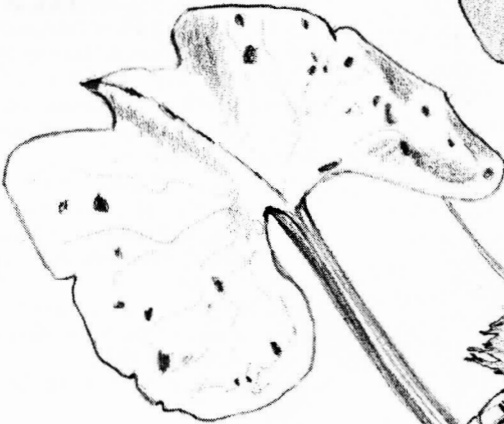
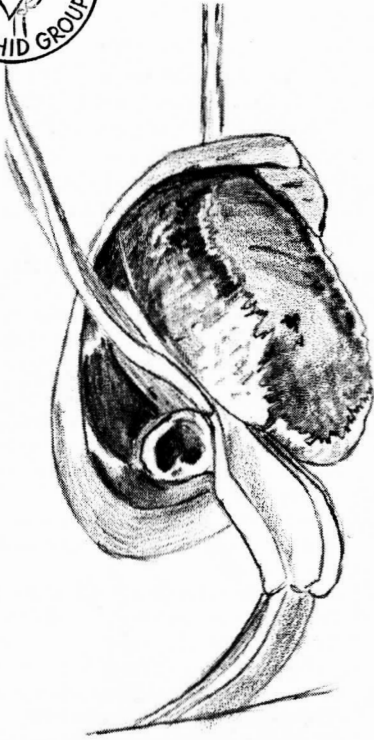


Corybas aff. *trilobus*
(*Corysanthes hypogaea*)

Wairarapa, September 2000.
"(The labellum has) ... 2-3 deep
lacinations or ragged lobes below,
with the sides much cut and jagged
and incurved...."

(William Colenso, 1884).



ISG

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From the editor

Allan Mere awarded to Bruce Irwin

In September Jessica Beever, President of the New Zealand Botanical Society, announced that the Allan Mere, presented annually by the New Zealand Botanical Society for outstanding contributions to botany in New Zealand, was this year awarded to James Bruce Irwin. The following citation is reproduced from the Society's *Newsletter* No. 61, p2.

"Bruce was nominated for the award by Ian St George and Eric Scanlen, supported by the New Zealand Native Orchid Group. His contribution, as a botanical artist and a researcher on native orchids, dates back to the 1930s. Bruce had a long and fruitful collaboration with Lucy B. Moore [1, 2, 3], beginning with work for Volume II of the *Flora of New Zealand* and culminating in *The Oxford Book of New Zealand Plants*. His exceptional skills in observing and portraying the intricate 3-dimensional structure of floral parts are well displayed in this latter publication, and numerous others to which he has contributed. Examples include his section on 'The structure of orchids' in *The New Zealand Orchids: natural history and cultivation* [4], and collaborative work with Dan Hatch [5, 6] Bruce Clarkson [7] and Brian Molloy [8]. Nor have his observational skills been confined to the comfort of his work-room - field work has always been an integral part of his research [9]. Dan Hatch describes him as having 'an eye for discovery' and refers to his 'genius with the pencil' [10].

"Two species of *Pterostylis* have been named for Bruce Irwin. The name *Pterostylis irsoniana* commemorates both Bruce Irwin and Owen Gibson. The species was described in 1950 by Dan Hatch [11],

who acknowledged 'the labours and enthusiasm of Messrs J.B. Irwin and O.E. Gibson, who between them have done much to elucidate the orchid flora of Mount Egmont'. *Pterostylis irwinii* D.L. Jones, Molloy & M.A. Clem., a species formerly known by the tag-name *Pterostylis* 'Erua', was described in 1997."

The presentation of the award to Bruce was made in association with the Auckland Botanical Society's Lucy Cranwell Lecture, at the Auckland Museum on Tuesday 3 October, 2000.

