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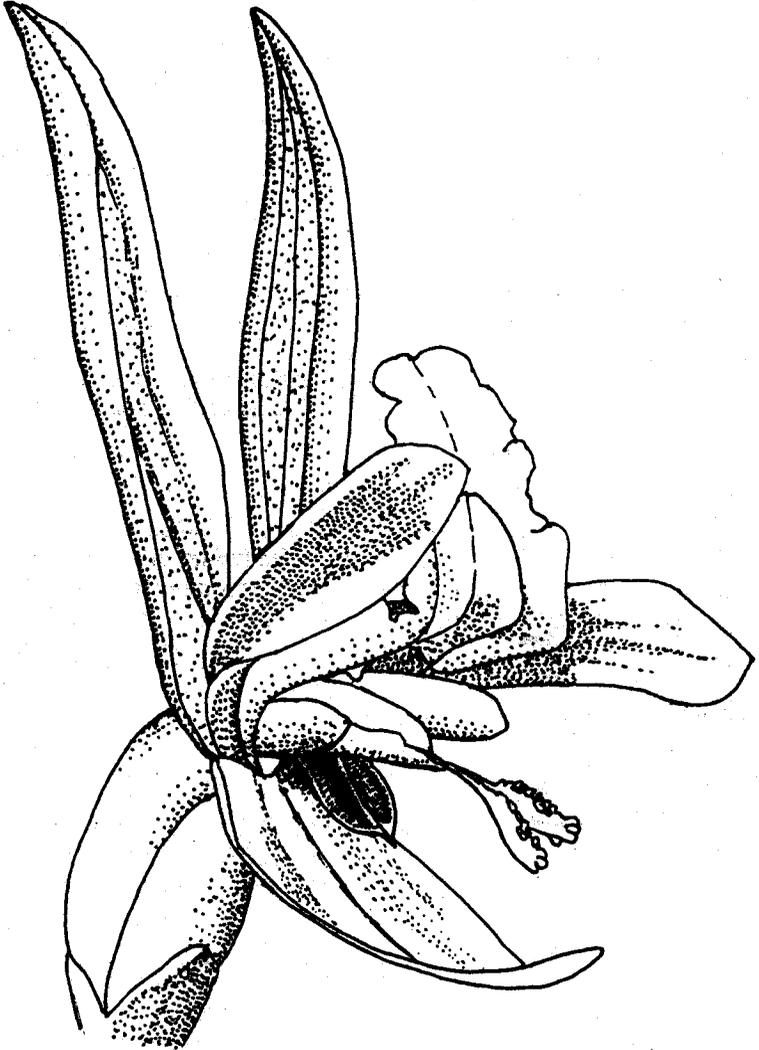
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Prasophyllum "aff. *patens*", discussed in this issue

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Spiranthes sinensis, *Prasophyllum* "aff. *patens*", swamp, garlic and alpine blues

by Eric Scanlen, Papakura.

It all started at the Iwitahi conference when Anne Fraser offered Ian St George and party the use of her shearing quarters at Ongarue. Bruce Irwin, who just happened to be around at the time, took her up on the offer. An expedition was mounted for 21 January beginning in a deep swamp in Pureora Forest. Up in the headwaters of the Waipapa River, Bruce led the dedicated band, knee deep in brown water and reeds, to an impressive display of hundreds of *P.* "aff. *patens*", all in full flower; quite spectacular for a *Prasophyllum* with maroon and white flowers duly upside down. They thrive in the area where the swamp narrows and steepens thus speeding up the water flow. How do they germinate in permanent flowing swamp water? Thousands of dollars worth of camera gear was gingerly carried out over the swamp and put into service with striking results. For the record, none of the dedicated few fell in or dropped their camera gear despite some close calls, one of them by Geoff Webster is recorded for posterity on video.

Earlier, Allan Ducker and the writer had led the party on a false lead to some robust but moth eaten *Prasophyllum colensoi* in a drained swamp downstream. These are a different animals from the little alpine *Prasophyllum colensoi* of the central plateau. The whole plant and

individual flowers in Pureora were twice the size of the alpine specimens.

Down at the shearing quarters, it was found that no amount of rinsing would wash out the brown swamp dye from our socks but a good hot dinner and a shower set everyone up for a sound night's sleep in the truckle beds.

Sunday saw us focussing up on *Genioplesium nudum* on a road batter exactly where Anne had predicted, up the road by the Mangakahu Stream and under the beetling ignimbrite cliffs. Anne and Katherine showed us some minute *Corybas oblongus* in seed and some *C. rivularis* leaves on steep swampy bits in the bush. Back at the shearing quarters for lunch, Allan and the writer indulged in a little raw (but hot!) garlic on sandwiches. Bob Talbot shifted muttering imprecations to the other side of the table; the cheek of it. A quick trip over to the Chateau saw Geoff and Bruce gasping for air in the back of the car. What a fuss!

All thoughts of garlic were soon forgotten as we pored over Bruce's *Thelymitra* "Whakapapa" growing by the road edge 10 metres from the dairy. Goodness knows what the tourists thought of the aging trampers crouching and lying in the gutter photographing minute orchid-pink flowers. Bruce coined the name for this late flowering *T. longifolia* look-alike with little pink

"spurs" (more like obtuse angles) protruding high on the column wings and under the matted white cillia. A look around the Whakapapa camp sites set in the bush near the dairy, revealed *Gastrodia cunninghamii* galore (in bud), *Pterostylis humilis* (in seed pod), *Pterostylis patens* and *Pterostylis* "aff. montana" in flower and all leaning out over the road or a metre or two into the bush. The party was entranced but had no time to waste.

Off to Horopito and the cameras were out again for numerous flowering *Thelymitra cyanea*, a solitary *Pterostylis* "aff. montana" some *Gastrodia minor* and several *Spiranthes sinensis*, 50 mm high and only in bud as predicted by Bruce. Back at the shearing quarters, after an hour's break at National Park to drain the petrol fill from Margaret Menzies's diesel car, a big dinner renewed the energies and showed that Val Smith was as good a cook as she was a photographer. Plans were made for the following day whilst Bob and others had their sights set on another shot at *S. sinensis* in two weeks' time.

In the morning we made our farewells to Anne and were treated to a peek at her outstanding NZ orchid art and her remarkable gem cutting skills before our run to Iwitahi. Trevor Nicholls pointed us at some nice *Gastrodia sesamoides*, *G. minor* and an *Aporostylis bifolia*, all in flower and being feasted upon by green aphids. A beautiful *Thelymitra formosa* was also discovered. Note books were out, the cameras clicked urgently as though there were no tomorrow for the three queued photographers; everyone

was getting late for their trips home to Taranaki, Tauranga and over the BOMBAYS.

But the die had been cast; Bob captured nicely the rare *Spiranthes sinensis* a fortnight later (on film of course) and despite fair warning that only garlic tolerant folk need come, he showed up at the Forest and Bird Lodge at Whakapapa the following weekend where Allan, his sister Evelyn and the writer were guests of Graham and Jan Dickson and family.

A hot Saturday (18 February 95) saw us with noses down in the Mangatapopo Valley looking for *Prasophyllum colensoi* (which we found everywhere in seed pod), and *Thelymitra hatchii* but find this we did not. Instead several *T. ixioides* showed up in the dampness at the foot of the lava flows south of the heavily trampled track at elevation 1,300 metres. Some were in early bud, some in seed pod and two mutants were open. Out came the cameras whilst the Dicksons headed for Ketetahi. Mutant number one had 3 blue sepals, the dorsal one spotted, a deformed column and no petals. Mutant number two had 6 tepals somewhat askew, a differently deformed column (but with the unmistakable purple top tapering up into burgundy and a rim of yellow behind the white cilia), and curiously, it had a branch half way up the stem amid the 3 bracts, with a little half formed flower atop. Weird!

Spiranthes sinensis at Horopito, yielded its secrets in the enervating heat to the ready cameras that afternoon. And in the evening, Evelyn's excellent garlic garnished lamb chops saw Bob retiring to

the other end of the table at dinner. He was warned!

