was enjoyed in a lofty niche with a panorama to eternity down Ninety Mile Beach. Orchid hunting does have its moments.

A scowling driver in a passing bus, studiously ignored our 2WD Mitsubishi Magna returning up Te Paki Stream. We reckon he’d been filling his thrill-seeker passengers with the need for high platform, 4WDs in this State Highway stream and didn’t appreciate having his spiel spoiled. All this while, Gary and Allan had been scrub bashing up the NZ divide in the Shenstone Block and spotted a *Petalochilus aff. fuscatus* with a straight, pink midlobe; only its 3 BMCs were yellow (Fig. 15). They also noted a few *Thelymitra matthewsii* in yet another pan area for Anne to monitor. Allan said they were looking down on Prime Site. “Never!” said the Column but it cost him a 10¢ bet, publicly paid, when they figured out the contours. Allan’s revenge. A fine dinner at the Kanuka Restaurant capped off a splendid day.

Sunday 28 Oct. Gary and Allan took their leave whilst the other ten took a break during the rain. P.m., Graeme and John Groom tried new territory between Kohuronaki Hill and the Spirits Bay Rd, finding several boring old (?) *Calochilus herbaseus*. A girl's foursome did the Twilight Beach track. Catherine spotted a corkscrew seedling *Thelymitra matthewsii* at the marked site, and Glyn distinguished herself, by first finding two in capsule, one at a new spot, bravo! and secondly by going waist deep in the flooded Te Werahi stream. Some predatory passers by smashed the quarter-light in Catherine's rental car at Te Werahi Gate then found nothing to take. Aren't they lovely!

The other four had headed for Radar Bush where DoC has replaced the tank trap with a locked gate. Bev and Bruce explored track sides whilst Ian and the Column actually reached the kauris. A few tail-ender *Pterostylis agathicola*, some fine *Pt. banksii* by a colony of *Corysanthes hypogaea* type leaves (flowers all bitten off) and *Bulbophyllum pygmaeum* caught their eyes. An apparently huge green and spotted seed capsule (**Fig. 16**) drew out the x 20 lens. A mutant pseudobulb perhaps? The Column touched it with a finger tip but jerked back when it sprouted 8 legs! Anne Puttnam's *Thelymitra matthewsii* was sought again unsuccessfully. [J62 p21] A pair of *Petalochilus bartlettii*, back to back on a mossy bank, a *P. minor* masquerading as Matthews' *Caladenia* "chloroleuca" (**Fig. 17**) and a solitary orchid-pink *Thelymitra* aff. *longifolia* were the Radar Bush highlights for this season and marked the finale for a moderately successful Te Paki pilgrimage 2001.

Many thanks to those participating for their keen eyes, their forbearance, skilful shutter tripping duties and for checking this report.

Key features in a catch-up of far north

Petalochilus

1853 Sir Joseph Hooker described

Caladenia minor from Hokianga as pink with a midlobe glandular at the margins [J72 p22, J78 p31 & references]. His type sheet had all *Petalochilus alatus* (was *C. alata*; late ones are often pink) except the one which Fitch drew (from a colourless specimen in spirits?) with marginal calli down the midlobe. Had Hooker designated a type specimen, it would still be *caladenia*.

1918 H.B. Matthews' *C. "nitida rosea"*, manuscript description, now being called *Petalochilus* aff. *fuscatus* (was *C. aff. fuscata*) after the similar Australian *P. fuscatus*. HBM's hand written script, held in AK, includes both a draft and final copy. The first had "nitido", the second, the "nitida" being used here. Key traits were the "glazed pink" flowers, pointed sepals, centrally ridged midlobe, being yellow, lanceolate, rather long, decurved with 3-4 stalked marginal calli either side. 4 BMCs to the midlobe showed up in several early shots [J72 p8 etc.] but on this trip, no more than 3 were seen, shortening towards the front. (**Fig. 14**).

1949 Dan Hatch described *C. carnea* var. *bartlettii* (now *P. bartlettii*) but made ID difficult by stating it was "dark glazed mauve" (it is cerise and white, to dark cerise), lacked marginal calli on the midlobe, (it normally has 2 as on Dan's type specimen) and by omitting to mention its rounded sepals. See J78 p31 for details, pictures J72 pp27,28.

1979 Dr. Winifred Curtis described *Caladenia pusilla* (now *P. pusillus* [1]); it has similarities with *P. bartlettii* but the Australian species has several variants.

1989 Doug McCrae, in popular error, lumped pink *C. "nitida rosea"* with *C. carnea* var. *bartlettii* into "*C. minor*" and tagged *C minor* s.s. as *C. "green column"*. (J35 p29-44). Imbroglia at its best.

1995 Allan Ducker videoed *Petalochilus*

“speckles” at Kaimaumu. The erect single BMC to midlobe, was recognised only after he tagged the colony at Shenstone’s Pink Track in 1999. Otherwise it looks the same as *P. aff. fuscatus* which also has the mauve-speckled dorsal sepal. We found that *P. aff. fuscatus* outnumber *P. “speckles”*. Rare intermediates were seen, one with 2BMC, and two with 2 BMC one side and three the other; one had a straight, petaloid pink midlobe and the 1999 *Caladenia “papillosa”* [J74 p18] looks like a mutant *P. aff. fuscatus*.

1997 D.L. Jones et al described *C. chlorostyla* (Latin for Doug’s “green column”), missing the point that this was Hooker’s “pink” *C. minor*, the only petalochilus in the north with the toothed midlobe.

2001 In Sept., D.L. Jones et al made a much needed new classification within the multi-varied genus of *caladenia* [1] but included both *Petalochilus minor* and *P. chlorostylus* as valid species, just as Dan Hatch had it in J73:16, for reasons not entirely clear.

Reference

1. Jones, D.L. et al *A New Classification of Caladenia* R. Br., *The Orchadian* Vol 13; #9 Sept 2001

2: Lower North Island circuit

Joy Garard wanted her Wairarapa Orchid Society to see NZ orchid slides in 3-D so organised the Column and Gloria on a circuit of four orchid societies on successive nights. She somehow persuaded societies to hold their meetings on different nights, often in new venues. What a persuasive lady! We were happy to oblige and, of course, check out a few orchid sites into the bargain, at a good time of year. The “check out” unexpectedly delivered eight new taxa for 3-D record.

1. *Corybas “a”*. A stop near the Makatote Viaduct, on 5/10/01 just happened to be where Bruce Irwin’s letter described a colony of his *Corybas “a”*, (Fig. 1). It is close to but differs from, *C. “A”*, now *C. iridescens*. Bruce has noted several *C. rivularis* agg. in the vicinity and hypothesises that they are *C. iridescens* x *C. papa*, yet only the *C. papa* putative parent has been found there in *sensu stricto* form.

2. *Corybas “Trotters”* (Fig. 2) Ian St George’s field trip on 6 October ‘01 took us to a stand of *Nothofagus solandri* by a Te Wharau stream, where the Column met the near-black *C. trilobus* agg. taxon first noticed by Ian [J22:2; 28:13] in Trotters Gorge north of Dunedin.

3. *Corysanthes hypogaea* A few metres upstream from *C. “Trotters”*, was Colenso’s find that Cheeseman and subsequent chroniclers have lumped with *C. trilobus*. The Column was anxious to compare Ian’s *C. hypogaea* (Fig. 3) with Geoff Stacey’s from Wharekawa, [J81:40 beware switched captions; *C. hypogaea* is the middle pic] in the Auckland Regional Park. Some notable characters of Ian’s and Geoff’s are compared with Colenso’s description in the Table.

Conclusions? Ian’s and Geoff’s both come close, possibly close enough to be included in the species BUT the lack of “sides much cut and jagged” to the lip (which Dr. Moore linked with *C. cryptanthus* in the absence of a type specimen [1]), is a worry. The furry inside to the labellum occurs in *C. trilobus* agg. around the Wairarapa and speaks of local hybridisation among the various taxa. Ian and the Column have meanwhile included both Wharekawa and Te Wharau forms with *C. hypogaea* because so many characters agree with Colenso’s description.