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A conservation issue: sowing your wild orchids

The 12 October issue of *Nature* carried a paper by Peter D Moore, titled "Seeds of doubt" [1]. He quoted Keller and others [2] who showed that attempts to sustain diminishing biological diversity by sowing the seeds of threatened wild plants can have adverse effects, by diluting and modifying local genetic resources of residual populations. This has implications not only for well-intentioned conservation efforts but also for ill-informed activities involving the introduction of orchid species to new sites.

Introduced plants, even those of the same species as local plants, may be poorly adapted to local conditions – the physical elements of the habitat and the local grazers, pollinators and pathogens. Keller and associates found that maladapted introduced plants crossed with local ones and reduced biomass, seed mass and survival in subsequent generations. The introduction of alien plants can thus make local ones less "fit".

"The introduction of fresh breeding stock into fragmented and isolated populations is often seen as a way of increasing genetic diversity... (but) the merits of such a policy can vary with the geographical distance from which introduced material is obtained and with the spatial variability in the genetic constitution of the species concerned," wrote Moore. Montalvo and Ellstrand [3] showed an inverse relationship between cumulative fitness of plants after alien introduction, and genetic distance (as measured by degrees of enzyme variation). In addition, genetic and geographical distance do not necessarily correlate well, so geographical proximity of introduced plants will not necessarily enhance the chances of success.

These observations seem not to apply to wind-pollinated outbreeding plants, which show little genetic variation over long distances. But they will certainly apply to self-pollinators which cross only occasionally, and to species pollinated by

insects that travel only short distances. That would include most of the NZ orchids.

Moore concluded, "The history of plant and animal introductions is littered with catastrophes," and urged caution in these activities. Well-intentioned conservationists who supplement dwindling local orchid populations with similar plants from distant sites, should be aware of the potential damage they pose to local orchids. Irresponsible vandals who introduce Australian orchids similar to our own into the New Zealand wild, should try to comprehend the enormity of the catastrophe they may unwittingly trigger.

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More on *Thelymitra pulchella*

Interestingly, specimens from Petrie's herbarium at Wellington have a number of sheets each labelled *Thelymitra caesia* Petrie, *Thelymitra pachyphylla* Cheeseman and *Thelymitra pulchella* Hook.f. The *T. caesia* have puffs of fine yellow cilia on the ends of flat column-arms; the *T. pachyphylla* have a few rather sparse cilia, and the *T. pulchella* have no cilia or fimbria. It is hard to be sure of the nature of the post-anther lobes, but those of *T. caesia* appear to be quite high, those of *T. pachyphylla* truncate and intermediate, and those of *T. pulchella* almost absent.

I think *T. pachyphylla* is a synonym for *T. fimbriata*, though I could not see the Type of that taxon as it was out on loan. If so, then Petrie at least agreed with my perception that these three forms currently included in *T. pulchella* are distinct.

A *Corybas* at WELT

There is a plant labelled by Cheeseman as *Corysanthes triloba* in Herb. Colenso. It is No. 6167, a duplicate of one sent to Kew between 1851 and 1865 (the date is unclear). Colenso's annotation reads, "Orchid: on wet mossy sides of a waterfall between Kahuaanake (Kauranaki) and Bare Island (south of Cape Kidnappers). A beautiful sight! To see so many there in one spot, flowering so vigorously. If this species should prove to be identical with 6158, it is curious that one should be in such a very contrary situation, high and dry." (There are no notes for 6158).

As one would expect from the habitat the specimen is in fact one of the Corybas rivularis group, probably C. "Waiouru" - Ed.

New group formed

Vinciane Dumont announced the following to the Orchid Specialist Group in October, "I would like to bring to your attention the creation of a new Foundation, 'La Fondation Orchidée', the goal of which is the protection, the study, the preservation of both indigenous and exotic botanical species, the conservation of their natural habitats, the reproduction and the promotion of artificially cultivated species, and the dissemination or orchid-related knowledge, including their biotopes and their culture.

"It is the Société Suisse d'Orchidophilie who offered the funds necessary.