In the morning the Silica Rapids at 1,300 metres above sea level, beckoned and there resided some open *Thelymitra cyanea* and *T. formosa* in the area oft trampled by the tourists. *Corybas macranthus*, *Pterostylis humilis*, a patch of another broad leafed *Pterostylis* (but smaller than *Pterostylis humilis*) and *Pterostylis* "aff. montana," all in seed pod, showed up along the Whakapapa water pipe line, with one fresh flower still on *Pterostylis patens*. Plenty of *C. trilobus* leaf and an unidentified round leafed *Corybas* made this area a memorable orchid haven. *Thelymitra* "Whakapapa", still in flower was rephotographed and videoed to highlight its pink spurs but the road had been freshly sealed and guess who got spots of bitumen all down his trousers. In the alpine garden, more were in flower alongside a little white *T. longifolia* (the last bloom in a cluster of plants) and a pinkish in-between neither of them with spurs on the column wings. Of course, the *Gastrodia cunninghamii* which were in bud three weeks before, were all in seed pod now but that's how it was.

Comments

What an excellent report! Eric's enthusiasm for orchids and talent for writing shine like a beacon. As with any good reporter, he raises many issues, and four are addressed below - and are labelled A, B, C and D - Ed.

A

On *Prasophyllum* "aff. *patens*", Bruce Irwin wrote (24 January), "I'm just back from a very useful weekend. At

midday Saturday with Geoff Webster I met Margaret Menzies, Val Smith and Bob Talbot from Taranaki and Allan Ducker and Eric Scanlen from Auckland. We visited the *Prasophyllum* aff. *patens* site (near Benneydale), and flowering was perfectly timed. At least 80 flower spikes were seen and of course there must have been at least five times that number in areas of the swamp not searched."

Your editor examined specimens of *Prasophyllum* "aff. *patens*" from another site a fortnight later, the first time I had seen this attractive orchid. Most plants were in seed, but several retained flowers. The flowers were bigger than those of *P. colensoi*, and the white labellum with its undulating edge, contrasted with the pink and green of the other flower parts, made a pleasing contrast. The flowers were heavily scented - almost a sweet liquorice smell - and while I was at the site in the early evening they were crawling with insects, including a small cricket. Not one flower was intact - all had been chewed, and all had had their pollinia removed - except one that had the coherent pollinia dislocated, but still attached by the stipe to the rostellum (see drawing). The anther cap was well behind and separated from the stigma. All flowers on all the heads I examined had set seed. So, is it insect-pollinated?

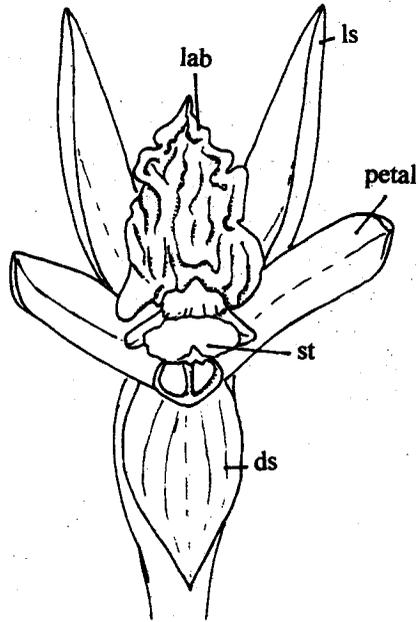
Points for insect-pollination include the scent, the presence of insects on the flowers, the coherence of the pollinia, the

absence of pollinia from most flowers. Normally nonresupinate (upside-down) flowers suggest self-pollination (as in *P. colensoi*), but in this species the anther is separated from the stigma, and is well below it, an arrangement that would make self-pollination difficult. The major point in favour of self-pollination is what appears to be universal setting of seed.

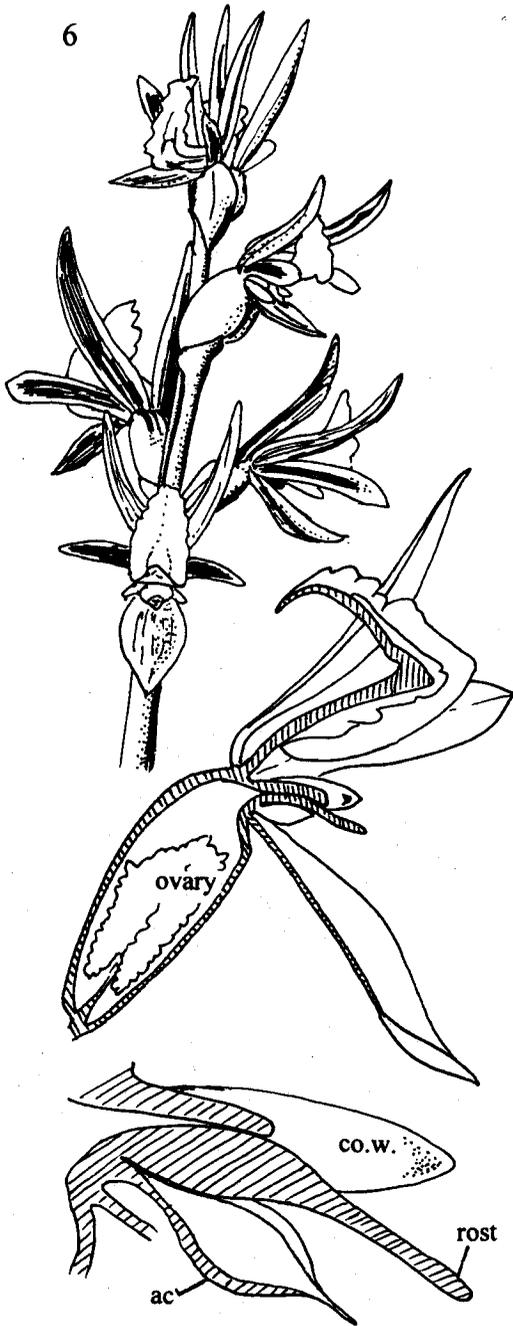
There is a project for you - identify the pollinator of this undescribed orchid before the orchid itself is described - I'd go in the early evening, liberally smeared with DIMP.

Jones noted of the Australian *P. patens*, "... closely related to *P. odoratum* but can be distinguished by its scentless flowers and the curved or flexed labellum at an angle of about 70° and not protruding markedly between the slightly divergent lateral sepals. It is close to *P. pruinatum* but can be distinguished by its white, scentless flowers and a larger labellum callus.... *P. patens* is a poorly studied and variable species. There is a large degree of variation in flower size, congestion on the spike, labellum flexure, divergence of the lateral sepals, petal width and waviness of the margins. In some areas flowering can occur over a couple of months and there seems to be a series of slightly varying races" [Jones D. *Native orchids of Australia*. Reed, Frenchs Forest, 1988; pp262-3].

At first acquaintance the New Zealand species certainly seems closer to *P. suttonii* or *P. odoratum* than to *P. patens* - Ed.



Prasophyllum "aff. *patens*" - flower from side and front



Prasophyllum "aff. *patens*" - flower and column in longitudinal section

B On *Prasophyllum colensoi* Eric Scanlen thought the "robust" Pureora plant was different from the "little alpine *Prasophyllum* from the Central Plateau".

Either *Prasophyllum colensoi* is very variable in the density of the flowers on the stem and in its robustness, or there really are two forms. I've certainly seen very slender sparsely flowered forms in Otago, and very thick densely flowered forms at Kaitoke; but, I have to admit, intermediates in different places too - Ed.

Dan Hatch commented, "In *Trans. N. Z. I.* 43: p203 (1943) Harry Carse had this to say, 'I think the (*Prasophyllum*) now included under *P. colensoi* will prove to be a different species. Mr Cheeseman, referring to it in a letter, says "your plant is not quite identical with the southern plant, but until a very careful comparison can be made of the structure of the flowers... they are best kept together"'.

"This was still Lucy Moore's opinion in 1970 and as far as I know it is Brian Molloy's also.

"H.M.R. Rupp, in *Orchids of New South Wales* (p28, 1943), has a footnote under *P. rogersii*, 'this species has since been recorded from New Zealand (Kaitaia)'. Not then having any opinions of my own on the matter I followed Rupp in my subsequent writings.

"But in *The orchid man* (1992), Lionel Gilbert published a drawing of *P. rogersii* by Rupp himself, which shows a plant quite unlike those from Kaitaia.