4. *Corybas “craigielea”* Ian led us unerringly to the untracked tea tree (*Leptospermum scoparium*) where the Column stumbled ahead through criss-crossed fallen poles, along a shallow drain and missed the lot! Fortunately, Lyn,

Table: characters of *Corybas hypogaea* contenders

Character	Colenso	Geoff	Ian
leaf subhastate (foreshortened arrow head?)	yes	yes	yes
petiole long	yes	longish	longish
sheathing truncate bract at base of petiole	yes	yes	?
peduncle short	yes	yes	yes
dorsal sepal sinuate to subapiculate	either	subapiculate	±sinuate
d. sepal green with purple median line	yes	yes	yes
spotted line			
lip blood red above greenish below	yes	no green	yes
lip with 2-3 deep lacinations below	yes	yes	yes
lip sides much cut & jagged & incurved	yes	no	no
lip furry inside	no	no	yes
habitat, in moss, steep dry hills	yes	yes	stream-bank
habitat <i>Fagus</i> forests	<i>N. solandri</i>	<i>N. truncata</i>	<i>N. solandri</i>
Habitat, flower 1"-2" below moss & debris	yes	yes	some do
Only about 1 in 20 leaves bear flowers	yes	yes	yes
Flowering time	September	September	Sept/Oct

Phyllis and Brian had sharper eyes for this little darling (**Fig. 4**) with the small round leaf. Its labellum too is like a mini shag-pile carpet. Compare it with (a) Ian's *C. "Rimutaka"* (**Fig. 5**) from 14 September, [J58 p9] with the Wairarapa style, furry labellum and (b) the Column's fifth Hunua's *C. trilobus* agg., *C. "Rimutaka"* (**Fig. 6**) of 23 September from the Wairoa Loop Track. It also shows on Mark Moorhouse's *C. trilobus* "rock shelter B" from Nelson and the Column's *C. "trivwhite"* from North Egmont [J76 p37]. Has anyone else spotted this furry phenomenon? It is notably absent from taxonomic texts. Back at Craigie Lea, Ian Townsend and Ian St George collected a microscopic wasp, too small to be a pollinator, as it ratted around inside a *C. "craigielea"*. In fact it was an anti-pollinator, according to John Early at the Auckland Museum. He identified this clear-winged marvel as a *Stylaclista* sp, parasitic on fungus gnats which pollinate corybas species, amongst others.

5. *Corybas "mactaiapos"* (**Fig. 7**) Arnold and Ruth Dench, dedicated conservationists at Newlands, Wellington, have "green fingers" (meaning solid practical and theoretical nous) and have been entrusted with growing several native orchids on the

endangered list. On 8 October, Arnold showed us Pat Enright's find from the Tinui Taipos [J81 p43]. Ian suspects a cross with *C. "Trotters"* [J79 p3]. Who has seen a *C. macranthus* with such a dorsal sepal? rounded at the tip and with tilted up edges. The tilt hints at it being a hybrid (or successful mutant?) of the northern form but the southern form, shows no tilted up edges to its dark dorsal sepal [J70 p38].

6. *Sarcoanthus Little Sparkle* (**Fig. 8**) Lois Dougherty's hybrid of *Sarcochilus falcatius* and *Drymoanthus adversus* [J59 p29] was alive and thriving at her Ascot Park home. It is a delightful miniature and one of only a very few hybrids with NZ species.

Calochilus trapeziformis Brian Tyler took the Column and Geoff Monk, on 10 October, to Lieta Chrystal's colonies of this ugly wonder orchid in the *Pinus radiata* forest at Horowhenua where hundreds of flowers were in bloom. One colony (**Fig. 9**) had a brown stripe on the labellum midrib and no stalk-like brown calli [J81 p4] behind the stack of black calli. Having different forms present, throws doubt on the hypothesis of a recent seed blown over from Oz — although *C. valida*'s "A" & "B" clones at Iwitahi set a precedent for at least

two seed arrivals. Food for thought. Coincidentally, Paddy Brown had given the Column a spent flower plus a pearl-like tuber in Masterton on 7 October. He said several growers of exotics around Masterton now have this strange species originating from a pot of Rhoda and Allan Wallis' of Masterton. Ian reported [J39 p12], Sept. 1991, that it was *C. formicifera* confirming Paddy's present opinion. Paddy by 'phone, on 19 Nov. said the flower is reddish and the labellum looks just like an ant; not like the Column's pic of *C. trapeziformis*. Allan, by 'phone, said his ferns from the west coast S.I. or Tauranga, all died, so he threw the pot, ferns pine needles and all, under a bench where the contents just dried out. A year or two later, Rhoda emptied the pot and there were 4 shrivelled up "peas" in it which they potted up out of curiosity and up grew the *Chiloglottis*! Brian Molloy who was sent a specimen writes, "I grew it on and photographed it (15/7/91) and yes, it was *C. formicifera* which I had grown before (and photographed) from tubers sent to me from South Australia." This confirms Paddy's thoughts but still leaves us with the mystery, whence came the Wallis' *C. formicifera* tubers? It is still possible that we have both species in NZ. Do keep your eyes peeled in pine forest or native scrub for more evidence please.

4. *Chiloglottis cornuta* "khaki" The Column had previously adopted the conventional patter that some have brown calli, some have green but never the twain shall meet. Wrong! Three widely separated flowers (all that we examined before the storm) in the forest at Horowhenua, had notably khaki calli. (**Fig. 10**) That changed the patter. Do we have three forms of *C. cornuta* or is this a green/brown calli hybrid? More observations please.

5. *Earina mucronata* which has normally no detectable perfume to the Column, had a nose catching non-perfume (like weak ammonia only different) on both Don Isles' plant at Palmerston North (9 Oct.) and Ross

McDonald's (10 Oct) at Wanganui. Regrettably, flowers were not examined in this hectic circuit so it remains to be seen if there are other differences from northern forms.

Acknowledgements: Gloria and the Column were most grateful for the warmth, cooperative effort, hospitality offered and for the reviews of this write-up by billetes, orchid societies and field party members on a most memorable tour. Our thanks to all.

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2. Jones, David L. *Native Orchids of Australia* 1988
3. Cheeseman, T.F. *Manual of the New Zealand Flora* 1925.



Fig. 9 *Chiloglottis trapeziformis* lacking brown stalk-like calli behind the black pile.

Fig. 12
Pterostylis tasmanica
White cilia visible on column structure. Tip of one lateral petal is visible near top of dorsal sepal. Spider web and prey partially obscuring features.



3: Awhitu and Wattle Bay: blue *thelys* and others in ER 9.

Tricia Aspin's Awhitu Peninsula, of huge and ancient sandhills, was the place to be on 20 November. At Matakawau, the roadside *Thelymitra pauciflora* refused to open (what's new?) but 20 or more *Gastraodia* aff. *sesamoides* were open on crooked stems in thick kikuyu grass! It's true. The tips to lower sepals on old flowers, were sunburnt, not the smoky, dark grey of Max Gibbs's *G.* "city" but browned and shrivelled. Fresh flowers atop conical spikes, were the normal creamy colour. Their old pine shelter had been felled so the tubers were doing their seed-before-dying act. Stella Christoffersen remarked how hard the ground was last year when she and Tricia rescued a clutch of tubers, thinking they had got the lot. This cluster must have been dormant last year so got missed. Any volunteers to salvage *G.* aff. *sesamoides*? Contact Tricia at (09) 2351074.

In Ian Dodd's piece of Franklin District trust bush, near Wattle Bay, his old farm tracks were growing over but still some *Thelymitra longifolia* had managed to open. The Encumbrance requires Ian to fence across gateways and not to interfere with natural regeneration. This will eliminate a number of orchid species! *Orthoceras*, *Petalochilus* and *Thelymitra* thrive on some soil disturbance and the dappled shade of track sides. Conservation idealists do tend to ignore the needs of orchids. Ian led us to some June flowering *Corybas trilobus* agg. with *C. hypogaea* style leaves but no fleshy bract at the leaf axil so it is neither *C.* "pygmy" nor *C. hypogaea*. This is a must for next June to spot the flowers. Lunch on the terrace of Ian's and Nancy's home at Wattle Bay gave outstanding views across the Manukau Heads tide race, to the rugged south coast of the Waitakere Range. Orchid hunting does have its moments. Thank you

Ian and Nancy.

Barry Lee's bush at Awhitu had *Thelymitra tholiformis* and *T. aemula* open, together. The *T. aemula* even exceeded in beauty the Papawiri Hill specimen in this issue; two flowers open, bluer than blue: and on a ridge top. By comparison, *T. tholiformis* was more a blue-mauve. The pink *T. longifolia* [J71 p26; J74 fig 13 & p19] which had intact pollinia plus crumbs of pollen, hadn't shown this year, but a metre away stood a white *T.* aff. *longifolia*, with dark purplish calyx. Five flowers were open in the shade in late afternoon. No-one could detect a perfume. Tricia's twin flowered *Corybas oblongus* [J81 p30] on a mossy track-side, had specimens with both capsules swollen, obviously setting seed. With 4 out of 7 plants bearing twins, it will be interesting to see if seedlings carry the twin gene.