"I accepted to take the Presidency.

"This Foundation was officially registered at the Geneva Registry of Commerce, on September 6th 2000.

"Our first project will be to participate in the reintroduction of *Cypripedium* in two sites located on the Massif of Chasseral, as part of the project prepared by Samuel Sprunger of the Botanical Gardens of Basel.

We will follow this project for at least ten years to make sure that it reaches its goals and that the results will last in time.

"Since our goals are in the exact line of the OSG, I wanted to inform you. In case a project needs some help, we will be happy to look at it and see if we can be of any help."

Rain and orchid numbers

A contributor to the NativeOrchids list wrote, "Last year I quoted a statement made by the Royal Botanic Gardens in Burlington, Ontario, Canada, saying that 'appearance of plants (of *Epipactis helleborine*) is strongly correlated ... with the amount of rainfall in the previous August and September'.

"Comparing my own observations of this species and the rainfall in the same area, I predicted 'still fewer shoots (100+) for the year 2000'. And in fact, this was what was seen, namely 147 shoots in 2000 as compared to 192 in 1999.

"The rainfall in the same months of the present year was very close to the average value (132 mm as compared to 124 mm); thus, using the same (probably too simple) linear relationship, a prediction for the next season will be a number of shoots slightly below average (185)."

Another responded, "Although I cannot remember the rainfall for the year previous, we have had a few years of dry seasons here in the northeast US. I work at Yale in New Haven, CT, and many of our buildings have foundation plantings that are watered by sprinklers or below-ground irrigation when sensors indicate water is needed. For two years now, I've noticed robust colonies of *Epipactis* appearing at these foundations. Of note, a pine bark shredded mulch is used as weed control around the shrubs.

"I can just hear those seeds embedding themselves in the rough bark surface of some pine several states north or west of us saying 'take us to Yale, please.'"

Will the real *Corybas trilobus* please own up?

(I am grateful to Brian Molloy for helpful comments).

In this Journal authors have repeatedly noted different forms, habitats and flowering times of the plants currently included in the "*Corybas trilobus* complex". This is an attempt to seek some clarity. First we must try to establish which form is the true bearer of the name: which is *Corybas trilobus sensu stricto*? Let us examine some history.

1853: In his *Flora novae zelandiae* JD Hooker described *Nematoceras triloba* from specimens from "Northern and Middle [South] Islands, damp woods. East Coast and interior, *Colensoi*".

Hooker described "a smaller plant than *N. macrantha*, with proportionally still longer thread-like lateral sepals and petals. Leaf petiolate, $\frac{3}{4}$ inch across, deeply cordate-reniform, trifid, rarely entire at the point; middle lobe acute. Peduncle shorter than the petiole, often much lengthened when in fruit. Perianth $\frac{1}{3}$ inch long; sepals 2 inches; petals half the length of the lateral sepals; upper sepals dilated and retuse at the point. Lip very large, of two parallel recurved lobes, and having two curved ears at the base; margins nearly entire. Column very small." (*My underlining*).

Brian Molloy, (*pers.comm.*) after reading a draft of this editorial, pointed out that in the 1864 *Handbook* Hooker wrote, "The Middle Island specimens alluded to in *FLN. Z.* I think are rather referable to *C. macrantha*, which differs in the much larger size, very coriaceous, rarely 3-lobed leaf." Thus he had described a mixed collection. Brian wrote, "The only collector named by Hooker in his original description was Colenso, and in my opinion it is reasonably safe to select one of Colenso's collections used by Hooker in 1853 as the lectotype or name bearer. At Kew there is one sheet with two Colenso collections: '2347 ?? *Acianthus Cape Palliser*' in Hooker's hand, and '161 *Acianthus 1847 Colenso East Coast N. Zealand*' also in Hooker's hand. In my

opinion, and that of my colleagues, the latter is the more suitable lectotype."