"Certainly far-northern plants are very small, and at first glance quite unlike *P. colensoi*, but when one is asked to define the difference confusion reigns.

Darwin's crack is most applicable, 'The differences are more obvious than able to be delineated'. It is probably safest to treat *Prasophyllum colensoi*, as Lucy Moore did, as an extremely variable epharmonic species."

Bruce Irwin also noted "By the way, at (another location) we found a few spent *Prasophyllum* plants almost as tall as and robust as the *P.* "aff. *patens*" but decided they were probably *P. colensoi*. I've seen large robust plants of *P. colensoi* on Egmont and Ruapehu, but smallish ones too. I think the amount of available moisture affects their size. On the other hand near Tauranga and up to the Far North all plants are small with well-spaced flowers but I couldn't spot any structural differences.... I can't recall seeing any robust plants north of here.... the possibility that two plants exist, but that their status is uncertain seems a reasonable attitude to adopt in the meantime."

C On *Thelymitra* "Whakapapa" Bruce Irwin commented further, "At Ruapehu on 21 January 1994 with members of the Wellington Botanical Society, I found several small plants of a *Thelymitra* which resembled *T. longifolia* in general appearance. However the plants were few-flowered, of short stature with narrow somewhat upright leaves. The outer surface of the sepals and particularly the flower stems were dark purplish red. Flowers were smallish, quite a strong pink and remained open at 3 p.m. on a warm but

dull day. The pollinia were in neat packets tucked tidily behind the stigma, not splattered over it in the manner of 'normal' *T. longifolia*, which was also present but had virtually finished flowering. Although I suspected that these late flowering plants could not be *T. longifolia* in the strict sense, circumstances prevented me from examining them closely. I gave them the tag-name *Thelymitra* 'Whakapapa'.

"A year later on 22 January 1995, this time with NOG members from Taranaki and Auckland, I returned to the area. Because of passing showers all flowers were closed, but the keen photographers in the group coaxed some open. Again I failed to examine them closely.

"Two weeks later I looked for and found similar plants 2km further north. That day there was no risk of being trampled by frenzied photographers, so I was able to examine columns closely. My first impression was that, as seen from the front, the column wings formed a much more rectangular frame than in *T. longifolia*. The column arms emphasise this squareness. They twist horizontally towards each other, then near their apices they again twist abruptly upwards in front of the column midlobe. To see the column arms more clearly, I looked at them from below and was surprised to see that much of the squareness is due to small triangular lobes or spurs where the column wings twist towards the horizontal immediately below the column arms. These spurs are obvious only when viewed from certain angles. They are not present on *T. longifolia* and I have never noticed them on any other *Thelymitra*.

“Eric Scanlen and Allan Ducker have since examined and photographed flowers from the original locality. They confirm that these also possess the triangular lobes or spurs on the column wings. In my opinion, for the above reasons, *Thelymitra* “Whakapapa” cannot be regarded as a form of *T. longifolia*. What then is it?”

two quite different forms in Otago [1], but only ever saw one of them in one place (Trotter’s Gorge): it flowered in early November, right across the track from a colony of *C. macranthus*, and near large concentrations of *Corybas* “A”. It was pollinated by a fungus gnat (I saw one leave a flower with pollinia attached), a gnat that looked very like

those that George Fuller noted pollinating *Corybas* “A” in New Plymouth [2]; after the publication of George’s paper in the December *Journal* I wondered briefly whether it might have been a *C. trilobus* x *C.* “A” hybrid.

Then I saw it again at Ruapehu - 3.5cm, thick, almost succulent leaves, very long petioles, deeply pigmented (almost black) flowers below the leaves - in flower and fruit on 18 December.

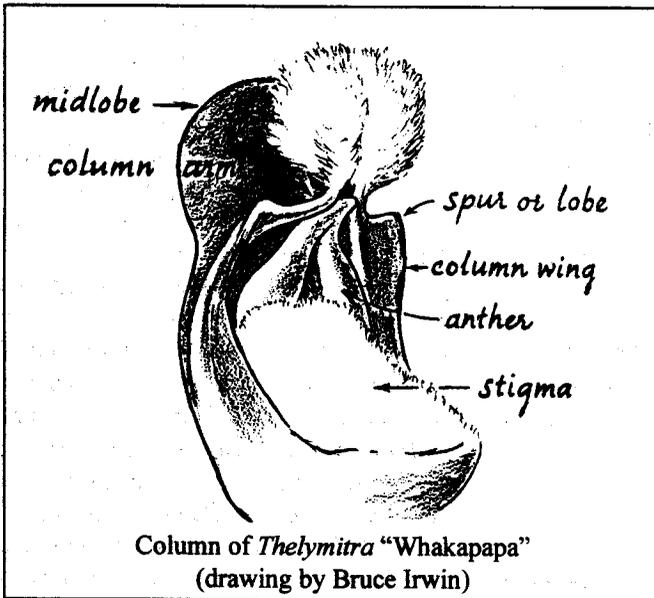
These flowers were quite definitely scented, and

the flowers I examined had had the pollinia removed.

I believe I saw this plant in one other locality - in flower at Labour Weekend at Martin’s Bay, south Westland, several years ago.

This one is, in my view, distinct. What of the other forms?

Max Gibbs first drew attention to the different forms of *C. trilobus* at Iwitahi in his detailed study reported in 1989 [3].



D On *Corybas trilobus*: a specimen from the track to Blyth Hut on Ruapehu spurred your editor to assemble his thoughts on different forms of this orchid.

In 1994 I began to look carefully at *Corybas trilobus* believing that there were at least two different forms, and that if I looked hard enough I would be able to discern clear distinctions. I had noted

And I thank him, Allan Ducker and Pat Enright for sending me specimens of their local forms for this study. I photographed and pickled all of them, so was able to compare them at leisure.

I remained confused; but one startling day it all seemed to become clear. It was on 18 September, on the track from Waikaremoana to Waikareiti that my wife spotted a colony of a dozen large green *C. trilobus* flowers. They were clearly different from a small red-flowered form nearby, yet shared the same mossy bank, receiving the same light.

There were differences that I could describe and draw (as opposed to the kind where you can't say exactly why they are different, but you are sure they are).

These two plants (I have labelled them Form 1 and Form 2) are shown in the Figure.

So far so good. Then I had another look at my photographs and specimens from areas around Auckland, Otago, Iwitahi and Wellington: there were all shapes and sizes between the two Forms I had found; some even had Form 1 leaves and Form 2 flowers. It seemed the two Forms were simply extremes of a range.

So, at one end of the range are plants with square leaves below large pale flowers with short dorsal sepals, downfacing auricular openings, labellar margins more inrolled in their upper than their lower halves, smooth lower edges and prominent midlobes. These seem to match the early flowering forms from

Otago and elsewhere [1].

At the other end are plants with leaves broader than long, below which are small dark flowers with long dorsal sepals, forward facing auricular openings, labellar margins more inrolled in their lower halves, fimbriate lower edges, and small midlobes. Perhaps small plants of this latter were what Colenso called *Corysanthes hypogaea* [4].

Perhaps between these extremes is a range of intermediate forms.

Pat Enright brought me flowers exactly matching the pale Waikaremoana form, from the Waima River catchment in ER 42, Inland Marlborough, flowering on 25 October.

At this stage I surmise that there are three forms - the big dark late form, the smaller, early pale form, and the small dark form (*Corybas* aff. *hypogaea*).

Please send me more specimens this year - this *may* become clearer with further study!