Back at Matakawau, a mauve/pink *T. pauciflora* (usually bluer in ER 9) had tepals deflexed down against the stem with the column standing free. Out flopped the camera gear but the Column's delicate removal of cobwebs, sent a green caterpillar galloping for cover into a hollowed out bud below. The blighter had tied the tepals down with silk to form a pupating den. Now freed, the tepals slowly rose and clamped shut before a shot could be taken; another tantalising photo opportunity missed! Interesting way to hold a flower open though, without damaging it. Hmm.

21 November, Albany Scenic Reserve's infertile weathered papa (Waitemata series mudstone/sandstone), is ideal for a range of terrestrial orchids amongst the tea-tree and *Hakea sericea*. The Column led noted author and photographer of tropical and European species, Wolfgang Rysy, his wife Sigrun and son Harald here on a cloudy warm day, with little hope of finding blue *thelys* open. But Allan Ducker led us straight to open *T. tholiformis*. Next, a regular green stemmed *Petalochilus minor* (Fig. 1) with very low side lobes, then a spectacular stand of *T. pulchella*, maybe the

one that Petrie dubbed, *T. caesia*. Tawny fimbria adorns its buckled-in column arms. The best stem had 5 open flowers. The orchids were showing their appreciation of track widening over a year ago. A red stemmed *Petalochilus chlorostylus* (Fig. 2, hooked marginal calli seem to differentiate it from *P. minor* according to the drawing, [1 p224]) with high white side lobes striped in red, suffered the attentions of 3 photographers but 2 *Calochilus* aff. *herbaceus*, say 50m from Michael Pratt's find, (flowered last year but not this) would have caused more jubilation had they not been spent.

24 November. Wolfgang and family trudged up Webbs Track, Kauaeranga Valley with the Column to get pics of six species of *Thelymitra*. Ha! They were all found [as in J59 pp18-20 + *T. tholiformis*] shut in the rain. The promised fine day forgot to arrive but the Rysys, escaping the German winter, were happy enough to get *Pterostylis banksii*, *P. agathicola*, *P. puberula*, *Corybas oblongus*, *Earina mucronata* and *Drymoanthus adversus* (all still open at about 400m altitude). Wolfgang used 4 rolls of film; the Column's camera never left his pack.

Reference

1. Jones, D.L. Molloy, B.P.J. and Clements, M.A. Three New Species and a New Combination in *Caladenia* R. Br. (Orchidaceae) from New Zealand, *The Orchadian* Vol 12 No. 5, Sept. 1997.

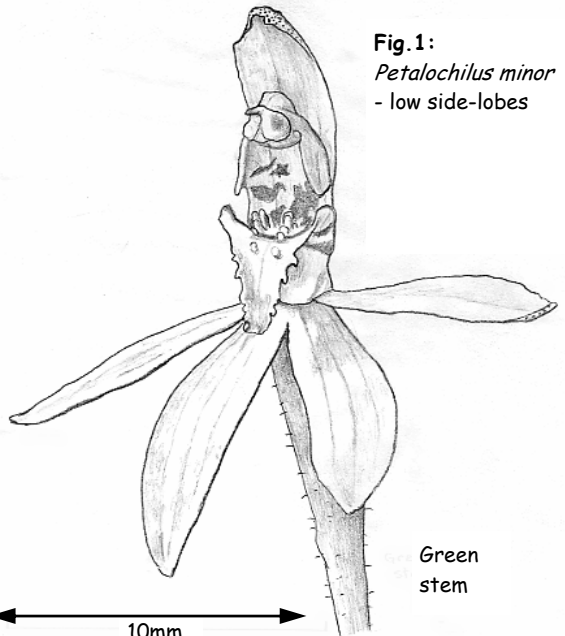


Fig.1:
Petalochilus minor
- low side-lobes

Green stem

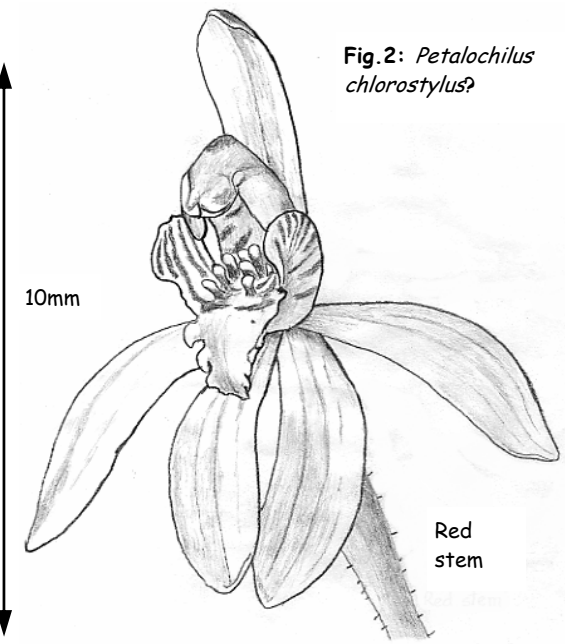


Fig.2: *Petalochilus chlorostylus*?

Red stem

original papers

Some Prasophyllum pollinators?

By Gary Penniall, Urenui

Prasophyllum “B”, Pureora, 7 January 01

On my return trip to Taranaki after the *Pterostylis micromega* survey at National Park, I decided to do a quick side trip to a swampy area at Pureora 4km in from main roads towards the *Prasophyllum* aff. *patens* site.

I had found *Prasophyllum* flowering at this site on a previous occasion with Ina McLellan on 8 December 2000 and thought at the time they were different to those on Mt Taranaki and in the National Park area. However this time armed with my Canon EOS 500 and new ring flash and with Margaret Menzies and Ernie Corbett to help I went back in for another look.

As luck would have it there were several plants in prime condition in full flower. They were much more robust than *Prasophyllum colensoi* I have previously observed and much more purplish in colour. They grew on slight mounds close to swampy areas similar to the preferred sites of *Pterostylis paludosus*.

While observing flowers we noticed a small fly busily investigating each flower in sequence and as it was a potential pollinator I photographed it in the act (see colour pages).

I later sent photos of the flowers to Bruce Irwin who positively identified them as *Prasophyllum* “B”.

Prasophyllum aff. *patens* 10 February 2001

In early February I received advice from Bruce Irwin (with a map of the area showing the site) that the *Prasophyllum* aff. *patens* at Pureora were flowering; I had mentioned to him earlier that I had searched in vain for

the spot. In fact I had found the abovementioned site for *Prasophyllum* “B” during this search on 8 December 2000.

10 February dawned a nice day and I decided to make a quick trip from Taranaki to photograph them. Following Bruce’s excellent map I went straight to the spot and found quite a number of flower spikes in excellent condition amongst the sedges in calf deep water.

While photographing I noticed a hard shelled beetle with *Prasophyllum* pollinia stuck to its head and displayed like a yellow flag as it systematically moved from flower to flower. I managed to get a good photo of it in the act of entering flowers.*

During this I heard voices on the track in the pine trees where I had left my camera bag and tethered my dog, and thought I had better check it out as I didn’t want to lose any of my property. I assumed the voices would belong either to shooters, drug growers or other orchid hunters.

Sure enough, on fighting my way through the edge thicket I found Gael Donaghy and Graeme Jane who were searching for the same quarry. I was able to show them the spot and also the *Prasophyllum* “B” site on my way back to the main road.

Altogether quite a successful trip.

* The beetle (see colour page 18) was identified by Levin member Ian Townsend as “one of the family Oedermeridae, in fact *Selenopalpus cyaneus* (Fabricius 1775), interesting in itself as one of the first insects collected in New Zealand during Cook’s first voyage. They are usually found on flowering shrubs and are known to be pollen feeders”. It is quite similar to the species of *Dasytes* I reported delving into *Prasophyllum* aff. *patens* flowers in 1996 [J59 p10] - *Ed.*



Petalochilus alatus *Petalochilus bartlettii* *Petalochilus nothofageti*



Petalochilus aff. *fuscatus* *Petalochilus* aff. *pusillus* A *Petalochilus* from Otago



Petalochilus "speckles", Te Pahi *Petalochilus minor* (= *chlorostylus*) A *Petalochilus* from Wairarapa



An Iwitahi *Petalochilus* A Wellington *Petalochilus* *Petalochilus variegatus*



← An Iwitahi *Stegostyla*



Stegostyla lyallii *Stegostyla* aff. *alpina* *Stegostyla atradenia*

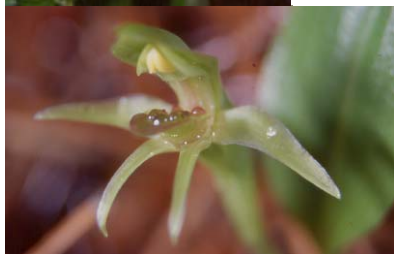


PAGE 5: Figures from "The Column", Fig. 1 *Corybas* "a" Note the short ovary and lateral tepals all hands-up. c.f. [J66 p24]. **Fig. 2 *Corybas* "Trotters"** Note drain in labellum, closed at top; Mountain beech pollen (it is another mast year) petiole bent aside for a view of the flower.