1864: In his *Handbook of the NZ flora* Hooker changed the generic name to *Corysanthes*, recognising the plants were similar to the Malayan ones. He expanded a little on his specific description, "Leaf $\frac{3}{4}$ - $1\frac{1}{4}$ in. diam., membranous, orbicular-reniform, 3-lobed at the very tip; middle lobe acute; petiole $\frac{1}{2}$ - 3 in. long. Peduncle sometimes 8 in. long after flowering. Flower $\frac{1}{3}$ in. long. Lateral sepals and petals filiform, sometimes 2 in. long, 5 times longer than the lip; upper dilated and obtuse at the tip. Lip very large, of 2 large recurved lobes, margins nearly entire. Column very small." He had seen plants from "Northern Island: damp woods, east coast, Cape Palliser, Cape Titokura, etc, *Colenso*; Auckland, *Sinclair*; Otago, *Hector* and *Buchanan*."

Hooker was again describing a mixed collection of North and South Island plants with 5cm sepals, the flowers usually below the leaves, the margins of the labella entire (continuous, completely lacking teeth), the dorsal sepal tips wide and blunt or notched. The flowers were just less than a centimetre long, the stalked (heart-shaped, round, kidney-shaped) leaves up to 3cm wide.

1884: Colenso described *Corysanthes hypogaea* from September-flowering specimens in the Ruahines near Norsewood. It was he who had originally sent *Corybas trilobus* to Hooker and he acknowledged this was similar, but he knew it was distinct. By now he was describing his own new taxa, though in this case he did send the specimens to Kew. He wrote, "*Plant* very small, terrestrial, tender, succulent; *leaf* single, 6-8 lines diameter, membranous, shining, much veined, veins largely anastomosing with longitudinal dots in the interspaces, cordate-reniform, 3-lobed at tip, middle lobe produced, acute acuminate, side margins sinuate with a single notch on both sides near base, auricles large, distant, subhastate, very blunt; light green above, midrib and marginal spots purple; silvery below and sometimes dashed with a purple hue; *petiole* $\frac{1}{2}$ - $\frac{1}{2}$ inches long, white, often pinkish,

with a sheathing truncate bract at base; *peduncle* short, 1-2 lines long, bibracteate close to base of flower, the front bract much smaller linear, the hind one ovate-oblong, both obtuse; *flowers* 3-4 lines diameter, much veined, dorsal sepal arched, closely clasping, subobovate-spathulate, narrowest at base, rounded and slightly sinuate or subapiculate at apex, green with a purple median line; *lateral sepals* and *petals* linear acuminate, very narrow filiform, upper pair $\frac{3}{4}$ inch long, lower pair hair-like, 4 lines long; *lip* large, dark blood-red above with darker stripes, greenish below spotted with red, bi-lobed at top, lobes rounded entire, 2-3 deep lacinations or ragged lobes below, with the sides much cut and jagged and incurved, a delicate circular bordered ear-like aperture on both sides immediately behind bases of petals."

1906: Cheeseman lumped *Corysanthes hypogaea* with *C. triloba* in his *Manual of the NZ flora*.

1970: Moore was mystified about Colenso's description of the edges of the labellum of *Corysanthes hypogaea*: "The green, purple and dark blood-red colours of the flowers are those of *Corybas trilobus*, but the margin of the labellum could have been described for *C. cryptanthus*"; they often grow together and she seems to have wondered if Colenso had had a mixed bag. Molloy later examined the type at Kew and labelled it with his opinion it was *Corybas trilobus* s.s, thus confirming it was not *C. cryptanthus*.

I have examined typescripts of Colenso's documents and specimens in his herbarium at Te Papa. Recent work there by the late Bruce G Hamlin has correlated the numbers he used and the notes he wrote when sending his specimens to Hooker at Kew, with extant specimens in his own herbarium (Colenso kept specimens of only a tenth of the number he sent to Kew).

No. 161 is referred to in a list of botanical specimens added to a letter from Colenso to Hooker dated July 1846, "161 ?*Acianthus*,

found at last!! detected (leaf only) in 1837 in banks nr the sea, Owae, E. Coast – which spot I often visited but, alas! in vain. – and again, (dry capsule) vide, No. 16, 'Journal', - and now, in flower, shaded damp spots, wood, with Nos. 154 & 159.' 154 and 159 were collected "from forest, hills, between Wareama, & the head of Wairarapa Valley" (i.e. the country to the northeast of Masterton). There is no specimen in Herb. Colenso at WELT.