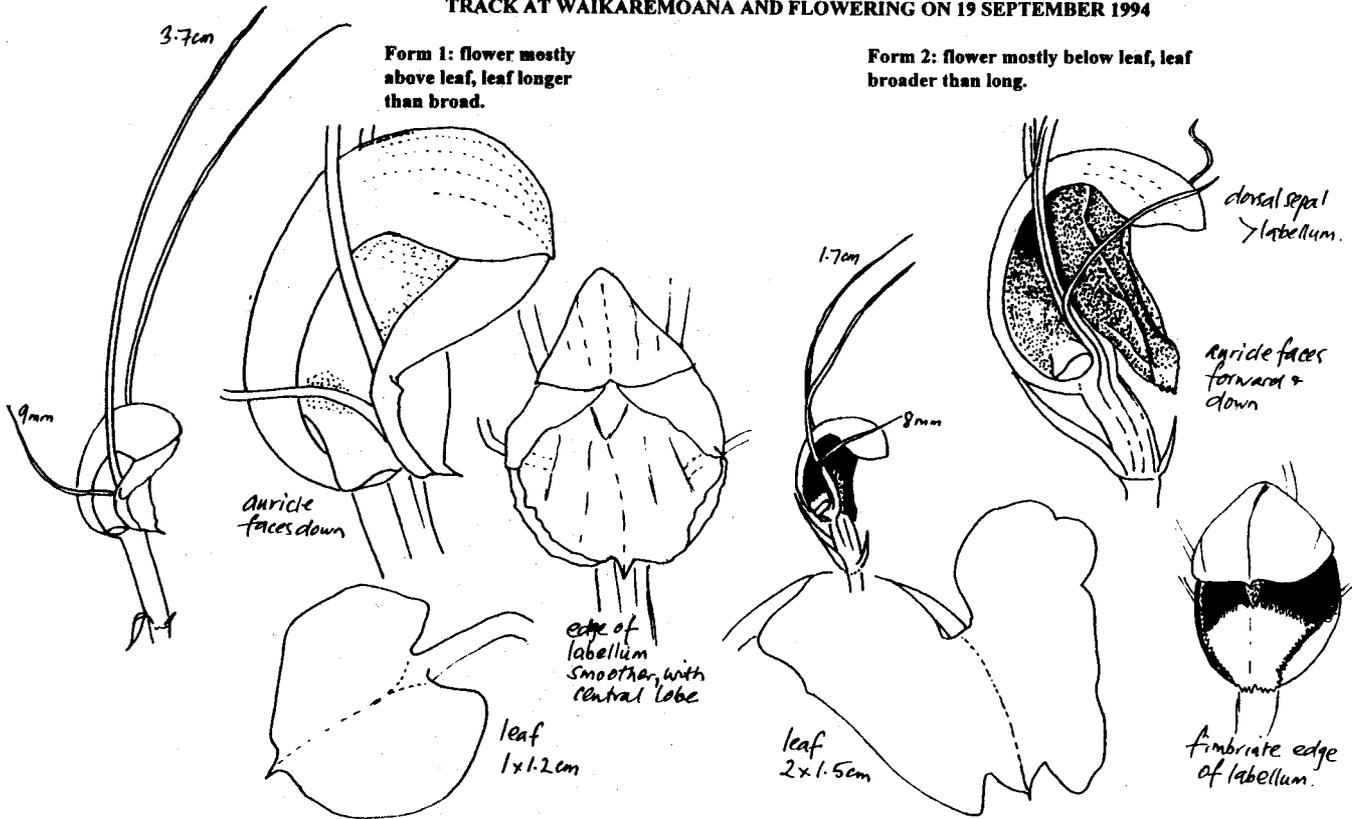
References

1. St George IM. *Corybas trilobus* in Otago. *NZNOG Newsletter* 1988; 28: 10-13.
2. Fuller, George. Observations on the pollination of *Corybas* "A". *NZNOGJ* 1994; 52: 18.
3. Gibbs M. Iwitahi diary: *Corybas trilobus* variations. *NZNOG Newsletter* 1989; 29: 2-7.
4. Colenso W. *Trans NZI* 1884; 16: 336.

TWO FORMS OF *CORYBAS TRILOBUS* GROWING TOGETHER BY THE WAIKARE-ITI TRACK AT WAIKAREMOANA AND FLOWERING ON 19 SEPTEMBER 1994

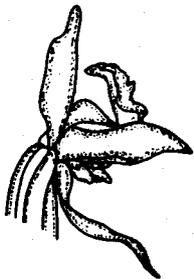
Form 1: flower mostly above leaf, leaf longer than broad.

Form 2: flower mostly below leaf, leaf broader than long.

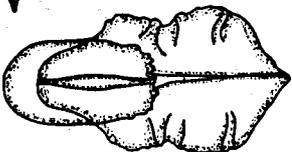
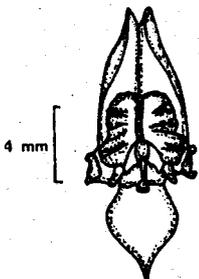


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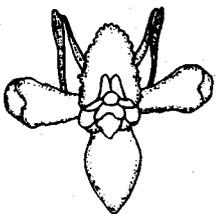
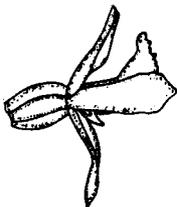
A selection of *Prasophyllum* with similarities to our "*P. aff. patens*", from David Jones: *Native orchids of Australia*, Reed, Frenchs Forest, 1988, pp260-262.



Prasophyllum suttonii



2 mm



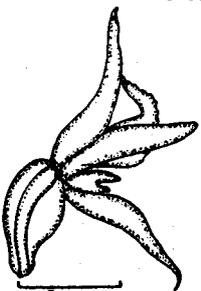
4 mm



2 mm

Prasophyllum patens

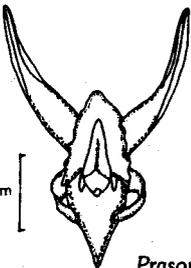
Prasophyllum prunosum



5 mm

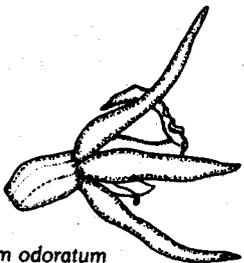


4 mm



4 mm

Prasophyllum odoratum



3 mm

Historical reprints

1 What was the first record of the plant we know as *Prasophyllum* aff. *patens*? In his 1906 *Manual of the New Zealand Flora* Cheeseman cited collections by Harry Carse at Maungatapere, Whangarei; Thomas Kirk from Great Barrier Island; and his own "Taranaki - Ngaire Swamp, abundant - T.F.C. December-January" (p675) and identified the plant with Hooker's Tasmanian *P. patens*.

In 1887 John Buchanan had described a plant he had found in two places in the northern South Island and called *Gastrodia hectori*. It had a leaf, was clearly not a *Gastrodia*, and Cheeseman assigned it to *Prasophyllum*. He wrote: "*G. Hectori*, Buch. in *Trans. N. Z. Inst.* xix. (1887) 214, is shown by the specimens in Mr. Buchanan's herbarium to be a *Prasophyllum*, probably *P. patens*" (p697).

Buchanan's description is reproduced here, along with his own lithograph. (His last sentence refers to *Gastrodia* in general, rather than to this species in particular - *Prasophyllum* is hardly a genus "of dark habitats, in dense bush country"). With its leaf it is certainly not a *Gastrodia*, and the colour does sound like *Prasophyllum* aff. *patens*. But Picton? The Conway River (south of Kaikoura)? Could Cheeseman have been right? Surely not; I know of no other record of *P. aff. patens* south of Taranaki.

Buchanan's specimen is in WELT - a single 25cm plant on a sheet with *Gastrodia cunninghamii* from Chatham Is. It is labelled "*Gastrodia hectori* Buch: North Island. Collected also in Marlborough"; in Thomas Kirk's hand is added "*Prasophyllum colensoi* specimen submitted to JD Hooker" (both undated). I think Kirk was right.

From Buchanan J. On some new native plants. *Trans.N.Z.I.* xix: 214 (1887)

Gastrodia hectori, Buch.

Root tuberous, stem and spike of flowers 18 inches high, closely sheathed for $\frac{2}{3}$ of its length by a long leaf, $\frac{1}{3}$ of the leaf being free, a short outer sheath at bottom encloses the base of the sheathing leaf. Scales none. Racemes $3\frac{1}{2}$ inches long. Flowers 18, close-set, brownish-yellow, $\frac{2}{10}$ of an inch in length, seed-vessel black, or dark brown, orbicular.

The present species was collected several years ago in Marlborough district, near Picton, and has also been seen on the Conway River. The species of *Gastrodia* are probably abundant, but their dark habitats, in dense bush country, prevent them from being easily seen.



GASTRODIA HECTORI. Buch.