8 14

10 17



13



15



16

Fig. 3 *Corysanthes hypogaea* sensu St George. Note fur inside labellum.

Nothofagus solandri pollen and silt encrusted moss from a recent flood

Fig. 4 *Corybas "craigielea"* Close-up of a tiny flower to show the furry inner labellum.

Fig. 5 *Corybas "Rimutaka"* sent from the Rimutakas by Ian St George; note drainage slot closed at the top and hairy inner labellum.

Fig. 6 *Corybas "Rimutaka"* ex Hunua. Short lateral petals normally present, hairy inner lip.

Fig. 7 *Corybas macranthus "Taipos"* in colour. Note unique dorsal sepal.

Fig. 8 *Sarcoanthes Little Sparkle* Three times the size of parent *Drymoanthes adversus*.. **Fig. 9:** see text page.

Fig. 10 *Chiloglottis cornuta "khaki"* Calli intermediate between brown and green forms.

Fig. 11 (see 1st colour page) *Petalochilus "speckles"* Speckled dorsal sepal, sepals pointed, protruding side-lobes, as for *P. aff. fuscatus* BUT only one erect marginal callus at base of mid-lobe. **Fig. 12:** see text page.

Fig. 13 *Thelymitra aemula* — needs direct sunlight, a hot day and preferably wet feet before opening. Note the apiculi under the sepal tips à la *T. carnea*.

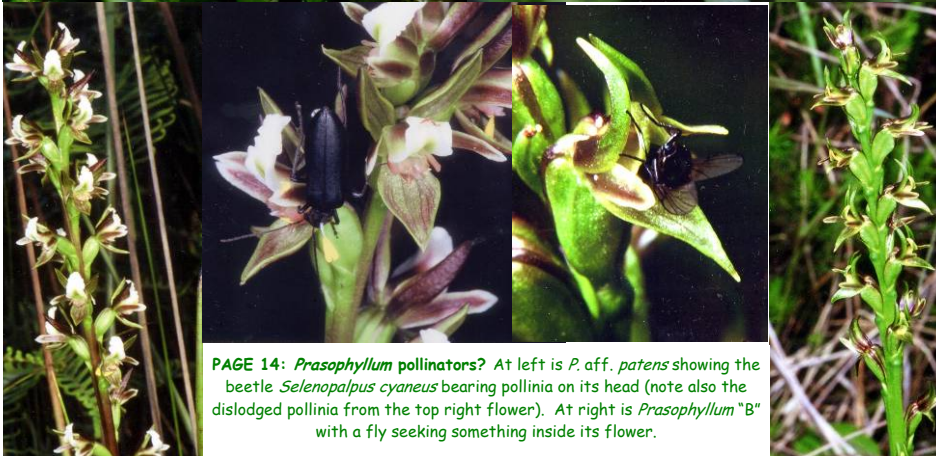
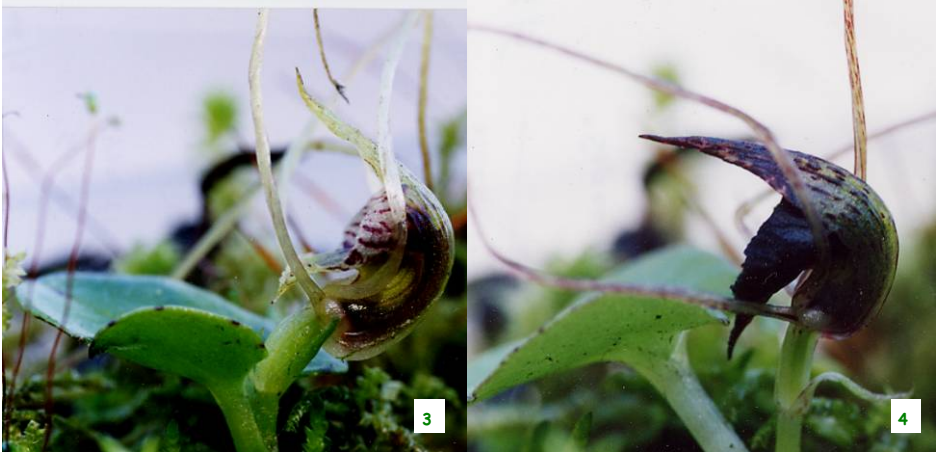
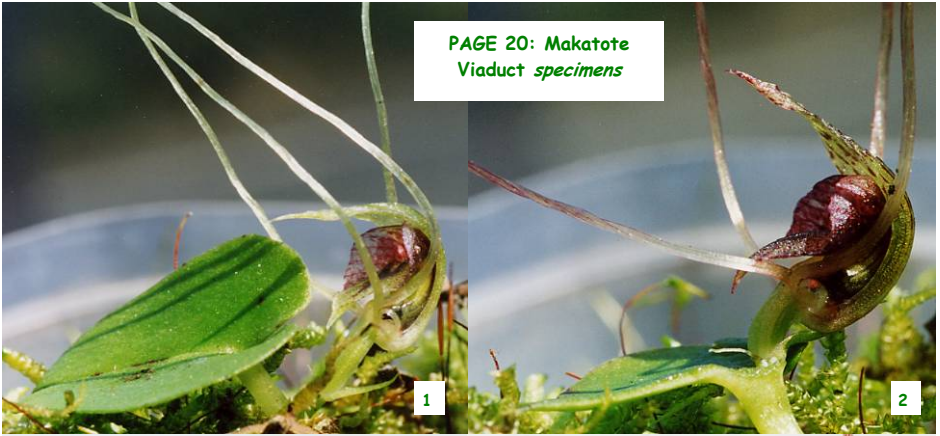
Fig. 14 *Petalochilus* aff. *fuscatus* s.s. from NZ Walkway, Scott Point.

Fig. 15 *Petalochilus* aff. *fuscatus* with hooked connective spike and previously unreported, petaloid, pink midlobe.

Fig. 16 *Bulbophyllum pygmaeum* sheltering a green (orb web?) spider which froze every whisker during 8+ flash shots. Note 2 beady eyes atop a hairy head between its front 4 legs.

Fig. 17 *Petalochilus minor*. One of many similar forms of this commonest petalochilus in the north.

PAGE 20: Makatote
Viaduct specimens



PAGE 14: *Prasophyllum* pollinators? At left is *P.* aff. *patens* showing the beetle *Selenopalpus cyaneus* bearing pollinia on its head (note also the dislodged pollinia from the top right flower). At right is *Prasophyllum* "B" with a fly seeking something inside its flower.

Ruapehu and Taranaki - two puzzles

by Graeme Jane & Gael Donaghy, Tauranga

Recently a school holiday break happened to be near the peak time for *Corybas* flowering and gave us an opportunity to seek out orchids in Taranaki and around Ruapehu. Before we set out we consulted the great oracle on our doorstep and acquired a good list of "must see" places duly marked on a map. Sailing over the Kaimais and with a need to plot out our route for the day - guess what - naturally enough we had left the maps on Bruce's work bench. First stop AA Otorohanga to replace the maps. Guess what - the agency closed that day but we got one map. Next stop Te Kuiti where we picked up their last copy of the needed map. Not good omens for starting out.

But as we moved round our circuit we were truly in luck. Everywhere we went *C. iridescens* or *C. papa* - often both were massed in flower on wet road banks, usually accompanied by a *Pterostylis* neither *P. montana* which it resembled in size, nor *P. banksii* to which it tended towards in external shape, but everywhere quite uniform in almost all its features including stigma and labellum. Some real "hot spots" were noted. At Mt. Messenger we saw *C. papa*, *C. iridescens*, *C. orbiculatus*, *C. oblongus* and *C. macranthus* all within a few hundred metres of the summit. On Kahi Rd near Waverley our first potential orchid patch yielded *C. iridescens*, *C. orbiculatus*, *C. oblongus*, *C. "Waiouru"* and *C. macranthus*.