In the list of plants he began in June 1850 and completed in January 1851 is No. 2347. There is a specimen in Wellington and it is annotated "*Acianthus?* Wet thickets, E. coast, between Castle Point and Cape Palliser." It is *Corybas trilobus*, identified as such by Cheeseman. There are 8 flowering plants and one nonflowering plant on the sheet; the leaves are for the most part as long as they are wide, though some are wider than long; the flower is always well below the leaf, and the edge of the labellum appears not to be notched or ragged.

This is not the small early-flowering form we have been calling *Corybas trilobus* in the first edition of the *Field guide* nor that identified as such in my *Nature guide*. It is much more likely to be a form with a smooth-edged labellum I have seen flowering in September in the Wairarapa and around Wellington.

This year I found what I think is another plant in the Wairarapa, perhaps 100km south of Norsewood, flowering in late August and early September; I had found the leaves and dried-off flowers last year, and was struck by their similarity (in habitat and structure) to the type specimens of *Corysanthes hypogaea* at Kew. Colenso's description is perfect for them, the distinguishing features (but are they significant?) from Hooker's *Corybas trilobus* being

- the labellum's striking "deep lacinations or ragged lobes below, with the sides much jagged and incurved", compared with the "entire" labellar margins of *C. trilobus*,
- the small (<2cm across x 1.5cm long) very kidney-shaped leaf, often veined, the

wavy notched side margins, silvery and dashed with purple below, close to the surface,

- the tiny flower with its short sepals and petals, buried, or almost so, in the moss and leaf litter.

What have we got then?

1. *Corybas trilobus* is a September-flowering form, its flower usually below the leaf, its labellum margins "entire" (neither toothed, notched, lacinate nor jagged).
2. *Corysanthes hypogaea* is a September-flowering form, its flower below the leaf, growing in association with beech, often with moss, the flower often just at or below the surface of the moss and litter, the margins of its labellum jagged and lacinate, the leaf usually wider than long.
3. The small early-flowering form with its flower above the 1cm leaf is an undescribed taxon. Its appearance in July, each leaf associated with a flower, followed after flowering by the appearance of many more bare leaves, presumably evidence of vegetative spread, appears unusual.
4. *Corybas* "Trotters" is an undescribed taxon. It is a large plant, the leaf often 5cm across, its edges notched, the large (1.5cm) almost black flower below the leaf, flowering in October.
5. *Corybas* "round-leaf" is an undescribed taxon. It has a habitat and leaf more like those of the *C. rivularis* group, but a flower like that of *C. trilobus*; alongside rivulets and in wet streamsides, Ruapehu only.
6. There is a range of other forms, some apparently distinct, others requiring clarification. Among them are white forms, forms with extended sharp-pointed dorsal sepals (some perhaps hybrids with members of the *C. rivularis* group), a dark November-flowering round-leafed form from the northern South Island, the curious forms from Iwitahi, and others.

Soon the molecular biologists will be able to help us.

WATCH OUT FOR THE NEW EDITION OF THE NZNOG FIELD GUIDE,

EXTENSIVELY
REVISED,

WRITTEN AND DRAWN BY

IAN ST GEORGE,
BRUCE IRWIN,
DAN HATCH AND
ERIC SCANLEN,

AVAILABLE IN
THE NEW YEAR.

STOP PRESS

Another new *Corybas* aff. *trilobus* from E. Wairarapa

On 5 November I visited Craigie Lea toward the coast from Te Wharau in the eastern Wairarapa with Pat Enright and Neville and Kathy Henderson staying in Masterton from Brighton, England.