2 Dan Hatch included what we now refer to as *Prasophyllum* "aff. *patens*" in *P. suttonii* - the relevant passage is reproduced below, along with his father's drawing.

From Hatch E.D. The New Zealand forms of *Prasophyllum* R.Br. *Trans. Roy. Soc. N.Z.* 76: 289-293 (1946)

3. *Prasophyllum suttonii* Rog. & Rees.

Proc. R. S. Vict., 25, 1921, 112.

Pr. patens Cheesman. (not of R. Br.)

Stout, up to 90 cm. high. Leaf sheathing the stem for half its length, the lamina shorter than, or exceeding the inflorescence. Flowers fragrant, up to 40 in a loose, pale-green spike. Dorsal sepal ovate-acute, concave. Lateral longer, lanceolate, free or united. Petals linear-oblong, obtuse, white with a dark central line. Labellum on a very short, rigid claw, the upper third recurved, margins broad, white, prominently crenulate. Callus rather narrow, extending to the curve. Column-wings linear-oblong, obtuse, entire, almost as high as the rostellum, as is the robust, acuminate anther.

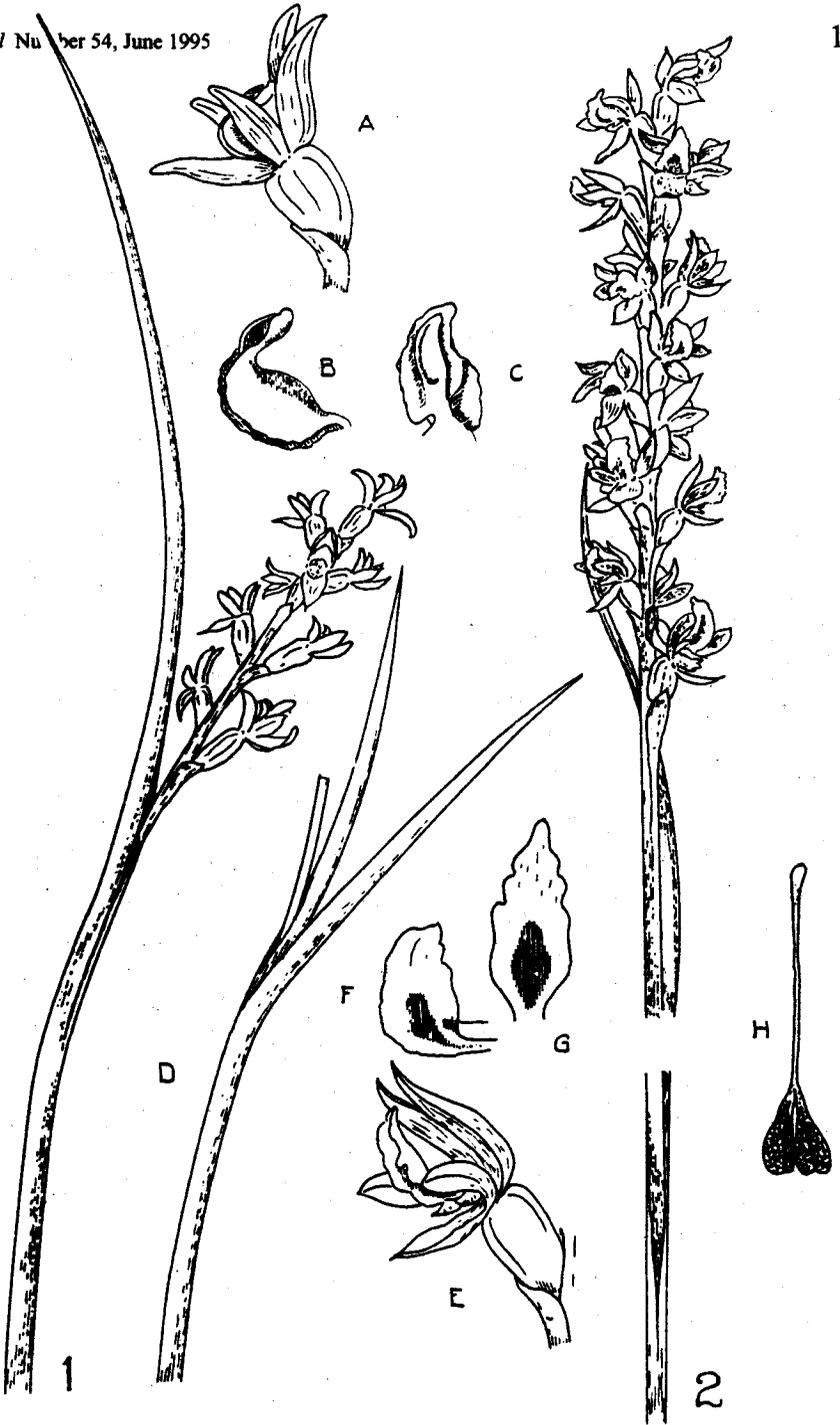
Distribution: Australia—New South Wales, Victoria, Tasmania, occasional in subalpine bogs. New Zealand—2, Maungatapere, *H. Curse*; 3c Great Barrier Island, *T. Kirk*; Waitapu, *K. W. Allison*; 5, Erua, *H. B. Matthews*; Tangiwai, 1, 1945, *E. D. Hatch*; Rotorua and south to the Waikato River (3 localities), *K. W. Allison*; Rotorua 1, 1923, *H. B. Matthews*; 6, Ngairu, *T. F. Cheeseman*.

Flowers December to January, 2,000ft. to 4,000ft. Usually found in *Hypolaena* bogs, growing in open water between the clumps. Most conspicuous.

Pr. patens R. Br., *Pr. odoratum* Rog., and *Pr. suttonii* Rog. & Rees have been much confused. The three are allied but quite distinct. Cheeseman identified the New Zealand plants by comparison with Australian specimens of *Pr. patens*. At that time the group had not been divided into the three species mentioned, and it is conceivable that his "*patens*" specimens were, in fact, *Pr suttonii*. In any case the true *Pr. patens* is a slender plant, quite unlike anything in New Zealand. At Mr. Rupp's suggestion the writer studied fresh specimens of all three species, and compared photographs of living plants, and sketches of the floral organs by Nicholls. There can be no doubt that our plant is *Pr. suttonii*.

PLATE 28.

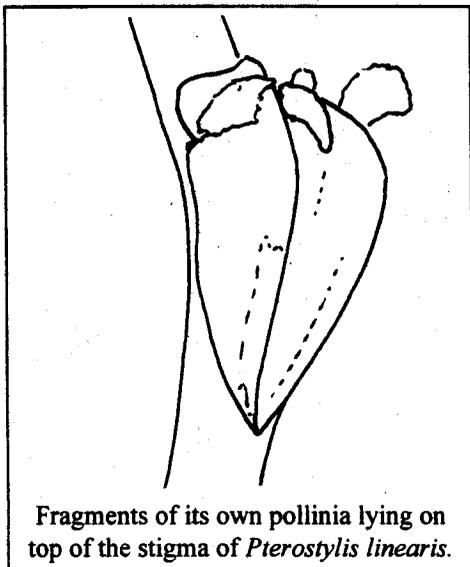
1. *Pr. colensoi*, nat. size. (a) Flower from side. (b) Labellum from side (after Smith). (c) Labellum from above (after Smith). (d) Two-leaved plant from Murimotu.
2. *Pr. suttonii*, nat. size. (e) Flower from side. (f) Labellum from side. (g) Labellum from above. (h) Pollinia of *Pr. striatum* attached to their caudicle (after Seemann).



Notes

* We were dismayed to hear of Ken Wilson's untimely death in February. He was a good observer, a sincere man of gentle and intelligent good humour, and we will sadly miss him at Iwitahi in December. Our sincere sympathy goes to Cath.

* I saw *Pterostylis linearis* at Rangataua Wetland near Ohakune last year. It has the prominent heart-shaped stigma typical of self-pollinating *Pterostylis* species such as *P. cardiostigma*, *P. montana* and *P. humilis*, jutting out far enough to catch pollen falling from the anther above. Indeed, on opening a flower I saw fragments of pollinia lying only on the top of the stigma - as shown - Ed.



* Have you noticed that whenever you open a flower of *Thelymitra pulchella* there are pollen granules sitting in the hollow of the labellum?