Then it was on to Ohakune and Ruapehu. The Whakapapa and Smash Palace sites where the "aff montanas" rule, proved much too early with only a hint of what the season would yet produce. But suddenly we were at Bruce's "problem" spot. The Makatote Stream. We duly stopped near the indicated spot and tried to sort out the sketch - it didn't quite fit. After an unfruitful walk back up the road we charged into the tutu scrub and

into the ditch. The first patch turned out to be *C. iridescens* without any doubt. Bruce has also indicated (just past that dead possum) something he thought was *C. papa*. So up the ditch we went only 10m and there it was. *C. papa* (or was it *C. "Kaimai"?*) - into the pot it went. Bruce has also mentioned ones he couldn't put a name to. So down stream we went. Quickly the confusion set in. Some seemed to be *C. "Waiouru"* but didn't quite look right. Others just weren't placeable. Each patch seemed uniform yet different - all within 30m or so along the ditch or up the steep bank from it.

So finally we decided to try and "map" the range of variation. First there was clear *C. papa* (or was it "Kaimai"), then there was a blood red *C. papa* with a petiolate leaf??? some "Waiouru" like things without the forward pointing tepals; a greenish yellow *C. iridescens*?? and finally the typical *C. iridescens* we had first seen. Out with the books and camera! After much debate we decided that at one end we had *C. papa* (but we still needed to see true *C. "Kaimai"* to confirm it) at the other *C. iridescens* and in between, what could only be a hybrid swarm. A bit of a surprise since we had often seen these two species on the previous days, with no real hint of hybridism, growing side by side throughout Taranaki. We needed to consult the Oracle. But before that we still had a few more places to visit.

At Rangataua we were too early for most things except for *C. "sphagnum"* and a hint of *C. "roundleaf"*. At Ohakune an evening walk added two *C. trilobus* forms - *C. hypogea* a tiny plant in amongst the beech forest leaves and a pale - almost colourless form, to the gross "green knob" we had seen at Marokopa and in Taranaki. The Kaimanawas yielded *C. "whiskers"* near the Rangipo power station and a final stop in our first lot of rain was at Wairere Falls to

collect some "true" *C. "Kaimai"*. In all a pretty good range of *Corybas* species in 6 days. All to be put down in silica gel for future reference.

But that was not the end of it. We had to go to Taranaki. So we invited Bruce around for tea and after dinner brought out our treasures. Much of the Taranaki stuff was routine and confirmed our determinations but then it came the turn of the Makatote specimens and the Wairere Falls *C. "Kaimai"*. The latter turned out to be not typical - another trip needed. It had too much colour and whiskers! Yet it did not have the forward pointing headlights created by the auricles, typical of *C. "whiskers"* and clearly seen on our Rangipo specimen. A careful longitudinal cut of the labellum with blade, though, confirmed the 130° angle of *C. "Kaimai"* (and not the 90° angle in the *C. "whiskers"*).

Now to the Makatote ones. The *C. papa* was typical. Spots of red at the bottom of the cleft, iridescent green below the cleft; auricles down-pointing and sinus nicely 90° in section. The *C. iridescens* also passed the tests but the remaining 6 specimens just provoked more discussion and a general conclusion that they must be hybrids with their characters all mixed up (see Table 1).

All permutations among these characters were noted in the photos:

A scoring for those in separate photos could be (see Table 2):

TABLE 2 Character/ photo	1	2	3	4
Peduncle	I	P	P	I
Petiole	I	P	P	P
Ovary	P	I	I	P
Labellum colour	I	W	W	W
Labellum shape	P	I	P	P
Dorsal colour	I	I	?	P
Tepal attitude	P	P	W	W

Where P is like *C. papa*; I is like *C. iridescens*; and W is intermediate, cf "Waiouru" (Numbers refer to photos—see colour, page 18).

Bruce mentioned seeing the odd abnormal *C. papa* or *C. iridescens* in Taranaki over the years - this patch at Makatote though certainly produced more variation in one place than he had seen before. We had seen one odd lot of *C. iridescens* on our trip at Kiwi Saddle in Taranaki but they were deformed, perhaps by the intense frost that had apparently occurred over the winter - sufficient to kill huge areas of tree ferns.

But why so much variation just there at Makatote? *C. papa* is off its patch there - it is on fertile volcanics rather than mustones,

TABLE 1	<i>C. iridescens</i>	hybrids	<i>C. papa</i>
Colour	deep red	red-green-translucent	mostly pale green with smooth yellow face to face of labellum
Peduncle	short	short	short
Petiole	moderately long	highly variable	sessile or very short
Ovary shape	somewhat squat	variable	long and narrow, sometimes curved
Labellum face shape	triangular at top, rounded at base with prominent apiculus	variable between the extremes	diamond shaped

hardly sufficient in itself. Maybe different pollinators are active there? Or maybe it's just that continuous volcanic disturbance from Ruapehu and the other volcanoes. Who knows? It just proves the worth of poking into every "potential" place!

Postscript

Three weeks later we revisited the

Rangataua site to find *C. iridescens* flowering everywhere, *C. "sphagnum"* still in flower and a few *C. "Waiouru"* type plants. Also leaves of *C. macranthus* in great numbers where there were none 3 weeks ago and spectacular flowers last year. Is this another hot bed of hybrids? Looks like we will have to go back there next year over several weeks to sort that one out!

close relations: orchids like ours



Corybas dienemus

from Macquarie Island,
grown in Tasmania.

Photograph by
Les Rubenach,
from ANOS Victorian
Group Bulletin,
October 2001

historical reprint

William Colenso's original description of *Caladenia variegata*, from his Descriptions of new Indigenous Plants. *Trans.N.Z.I.* XVII, 1884, 248-9

Caladenia variegata, sp. nov.

Plant erect, 6-12 inches high, glandular-pubescent; pubescence pink-tipped; scape red, sub-rigid not succulent, slender above leaf, stoutish below, arising from a thickened node, having three clasping membranous acute sheaths, one at base enclosing scape and leaf, one at middle 6-8 inches long. and one close under ovarium; root rather long, stoutish, ending in a long white tuber as big as a pea. Leaf single: ½-1 inch from base; 6-8 inches long, 1-2 lines wide, linear-acuminate, thickish: glabrous, channelled, green on upper and purplish-red on under surface, slightly ciliate at edges, and very sparsely pubescent underneath the lower portion with long weak glandular hairs. Flower single on top of a scape, (one specimen only, out of nearly forty obtained, bore two flowers, both springing from within the upper sheath and pedicelled,) perianth spreading, more than ½ inch diameter; dorsal sepal green, arched, sub-oblong-obovate, obtuse and apiculate at apex, produced, glabrous above; lateral sepals pinkish, oblong, apiculate, larger than petals, 3-nerved; petals pink, oblong-lanceolate, falcate; lip sessile; disk with two longitudinal rows of bright-yellow stipitate glands having large globular heads, extending from inner part of middle lobe down into the throat, with smaller glands scattered on each side, and one or two at the margin of extreme base of the middle lobe; the two lateral lobes are transversely banded with light-purple, margins white, rounded at tip; middle lobe deltoid, deeply crenulate, recurved: bright yellow; column winged throughout, green, pubescent at top, transversely banded with light-purple, similar to lateral lobes; anther acute, tip subulate, margin finely fimbriate. Ovary 8-9 lines long, linear-obovate, sulcate, densely glandular-pubescent.

Hab. Plentifully, but only in one spot, among mosses on fallen and rotten *Fagus* trees, and on the ground alongside, in rotten vegetable soil, shady woods, top of a high hill near Norsewood, County of Waipawa: December, 1883: W.C.

Obs. A species closely allied to the two known New Zealand species, *C. minor* and *lyallii*; and also to several Tasmanian and Australian species, *C. carnea*, *alata* and *angustata*: but while serving naturally to unite them differing from them in all important characters. *C. minor*, which is so common at the north (Bay of Islands), on clayey open hills among fern

from the internet

Try <http://www.flowervr.com/australianbush.htm#INDIVIDUAL> for some dinkum daft Aussie bushwhackos. For example—

Australian Bush Flower Essences

23 ~ GREEN SPIDER ORCHID -

Caladenia dilatata (sic)

Negative Aspects - Nightmares; needing acceptance; phobias.

Positive Aspects - Attunement; ability to guard information; release of terrors & phobias.

The Green Spider Orchid is a plant that is very much aligned to higher learnings and philosophies and deep insight. This Essence can assist in working with telepathy, to attune a person to be more receptive. This is an excellent remedy for people who are reaching out to deeper and higher levels. It is also for people who are teaching spiritual matters and understandings. It helps them impart that knowledge. On the other hand it helps an individual to keep information within. In many of the teachings from a higher level it is very important that they not be divulged or discussed with anyone. Many personality types have a great need to be accepted. They desire to share information and knowledge as way of gaining acceptance or to prove that they are really advancing or developing spiritually. This remedy is very good for guarding information until the energy has been built up within to allow it to be assimilated before letting that knowledge out. Green Spider Orchid can release terror phobias from the past. Also for nightmares which beset children when they are associated with past times, as opposed to nightmares coming up for unknown reason for which Grey Spider Flower is more appropriate. Ian received the message that these two new Gariwerd Essences, Dog Rose of the Wild Forces and Green Spider Orchid, would be dealing with the higher vibrations and herald a new level that people are ready to work at. Both would stimulate rapid growth on the spiritual path.

62 ~ YELLOW COWSLIP ORCHID -

Caladenia flava

Negative Condition - critical; judgmental; bureaucratic; nit picking.

Positive Outcome - humanitarian concern; impartial -can step back from emotions; constructive; ability to arbitrate.

Yellow is the color symbolizing the element of Air which deals with the intellect. The pituitary is the endocrine gland associated with Air and is balanced by Yellow Cowslip Orchid. This orchid is of a very social and gregarious nature, and is commonly found growing in a cluster, another aspect that ties it into the element of Air. For Air is very much about social order, group activity and harmony - ordered society. When out of balance there is excessive judgment and criticism. I am now releasing all judgment and criticism. I am now able to see the forest and the trees.

42 ~ RED HELMET - *Corybas dilatatus*

Negative Condition - rebellious; hot-headed; selfish.

Positive Outcome - male bonding; sensitivity; respect; consideration.

This remedy helps a man bond with his child or children. It increases men's awareness of the importance of allocating quality family time. This essence required not only sunlight but also moonlight in its making up, as if adding the feminine principle so as to allow the bonding. It is also for children who have unresolved father issues. Which can manifest as a recurrent, lifelong rebellious attitude to authority figures - police, headmaster, and bosses etc. I now express greater care and gentleness in my relationships.

I am now able to communicate easily with those in authority.

orchid keys: 4—*Pterostylis*

By Graeme Jane, Tauranga

The names used for *Pterostylis* species in New Zealand have changed greatly since Volume II of the Flora (Moore and Edgar 1970). Additions include *P. alveata* (a recent arrival from Australia); *P. agathicola*, *P. cernua*, *P. irwinii*, *P. paludosa*, *P. porrecta* (all recognised by Jones et al 1997) and *P. cardiostigma* (Cooper 1983). *P. tasmanica* (formerly *P. barbata*), *P. puberula* (formerly *P. nana*), *P. tanypoda* (formerly *P. cynocephala*) and *P. tristis* (formerly *P. mutica*) have been renamed. The generally recognised *P. patens* and *P. banksii* var *silvicultrix* (probably a distinct species) are also additions included here. To cap it all off recently (Szlachetko 2001), the genus has been split several ways separating out *P. tanypoda* and *P. tristis* to *Oligochaetochilus*; *P. tasmanica* to *Plumatochilus* though the remainder stay in *Pterostylis* - but it is as yet too early to assess the acceptability of these last changes.

- | | |
|---|--------------------|
| 1 Flowers usually several per stem | 2 |
| Flowers normally solitary | 3 |
| 2 Labellum callus forward pointing, flowers usually green to blue-green | tanypoda |
| Labellum callus rear pointing, flowers usually tinged brownish or reddish-green | tristis |
| 3 Flowers with long, prominently bearded, pendant labellum | tasmanica |
| Flowers with a plain labellum, mostly retained within the flower | 4 |
| 4 Flowers strongly nodding with lateral sepals pointing downwards | nutans |
| Flowers not or weakly nodding, lateral sepals pointing upwards or rearwards | 5 |
| 5 Plant with a distinct ± flat, basal rosette of distinctly petiolate, ovate to spatulate leaves in first year plants, flowering stem with very different (smaller, linear to ovate) clasping leaves, some second year plants with both sorts of leaves | 6 |
| Plant with more or less similar linear to ovate, or obovate sessile leaves only, juvenile plants sometimes with spaced, (non-rosette) alternate, spatulate to petiolate leaves | 10 |
| 6 Dorsal sepal equal to or shorter than petals, stem prominently rough, puberulous | puberula |
| Dorsal sepal longer than petals, stem sometimes papillate | 7 |
| 7 Juvenile leaves ovate, dorsal sepal mucronate | alveata |
| Juvenile leaves trowel-shaped, dorsal sepal acute-acuminate | 8 |
| 8 Junction of lateral sepals with a distinct forward-pointing lip, jug-shaped | 9 |
| Junction of lateral sepals inrolled | alobula |
| 9 Lateral petals broadly flared, much wider than dorsal sepal | brumalis |
| Lateral petals about same width as dorsal sepal or less | trullifolia |
| 10 Plant with a basal rosette of sessile leaves and long flowering stem with clasping stem leaves | foliata |
| Flowering plant with either leaves all similar or grading from broad to narrow up the stem | 11 |
| 11 Plants usually flowering on a short stem, almost buried in the rosette | 12 |
| Plants flowering with a tall stem | 13 |
| 12 Stigma heart-shaped | humilis |
| Stigma narrow elliptic | venosa |
| 13 Leaves very narrow-linear, linear-lanceolate, flowers small to medium-sized | 14 |
| Leaves lanceolate to ovate, flowers medium to large sized | 19 |
| 14 Labellum tip narrow with distinct basal callus | irsoniana |
| Labellum without calli | 15 |

16 Lateral sepals crossing dorsal sepal	irwinii
Lateral sepals drooping forward, not meeting dorsal sepal	porrecta
17 Labellum evenly tapered to a blunt tip	graminea
Labellum abruptly constricted to a conspicuous tip	18
18 Dorsal sepal much longer than petals	agathicola
Dorsal sepal scarcely longer than petals	aff. montana
19 Lateral sepals flat to slightly cupped towards the tip	20
Lateral sepals rolled, or strongly cupped	24
20 Plant yellow green with very upright leaves	21
Plant light to dark green, leaves not upright	22
21 Stigma heart-shaped	paludosa
Stigma ovate to oblong	"sphagnum"
22 Lateral sepals shorter than dorsal sepal, often curved forwards	montana ss
Lateral sepals reaching above dorsal sepal	23
23 Stigma strongly raised, ovate-cordate	cernua
Stigma lanceolate-ovate	aff. montana
24 Stigma heart-shaped, petals and sepals held erect together	cardiostigma
Stigma ovate, lanceolate or oblong, tepals not together at tips	25
25 Dorsal sepal (and petals) strongly curved downwards	26
Dorsal sepal and petals arched but not curved downwards	28
26 Lateral sepals more or less erect, dorsal sepal often touching lateral sepals at their junction	oliveri
Lateral sepals strongly curved backwards, dorsal sepal arched	27
27 Sepals and petals acuminate (North Is)	patens
Sepals and petals acute (South Is)	areolata
28 Labellum tapered continuously to an acute tip	29
Labellum oblong tapering abruptly to an acute tip (pinched)	30
29 Leaves flat	"Catlins"
Leaves with undulate margins	micromega
30 Dorsal sepal distinctly longer to much longer than lateral petals	31
Dorsal sepal scarcely longer than lateral petals	32
31 Leaves elliptic-lanceolate, dorsal sepal tapering to long point	banksii
Leaves ovate-elliptic, dorsal sepal abruptly tapering to a relatively short point	australis
32 Lateral sepals scarcely taller than dorsal sepal	banksii var silvicultrix
Lateral sepals much taller than dorsal sepal	aff. montana

P. montana is still a poorly defined complex, apparently of several species and hybrids. Most forms are hairy at the junction of the lateral sepals and share a twisted labellum of varying length. Hybrids occur between *P. montana* and *P. aff. montana*, (Ruapehu) *P. montana* and *P. irsoniana* (Knuckle Hill, Golden Bay) and possibly with *P. banksii* (Kaimai Ranges) and *P. australis* (Boyle River Canterbury).