* On 18 February I was looking for late-flowering swamp orchids (*Pterostylis* aff. *patens*, *P. micromega*, *Spiranthes sinensis*) at the Kurapaponga Lakes between Napier and Taihape. I didn't find any of them, but did see *Orthoceras novae-zeelandiae* in full flower, *Pterostylis* spp. in seed, including a form of *P. graminea*, *Thelymitra* ssp. in seed, *T. cyanea*, and a *Genoplesium* in red bud - probably *G. nudum*.

* Ruth Rudkin wrote (9 February), "In the December 1994 issue of your *Journal*, you have a very interesting article, 'The various contrivances by which New Zealand orchids are fertilised by themselves'.

"However I think you are mistaken when you accuse Darwin of seeing self-pollination as being the same as what was in the mid-nineteenth century called self-pollution, self-abuse, the secret vice, or the sin of Onan; in a word, masturbation. In the book *Darwin* by Adrian Desmond and James Moore, published by Michael Joseph, London in 1991, the Index lists under 'Marriages, cousins' the following pages: 258, 280, 290, 447, 575, 610, 619-20.

"As he was writing *The origin of species*, the Darwin family life went on.

While finding examples which showed that outbred offspring fared better in the 'severe struggle for existence' he was very much aware of what was happening in his own family. There were four first cousin marriages between the Darwins and the Wedgwoods. Of the ten children, two had died young from natural causes and the signs were ominous for the rest. In his book he belaboured the 'evil' effects of inbreeding and the good effects of crossing. When 'relations unite' there is a 'decrease in... general vigour' and an increased likelihood of 'infirmity' among the offspring. He was writing about this in 1857 at the time when his sixth child was born, sickly and without its 'full share of intelligence'.

"Surely Darwin looked upon self-fertilisation as the worst case of inbreeding only to be used as a last resort. It will never be known how many orchid species died out in New Zealand because of the weakness inherent in self-fertilisation."

Child health was generally poor and infant mortality high in the midnineteenth century, and people looked desperately for explanations. They were slow to identify the true causes - poor nutrition, large families, late child-rearing, primitive obstetric practices, and uncontrolled childhood infections. Instead they accepted these tribulations as manifestations of the wrath of God for the biblical evils of masturbation, and (thank you for drawing our attention to it) 'consanguinity' from cousin marriages. Darwin was indeed a man of his times, and he at first borrowed from these moral fantasies to make his own

assertions. He later realised the scientific truth - that masturbation and cousin marriage result in feebleness of neither body nor mind - and accepted that self-fertilisation is an excellent survival mechanism for some plant species - Ed.

* If anyone is growing native orchids for supply to other growers, Carsten Strompl, Weberstrasse 14, 24568 Kaltenkirchen, Germany would like to obtain New Zealand natives. I often receive requests for plant material from overseas so I would also be glad to hear from growers who might respond - Ed.

* The Wellington Botanical Society's *Bulletin* No. 46, December 1994, contains two papers on native orchids - the full text of Bruce Irwin's "*Corybas rivularis* - one species or several?", and "Tuber development of three orchid species at Hokio, west of Levin" by the late Frances Duguid. Each is a superb model of how careful observation and recording can lead to a valuable contribution to knowledge.

* John Williams, Wanganui, wrote to "...mention a sighting of *Gastrodia* 'long column' as confirmed by Bruce Irwin from the flowers and spike from one of two growing in the silty creek bed behind our house called Mainui, alt. 600', 44km from Wanganui on Kaurapaoa Rd. The taller specimen which was not accidentally cut off by a flying object (a sheet of corrugated aluminium) reached a height of 1m 40cm and had 77 flowers. About 15 years ago the spot where the *Gastrodias* are was the creek bed: we

used to look annually at large *Pterostylises*.... The *Gastrodia* set a few large seed capsules. I think the sighting date was 26 January 1995."

* Cynthia Aston wrote from Taumarunui (2 March), "I was most interested in the *Journal's* material on *Thelymitra* pollination by native bees. I grew up in Wellington (Lyal Bay, which then was 'tatty' enough to have interesting wild bits), and I remember the first orchids I noticed, on an exposed very windy hill. They were *Microtis unifolia* and *Thelymitra longifolia*, a form that was always white and fairly stunted (no wonder). But it always opened and showed its conspicuous black column (unlike the huge bloated things we see here along bush tracks). Just across the bay there were rock outcrops above the Miramar golf course and among the rocks I saw my first *Pterostylis*, very low-growing with large flowers, I suppose *P. banksii*. And when I began to explore a bit further the Karori Stream was quite a good place for orchids (*Dendrobium* and *Earina mucronata*). But of course then the stream had koura in its pools and kidney-fern between the rocks. How different now!"

* Betty Seddon wrote (9 March), "Have just returned from two months away ...I had a trip on the *Geomarine* to the sub-antarctic islands, with Mark Hammond, from Discovery Maritime. What an adventure! While visiting Campbell and Auckland Islands we found a few orchids which was an added excitement to me.

"On the Campbell Islands I found

Lyperanthus antarcticus flowering profusely in any sheltered place. Also *Chiloglottis cornuta*, but mostly the flowers were over and the seed head swelling. A few faded flowers were seen. The plants were very pale and small, and not the usual lush green - due to the harsh climate I suppose. Found *Aporostylis bifolia* in good numbers, but this was also in seed, and no flowers were found. Lastly I found *Corybas trilobus* leaves under the scrub in the Camp Cove (Perseverance Harbour) track.

"On the Auckland Islands I found - *Lyperanthus antarcticus* flowering; *Chiloglottis cornuta* flowering and seed - a good lush patch under the rata forest; *Caladenia catenata* - tiny flowers in a small patch under the rata on the site of the old village Hardwicke, Port Ross; *Thelymitra cyanea* - flowering profusely along the tracks in Port Ross; *Corybas oblongus* - seed and a few flowers; *Corybas acuminatus* - in a damp situation near a stream up the West Arm of Cornley Harbour.

"It was a fascinating trip, but the Southern oceans rule supreme and there are always disappointments! The weather changed suddenly and we were unable to land on Enderby Island which was a big blow to us all. However, we did get in to Zodiac round some of the Snares. This only made us long to land there, but we did see the little all black tomtits and the friendly fernbirds and of course the Snares Crested Penguin, so were lucky I suppose.

"All in all it was a great experience. The rata was in flower at the Auckland Islands and some of the inlets with their

tumbling waterfalls, surrounded by a sea of scarlet and green, were a wonderful sight.”

See “Australian Notes” in this issue for a further note on sub-antarctic orchids - Ed.

* Bruce Irwin wrote in December that he had found *Acianthus viridis* in exactly the place where Dan Hatch found it half a century ago, near the Waitonga Falls on Ruapehu. Auckland Museum has a Jessie Brownlee watercolour, reproduced here. ⇒

* A new “Australasian Native Orchid Society of New Zealand” has been formed (Secretary John Brigham, 24 Hydra Place, Glen Eden, Auckland), and held its first show at Sunrae Orchids in Drury in December. Its aims (growing and showing) reinforce our own (looking and saving), and we intend to cooperate as far as possible. The Society meets monthly on the third Sunday at a location (published in its monthly Newsletter) between Hamilton and Warkworth. NZNOG members are invited to attend at any time. John Brigham writes, “One thing that was apparent at our show and probably at all shows is the lack of New

illustration 1. from colour sheet

Acianthus viridis, watercolour by Jessie Brownlee, reproduced with permission from Auckland Museum

Zealand native orchids entered either as exhibits for competition or just for display purposes. I understand that many species cannot be successfully grown in captivity; however, there are still quite a few which can. It was quite surprising how many people actually ask about New Zealand native orchids. Perhaps, although time of year might be a problem, your members may like to exhibit at our shows or be available to

talk to people who require specifics. Even photographs, literature etc would be a great advantage". Please contact John Brigham direct (09 8185813) if you can help.