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notes, letters, comments

An index for all the Journals from #21 to the latest issue is available. Send Eric Scanlen, 4 Sunny Park Av, Papakura the \$5, for an index with your next Journal. If you have MS Publisher 2000 on your PC, contact him at escanlen@xtra.co.nz for a free copy by e-mail.

Peter de Lange emailed (19 November), "A few orchids seen on Little Barrier Island on the 10 November 2001 - Thumb/Waipawa Track loop. I don't have a copy of Hamilton's flora of Little Barrier Island so I don't know which of these are new records.

Acianthus sinclairii

Bulbophyllum pygmaeum

Stegostyla atradenia (scarce)

Petalochilus bartlettii

P. chlorostylus

Corybas cheesemani (seed capsules)

C. macranthus

C. oblongus

C. trilobus "mess" (at least three leaf variants)

Cyrtostylis oblonga

Danhatchia australis (scarce - confirms

Terry Hatch's earlier observation - in flower under Nikau, Waipawa Stream - earliest flowering I have ever seen)

Drymoanthus adversus

Earina aestivalis

E. autumnalis

E. mucronata

Microstis parviflora

M. unifolia

Pterostylis agathicola

P. alobula

P. banksii

P. brumalis

P. cardiostigma

P. aff. graminea (cmn sp of kauri forest and gumland scrub)

P. trullifolia

Thelymitra aemula

T. carnea

T. colensoi

T. aff. longifolia (insect pollinated variant)

T. aff. pauciflora (cmn dark blue flowered robust form of northern New Zealand)

T. tholiformis

Winika cunninghamii

"P.S. *Gastrodia aff. sesamoides* is proving to be very common in the pine bark mulch at the Hort Research Mt Albert campus - again all plants in exposed situations had malformed and/or black tipped flowers (= *G. "City"*) - those in shaded sites had well-formed, uniformly white flowers. Collected one semi-exposed specimen for AK which showed black tipped flowers in the exposed portion and the more usual white in the shaded portion."

Thigmonasty again: five *Pterostylis foliata* gave very mixed results. One, which on later dissection turned out to have been pollinated, would not spring at all. Another non-pollinated plant reset 106 minutes after being sprung and would not re-spring thereafter. The other three showed a mean spring-to-reset time of 53 minutes, and a mean unresponsive period of 15 minutes; the movements were indistinct and often quite sluggish and floppy compared with those of *P. alobula*. *P. foliata* thus retains something of its insect-trapping labellar mechanism, despite showing the hallmarks of a self-pollinating *Pterostylis* (upright flower, prominent stigma), so is still capable of taking advantage of an occasional insect visitor.

Trish Aspin wrote, "Four specimens of *Pterostylis banksii* & three of *P. cardiostigma* were gathered from the Matakawau Reserve (they will be placed in AK herbarium) in the morning & placed in a jar of water indoors: 19 degrees. Compared to *P. agathicola* & *P. trullifolia* they need a much stronger prod to trigger the labellum. Larger insects maybe? What an endless field of study sits waiting within our orchid realm. I also began the *P. cardiostigma* at the

same time but it was so slow to trigger & reset (quite insensitive in fact) that I gave up & went to bed & tried next morning. A single prod did not trigger these, several were needed, although I did notice that the first of the day was the most responsive.

No.	Minutes to...	1 st reset	2 nd sprung	2 nd reset	3 rd sprung	3 rd reset
-----	---------------	-----------------------	------------------------	-----------------------	------------------------	-----------------------

Pterostylis banksii

Pterostylis cardiostigma

1	4.10pm 13 Oct	100	15	70	30	55
2		40	45	55	30	15
3		90	30	25	25	15
4		100	20	50	45	55
mean		83±29	28±13	50±19	33±9	35±23

1	7.40am 14 Oct	155	475	160	125	? (bed)
2		130	135	80	100	90
3		195	165	65	105	50

German fined for orchid theft: A German orchid dealer has been convicted by a Porterville (South Africa) magistrate of stealing protected plants from the Groot Winterhoek wilderness area near the Western Cape town. The man, Dr Heinrich Beyrle, was caught with an assortment of 57 plants in his possession, many of them listed in the Red Data Book of Endangered Species. Beyrle, who pleaded guilty on Thursday to two charges under the Cape Nature Conservation Ordinance, was sentenced to a fine of R8,000, or 18 months' jail, and was freed after paying the money.

Beyrle is thought to have landed at Cape Town international airport on 28 October. He was arrested on 1 November after being challenged by a field ranger in Groot Winterhoek, and attempting to escape. Cape Nature Conservation officials said the plants included 23 protected species from the Orchidaceae, Iridaceae and Proteaceae families. He was refused bail on his first appearance in court, and had been in jail in Porterville's Voorberg Prison since then.

Beyrle, who lives in Friedberg in Germany, runs a website - www.myorchids.de - which offers orchids from around the world for sale. It includes several South African plants, among them two-year-old *Disa crassicornis* from the Drakensberg escarpment

for DM59, and three-year-old *Disa sagittalis* from the "winter rainfall area" for DM69. Describing the origin of the plants, the website says: "A legal stock of motherplants, controlled by the local authorities, exists since many years in the nursery." Beyrle lists masters and doctoral degrees on orchids from the Technical University of Munich among his qualifications. Cape Nature Conservation said the plants, which were battered when Beyrle tried to bury them during his arrest, would probably be planted out in a greenhouse to see which would survive.

In September this year, two Czechoslovakian poachers arrested in possession of various species of protected fauna and flora were fined R169,000 by a Worcester magistrate.

Whoops!

In J81 on page 41 the Column's Figures 3 and 4 were inadvertently switched. Please correct.

A contributor to NativeOrchids@yahoo.com wrote (11 December), "This is a general observation of

Calypso bulbosa. This little orchid gem was certainly the star of our forests in southern Alberta this past spring. Whereas they normally grow in the millions, this year they were in the billions! This is the foothill and montane regions of the Eastern or 'dry' side of the Canadian Rockies. They were so prolific that it was impossible not to step on them in some areas. We had a Scout Camp with a couple dozen boys running through the woods for a few days ..I cringe when I think of all the crushed orchids. These orchids, however, are prolific over several thousand square kilometers. Grizzly and Black bears dig up large clumps of these and eat the corms.

"Why so many Calypsos last Spring? The one variable that was different was that we had one of the driest years on record. These areas average about 16 inches of precipitation ...last year about 11. Other orchids, such as the Cypripediums also seemed to be out in record numbers. Maybe some terrestrials bloom in response to stress. Calypsos grew in their normal numbers on the Western side of the Rockies where it is wetter.

"Calypso ecology? The richest areas in Alberta are in Zone 2 (average coldest day -35 to -40c). About 90 frost free days. Moderately moist to moderately dry white spruce and Douglas fir forests. Often a calcareous rock base that is overlaid by acidic conifer leaves. Accompanying flowers are arnicas, columbines, larkspurs, bunchberries, other orchids and various species of Pyrola.

"Growing calypsos? Fairly easy if enough surrounding ground is dug up...."

Many members heard Peter de Lange and John Sawyer speak at Iwitahi, and were encouraged by their cooperative message. John wrote recently in the Wellington Botanical Society's *Bulletin*, "**The First International Orchid Conservation Congress** held in Perth, Western Australia from 24-28 September was attended by 132 delegates from 21 countries (4 from NZ). The conference promoted information ex-

change and the concept of integrated conservation (including *ex-situ*, habitat manipulation and public awareness). There was strong representation of "amateur orchidologists" and it was noted that professionals ignore amateurs at their peril. That amateurs play a major role in the conservation of the world's orchids should not be forgotten,

Several key themes emerged during the congress including: threats facing orchids in the wild (especially fire and wild collection); measuring diversity and the importance of good taxonomy ("*are flies better taxonomists than people*" because of the strong evidence of pollinator specificity); and finally effective recovery operations (we must set realistic and achievable objectives).

A paper was presented on behalf of the Department of Conservation by John Sawyer and Peter de Lange entitled "*Biogeography orchid conservation in New Zealand: Case studies from the Department of Conservation orchid files*". This paper described projects undertaken by staff of the Department over the past 12 years.

Some conclusions from the conference were:

- The problem of decline in New Zealand's native orchids is significant. While there are relatively few nationally threatened orchid species, many others are in decline at a regional level. Taxa without formal names are also in serious decline.
- Orchids are flagship species around the world. The benefits that accrue to conservation from protecting orchid populations and orchid communities can be large. This was described as "*collateral conservation*". It may be that orchids and/or other groups of species, e.g. mistletoes, can be used more effectively in this way in New Zealand.
- The three "Ps" are important: Patience, Persistence and Partnerships. It was suggested that passion could be added to that list.
- Increased skills in the range of orchid conservation techniques would be benefi-

cial to New Zealand conservation efforts.

- Closer collaboration between the Department of Conservation, the NZ Native Orchid Group, groups such as the Wellington Botanical Society and other such volunteers will reap great benefits for native orchid conservation.

Graham Marshall has a spare copy of the now rare classic, **John Johns' and Brian Molloy's *Native orchids in New Zealand***. He will accept the highest offer over \$50, and will donate \$10 to the Journal's colour fund. Contact him on phone 09 8288866 or 09 4797158, or at 106 St George's Rd, Avondale, Auckland.

Anne Fraser wrote (6 Dec 2001), "The instigation of the new feature on population monitoring in Journal 81 prompted me to update my aim to study the **autecology of *Thelymitra matthewsii*** Cheeseman, as a research project for an MSc at University of Waikato. The study will continue for another 3 years to enable useful population monitoring to be carried out, following this 1st year of course papers, laboratory tuition, literature search and a comprehensive report of the research project

"The objectives of the research are to understand the life history of *T. matthewsii*, determine genetic variation in and between known populations, including relationships with Australian taxa, and to find out why the species is rare.

"The project encompasses the biology, demography, ecology and genetics of the species. I will be recording ecological aspects of habitat, soil disturbance, and vegetation at individual locations of the known populations in the Far North, and monitoring juvenile, flowering and fruiting presence in quadrates designed to be observed over the period, for the purpose of comparison of variability of the populations. Recruitment and decline, and pollination, will be an integral part of the observations, as will the health of the populations.

"Genetic analysis will involve the use of isozymes and internal transcribed spacers of nuclear ribosomal DNA. Isozyme analysis of plant tissue isolates proteins in gel electrophoresis to determine population-level variability. Proteins can be visualised by histochemical procedures enabling the existence of modifications to be shown. Data recovered from the gel consist of the number and relative mobility of various enzymes, which can be compared between samples.

"The use of internal transcribed spacers (ITS) involves the isolation of total RNA from plant tissue. Primers are synthesised that will anneal to conserved regions in mRNA and complementary strands are made. Strands are separated by electrophoresis in gels to determine the nucleotide sequences, which are then used with computer software to calculate phylogenetic relationships. This procedure will be used to determine the status of *T. matthewsii*, and its relationship with other con-generic species, and identify variations between New Zealand populations and Australian taxa, if any.

"Successful completion of the Masters does not necessarily mean completion of my interest in the species, or indeed any of our native species, and much interesting work will remain to be done."

Field guide to the New Zealand orchids

2001 edition

by Ian St George, Bruce Irwin, Dan Hatch and Eric Scanlen

The extensively updated and critically acclaimed 2001 edition is \$20 to members: order your copies now from
Ian St George, 22 Orchard St,
Wadestown, Wellington.

australian notes: David McConachie

Conserving Pterostylis hians and Diuris fragrantissima by accident!

by Kevin Western; first published in the *Journal for the Society for Growing Australian Plants* – reprinted from *J. NOSSA* Dec. 2001

In January 2000, I received a small package of seed from a NSW species of “Greenhood Orchid”, *Pterostylis hians*, along with seed of several other terrestrial orchid species. At that point in time I had never heard of *P. hians* but I figured the only good way to find out what they looked like was to sow raise them. The genus *Pterostylis* is reasonably easy to grow in artificial cultivation if you have a little experience and a little luck. There was not much seed, but I estimate that better than 95% did germinate and grow.

In the natural setting, orchid seeds will only germinate if and when they are invaded by the right fungus. The fungi involved are referred to as mycorrhiza and include the genera *Tulasnella*, *Ceratobasidium* and *Sebacina*. Interestingly they can occasionally be involved in quite destructive disease states in some grain crops. Orchid seeds are extremely small and have almost zero nutrient material in them. There is not enough energy for the embryo to germinate and commence growth as there is with other plant seeds. When the right strain of the right species of mycorrhizal fungus attempts to invade and engulf the orchid seed, the seed uses the stored energy of a diminutive drop of oil to turn the tables and control the fungus so as to gain initial nutrients and energy to commence growth. Early researchers discovered that each species of orchid tended to rely on the presence of one to a few strains of fungus for their germination. As germination does not occur without those fungi, in nature, most orchid seeds perish. In the mid 1920s a researcher speculated that

the fungi were providing the orchid seeds with carbohydrates and essential nutrients and that if he were to sow surface-sterile orchid seeds onto sterile nutrient gel, and maintain sterile conditions, they would germinate and grow without the need for mycorrhizal fungi. Luckily for the orchid enthusiasts of the world, he was right. Today we still sow orchid seeds onto sterile media formulations that are not vastly different from the original formula that he used.

The *P. hians* seed was sown onto sterile nutrient agar containing about 5% coconut water. (Water from fresh, unspoiled, sweet coconuts contains very low concentrations of plant growth regulators that enhance germination of orchid seed but are not destroyed by sterilisation at 121°C for 20 minutes in a pressure cooker). After a few months, the seedlings were large enough to be spread out by sterile transfer technique into several new flasks of nutrient agar, this time containing about 6% of banana pulp. (Bananas have nutrients and/or plant growth regulators that enhance the growth of germinated orchid seedlings in tissue culture). At this stage a fellow “orchid nut” noticed the *P. hians* seedlings growing in my home laboratory and informed me that he had read that *P. hians* had only ever been known from one small, confined location. Furthermore, a bushfire had destroyed all trace of the species in this location. Subsequently, at a conference, I met the people who had first discovered the species. I learned from them that lawful collections had been made to provide herbarium specimens and maintenance in

lawful cultivation for drawing and recording. Material was sent to the keepers of the Australian collection of terrestrial orchids. Tubers from multiplication of the live material were subsequently distributed to competent growers to ensure ongoing survival of the species in collections. It was seed from one of these sources that had been sent to me. They also confirmed that, despite extensive searches for *P. hians*, no specimens had been found since the bushfire and it had to be presumed that *P. hians* was extinct in the wild. They were delighted that seedlings were growing in tissue culture as this meant that they were free from contamination and in a fit state to be returned to the wild in selected, safe locations. This is scheduled to happen mid to late autumn 2002. Hopefully a system of cross-pollination of plants from the original collection will also be organised so as to maximise the likelihood of maintaining genetic variability.

Despite the fact that *P. hians* was not widespread in nature and was able to be wiped out by one bushfire, it is a good grower in the flask. This was seen at the September regional meeting of the Australian Plants Society where I displayed a flask with two seedlings that had made it to flowering size. I am informed that *P. hians* also grows quite vigorously and reliably in pots of fresh sphagnum moss and continues to do well if the tubers are repotted into fresh sphagnum moss each summer. My impression is that this species has habits typical of the *Pterostylis* species that are found growing in mosses and fallen mulch in cracks and pockets on rocks in places such as the Grampians. I hope to be able to continue to re-

ceive seed and grow it on until safe breeding populations of this species can be successfully re-established in the wild.

On a similar note, I received seed of *Diuris fragrantissima* about 12 months before receiving the *P. hians* seed. As usual the seed was processed and sown and eventually germinated. There was a problem though in that despite routine surface sterilisation of the seed and its subsequent germination, a slow-growing mould had survived and was growing at one edge of the mother flask. I was about to toss it out when the "orchid nut" colleague mentioned above asked whether I knew what I had. As with *P. hians*, I had been sent seed of a species that was known from only two existing wild plants. This news changed my approach! Luckily it was possible to separate the uncontaminated seedlings and replant them in fresh flasks of sterile medium. They too grew well and something like 900 seedlings in flask have been given back to the authorities. They were then planted back in a safe location where it is reported success rates have been superb. Some of the flasks were distributed to successful growers to ensure ongoing production of seed until this species is off the endangered list. Many more seedlings will be sent back to Victoria in 2002 so they can be associated with their mycorrhizal fungus and be effectively reintroduced into safe habitats. In these times of growing realisation of the impact of our habits and intrusions into the untouched habitat on the flora and fauna, it is nice to know that we can occasionally reverse the trend - even though, in these cases, at first, it was largely by accident.

What did you see this native orchid season?

Tell us about it or show us your pictures:

we are very interested in your observations.

Write (or better still email) The editor, NZNOG, 22 Orchard St, Wadestown,
Wellington—istge@rnzcgp.org.nz

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Petalochilus variegatus, from a photograph by Eric Scanlen

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Subscription NZ\$30.

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