* Pat Enright has made the first record of *Microtis oligantha* around Wellington: "11 December 94 Mt Kau Kau: *Prasophyllum colensoi* in flower on top. *Microtis oligantha* with the odd early flower very abundant on some of the lower slopes with *M. unifolia* much less common. Small patches of *Pterostylis montana* were found in bud, flowering and

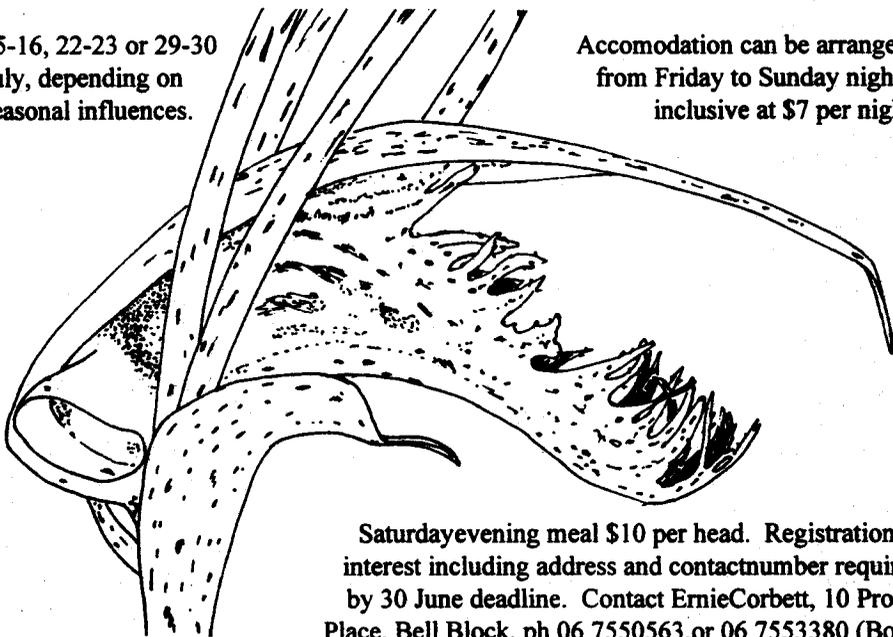
in seed depending on the aspect where they grew.

"15 October 95 Mt Kau Kau: a return trip was made to to verify *Microtis oligantha* and to look for any unusual specimens of *Thelymitra longifolia*. The *Microtis* is reasonably common on the south facing slopes, growing with *Ophioglossum coriacium* and some other small herbs in mossy patches or where there was not too much competition. The only unusual *Thelymitra longifolia* flower was a pink specimen, although even though it was a very hot day a few flowers were still closed up."

Field trip: the elusive *Corybas cryptanthus* in Taranaki

15-16, 22-23 or 29-30
July, depending on
seasonal influences.

Accommodation can be arranged
from Friday to Sunday nights
inclusive at \$7 per night.



Saturday evening meal \$10 per head. Registration of interest including address and contact number required by 30 June deadline. Contact Ernie Corbett, 10 Protea Place, Bell Block, ph 06 7550563, or 06 7553380 (Bob), or 06 7647589 (Margaret). Final date, locality map, etc will be mailed to registrants.

Orchid artists

William Henry Nicholls (1885-1951)

The great Australian orchidophile Rev. H.M.R. Rupp wrote of W.H. Nicholls -

"... the outstanding merit of his orchid paintings and drawings is their remarkable combination of the artistic sense with the scrupulous accuracy of the scientific botanist. He depicts his plants as they really are. Even FitzGerald now and then allowed the artist in him to over-rule the botanist; as when he gave us gracefully undulating stems which should really be quite straight. Nicholls never did this, yet his figures are always pleasing to the eye." [1]

Nicholls was the son of a schoolteacher, but had only primary school education, in Victoria. A bookbinder in his early years, he was left out of work by the great Depression, took up a position in the Footscray Municipal Gardens, and worked there all the rest of his life.

He joined a group called the Ramblers, and his interest in orchids was kindled. In 1923 he began his "Study of our Native Orchids", at first ink drawings, but as his interest developed he taught himself enough Latin to describe the plants formally, and he taught himself to paint them.

He wanted to update FitzGerald's work by painting life-size from live specimens, in their natural colours, all the known species of Australian orchids. In an obituary in 1951 Rupp wrote -

"I frankly confess in those days his ambition appeared to me unlikely ever to be attained. His personal experience was limited to certain areas of Victoria; he was in comparatively poor circumstances and had little influential backing, and his education was elementary I badly underestimated the man." [1].

In 1934 Nicholls wrote the orchid section for *Gems of the bush* [2], thirty-four pages written and illustrated in a week of spare time - eighty line drawings, seventy photographs and four colour plates. It was a masterpiece, and it set his reputation.

He wrote over a hundred papers for *The Victorian naturalist* and *Wild Life*, many of them describing new species. J.H. Willis wrote -

"His keen vision, patience and powers of concentration were quite amazing. Working at great speed, with a lens in one hand and a pencil or paint brush in the other, he would delineate the structural features of such delicate, pinhead-sized flowers as those of an *Oberonia*." [3]

But Nicholls's great work was *Orchids of Australia*. The Melbourne firm of Georgian House undertook the publication of the six hundred superb watercolours and text, in groups of twenty-four.

illustration 3 from colour sheet here

(keep illustrations 2, 4 and 5 for next issue)

Cryptostylis subulata, from a watercolour by W.H. Nicholls for the prospectus
for his 1951 Georgian House serial edition of *Orchids of Australia*

Twenty-five parts were to be spread over ten years. Nicholls did not see his work published, for he died when the first part was in press. For want of funds, further publication was suspended after the fourth part, and it was only in 1968 that Thomas Nelson Ltd arranged to publish all the paintings in a single volume, the text edited and updated by D.L. Jones and T.B. Muir. [4]

His friend J.H. Willis wrote that he was undoubtedly one of the three foremost figures in Australian orchidology this century (with Rupp and Rogers). [5]

Orchids of Australia is a magnificent book. William Henry Nicholls left a great legacy for students of Australasian orchids on both sides of the Tasman.

The prospectus for the intended Georgian House 1951 serial publication showed a painting of the tongue orchid *Cryptostylis subulata*, discovered in a Northland swamp by Digby Graham in

1975, and now established as a New Zealand species shared with Australia. This painting was not published in the 1951 series, nor in the 1969 "complete" edition, so the only copies are in the possession of those who, as Dan Hatch did, kept the prospectus. I am grateful to Dan for his permission to copy the plate.

References

1. Rupp H.M.R. Memoriam: William Henry Nicholls. *Australian orchid review*. September 1951.
2. Barrett C. *Gems of the bush. Sun nature book no.5*. Melbourne, Sun News-pictorial, 1934.
3. Willis J.H. Foreword to the Nelson edition of *Orchids of Australia*.
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5. Willis J.H. Obituary: William Henry Nicholls. *Wild Life*, May 1951.

Australian notes

1

Species, subspecies, sibling species, cryptic species & microspecies

Adapted from a paper by Bob Bates that first appeared in the Native Orchid Society of South Australia *Journal*, October 1993

Of course there are no hard and fast definitions for any of these terms. The fact that so many similar terms exist at all is an indication that nature doesn't follow

hard and fast rules.

Species (the term is singular *and* plural)

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 any of the following -

- geographical isolation
- different flowering times
- different pollinators
- sexual incompatibility (from mechanical, chemical or genetic barriers).

The orchid breeder, of course, finds ways to overcome most of these barriers, and can cross very different species.

Subspecies (i.e. "below the level" of species)

Subspecies are not well isolated genetically. They are usually geographically isolated but where their distribution overlaps they probably interbreed quite freely. At opposite ends of the range they may look very different, but usually it is hard to tell them apart. The Australian *Caladenia longicauda* has recently been divided into twelve subspecies (and the European late spider orchid *Ophrys sphegoides* has at least thirteen subspecies - Ed). They look similar, but are all to some degree isolated from each other geographically, by habitat preferences, or by flowering times. They probably all have the same pollinator, or at least share some of a suite of pollinators.

Form, variety

Most taxonomists these days are not keen

to use any classification below the level of species other than subspecies (*NZ taxonomists have not been keen even to identify subspecies - Ed*). The terms "form" and "variety" indicate that there is no genetic isolation at all. An albino form, or a hairy-leaved variety, for example, may have amongst its progeny coloured or smooth-leaved forms.

Sibling (sister) species

This term is used for species which are very difficult to tell apart but which are, nevertheless, well isolated genetically even when they occur together. Most likely they have very specific pollinators or are incompatible genetically. Examples are the Australians *Caladenia tensa*, *C. verrucosa*, and *C. stricta*: all orchids of the same shape and colouring. They all occur together in Monarto Conservation Park in about equal numbers, flowering at the same time; but hybrids are unknown because each has its own specific pollinator. Some of the Australian *Thelymitras* are sister species also (and the self-pollinating and insect-pollinated forms of *T. longifolia* in New Zealand may be seen as sibling species - though I am not sure where the different forms of *Corybas trilobus* fit in to this classification - Ed).

Cryptic species (cryptic means hidden)

These are really difficult ones to work out. Once again they are difficult to tell apart; so difficult in fact that most of them have probably not yet been recognised. It is of evolutionary benefit for a rare species to resemble a common one, so sometimes a quite distinct species

will "evolve" to look like another. This has given rise to all sorts of mimicry, well recognised in insects, where a harmless and tasty moth will look like a poisonous wasp. The mimic is always less common than the species mimicked. Recently in Australia some so-called forms of *Chiloglottis reflexa* have been found to be genetically isolated in that they have different pollinators - they are actually cryptic species, and are likely to be named one day.

Microspecies

The Australian *Prasophyllum fitzgeraldii* is apomictic - i.e. it sets seed asexually, so all plants are identical. But over the

years, through mutation or chance crossing with other species, a new apomictic form will arise. It looks different from the others and is, in turn, genetically isolated by apomixy. There are now dozens of different *P. fitzgeraldii* microspecies, perhaps differing in only one mutated gene. There is no real value in naming them all.

Hybrids

Many taxonomists believe it unnecessary to name hybrids (at least natural ones) especially if they are not put into cultivation. In Australia there are now about 200 recorded *Caladenia* hybrids. Imagine a name to learn for each.

2

Orchids of the Australian and New Zealand Sub-antarctic islands

This paper by the prolific Bob Bates appeared in the Wollongong and District Native Orchid Society *Bulletin* of August 1994; it first appeared in NOSSA *Journal* April 1980, and then in ANOS Victorian Group *Bulletin* in May 1990. It is still interesting, especially in view of the note, above, by Barbara Seddon, of her recent visit to the sub-antarctic islands.

When one considers the remarkable evolution of species on remote oceanic islands such as the Galapagos it at first comes as a surprise to discover that the widely separate sub-antarctic islands have no endemic flora of their own but rather possess an extension of the flora of the nearest large land mass. This is because periods of adverse climate cause almost total extinction of plants that have reached these bleak islands, necessitating introduction and re-introduction of

species from further north during warmer periods. Evolutionary development of species is halted.

Although winds and ocean currents are circumpolar in a westerly direction, there is very little transfer other than of grasses, in that direction. The reason for this is that transfer of species is affected mainly by migratory birds which annually move north-south, flying rapidly from island to island carrying mud and seeds on their feet. Because of these facts the orchids of

the Falkland and South Georgia Islands are the same species of *Habenaria* as found in southern America. The orchids of the Australian and New Zealand sub-antarctic islands are the same species, indeed because they are probably recent introductions (the islands are presently in a warm period) they are part of the same populations as the species of "mainland" New Zealand and Australia.

Due to the paucity of insects on the sub-antarctic islands the orchids are cleistogamous (self-pollinated), and because flowering may only occur in the milder years, vegetative reproduction will be more important than seeds - thus they are all colony formers.

The species

The most widespread species is *Corybas*, the New Zealand species with long filamentous sepals and petals giving them the name of "spider orchids". The widest ranging species is *C. macranthus* found on Campbell and Auckland Islands and extending to Macquarie Island, politically part of Australia but possessing the flora of southern New Zealand. *C. trilobus*, *C. oblongus* and *C. rivularis* also occur on Campbell and Auckland Islands. Whereas the Australian *Corybas* complete their life-cycles in the winter months, the sub-antarctic *Corybas* grow only in the summer months.

The most typical of the sub-antarctic orchids is *Lyperanthus antarcticus*, originally described from Auckland

Island and, despite its name, not occurring in Antarctica proper. Surprisingly three South Australian orchids do reach the sub-antarctic. Campbell Island (52° S) is in fact the type locality *Chiloglottis cornuta* where it is found in sphagnum bogs - the same type of environment it occurs in near Nangwarry and Mt McIntyre in South Australia's southeast! The *Thelymitra venosa* from Auckland Island are apparently of the same form as the plants of that species from the Mt Lofty Ranges. *Thelymitra longifolia* from the sub-antarctic is however, somewhat different from the local form. Another orchid common in the islands is *Aporostylis bifolia*, a plant midway between *Chiloglottis* and *Lyperanthus* and one orchid which does not appear to have evolved in the sub-antarctic. To complete the list we find *Townsonia viridis* (a species also found in sub-alpine Tasmania and now called *Acianthus viridis* (*Prasophyllum colensoi* (a plant similar to *P. alpinum* in Australia) and *Caladenia lyallii*.

It will be noted that all of the sub-antarctic species are terrestrial. However, no less than five epiphytes occur on Stewart Island, south of New Zealand's South Island (considerably further south than Tasmania). The moderating effect of a "warm" ocean current and the maritime environment probably accounts for this.

BACK TO BASICS

Iwitahi Native Orchid Weekend 8-10 December 1995

Last year we had a very successful seminar weekend. This year we would like to do something different and yet similar to what we have done in the past.

We would like to consider doing the following things and we would be happy to have your reaction to these.

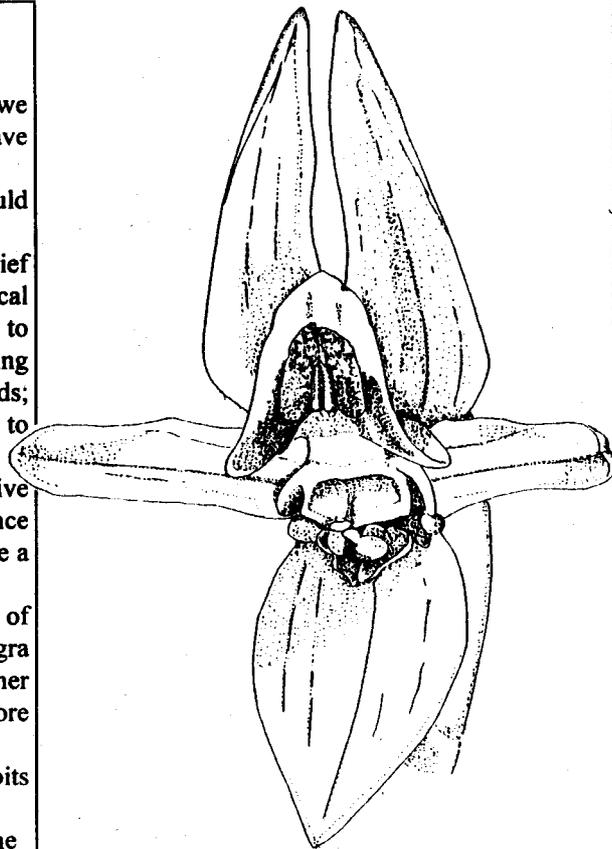
The Friday evening would be used to give two-four brief presentations which would be followed up with practical demonstrations/ workshops on the Saturday morning of how to monitor orchid colonies. These would cover such things as recording the positions of orchids within a plot/colony; pollination records; dissecting the flowers to study and learn the parts; be shown how to do drawing and photographic records.

[A good number of us amateurs have been looking at our native orchids for quite some time now and would now like to have guidance along the lines mentioned so that we can use our enthusiasm to make a better contribution to the study of our orchids].

Saturday afternoon we would like to utilise the collective pairs of eyes and do an "emu" parade through the four blocks of nigra adjoining the reserve to see what we can find. Even if it is not another colony of *C. valida* it is important that we find anything of note before it is too late.

Give folk the opportunity on Saturday evening to present their bits and pieces after the BBQ.

Sunday morning there will be jobs for them that are willing and the others can do the other. Trevor Nicholls, phone: 07-378 4813, 33 Hinekura Ave, Taupo 2730.



Prasophyllum colensoi