Our guests were delighted to see such a range of orchids all in one habitat, and especially *Caladenia variegata*, *C. chlorostyla* and *C. atradenia* in full flower, as well as *Corybas macranthus*, *C. "Trotters"*; and, along with the last in its usual streamside habitat, a strange *Corybas* aff. *trilobus*, round-leafed, the flower hairy, pale red and white, scented, its dorsal sepal notched, a dead fungus gnat jammed between the labellar lobes of one flower.

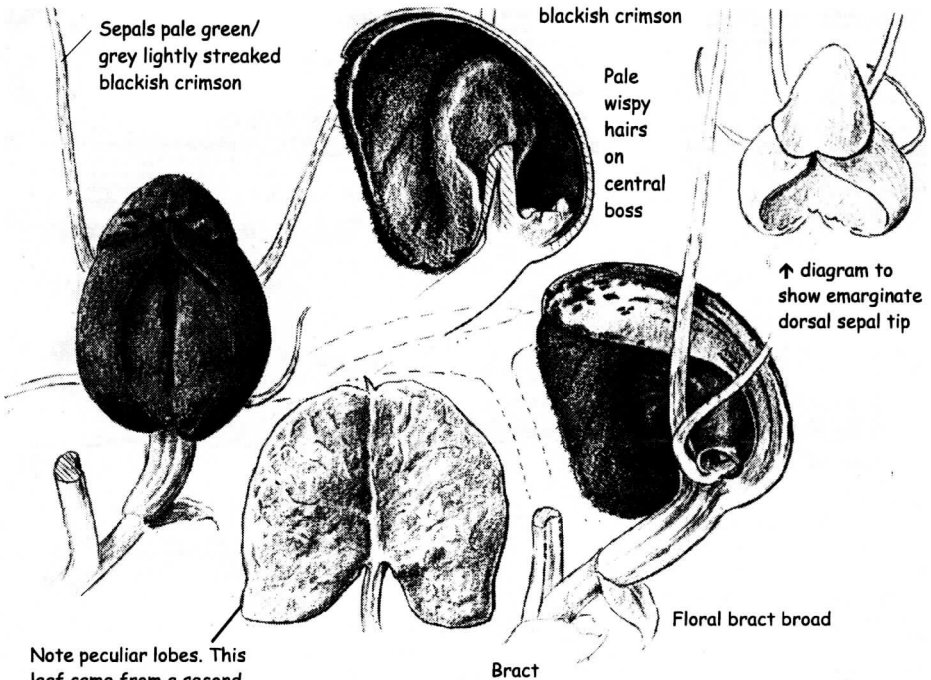
Apart from the colour, it looks much the same taxon as that sketched by Bruce Irwin on page 8 of this issue.

Drawings by Bruce Irwin

Coincidentally with the editor's ponderings on the nature of the *Corybas trilobus* variations, Bruce Irwin posted him a couple of sheets of sketches of different forms he had been sent. The sketches are reproduced here. There is the very late November-flowering Wairau form on this page; then there is *Corybas* "Trotters", and then a September Wairarapa plant which the editor thinks is *Corysanthes hypogaea*. The notes are Bruce's.

NOTE VERY PROMINENT DRAINAGE CHANNEL

Central boss dull olive, remainder of labellum blackish crimson



Note peculiar lobes. This leaf came from a second flower. Midlobe represented by apiculus: blade \pm absent.

Labellum: dark olive/black outer surface, inner lighter dull olive with magenta fuzz except near c/l. Matt red/black surface minutely hairy

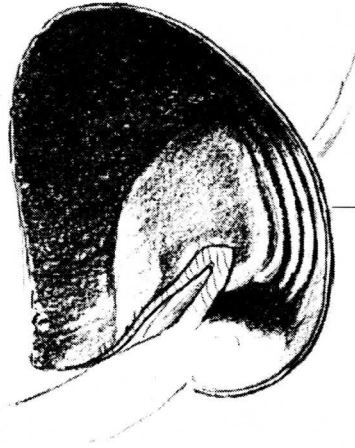
An almost black form of *Corybas trilobus* from Dip Flat, Upper Wairau, Marlborough, sent 23 Nov '98 by Graeme Jane

Corybas "Trotters" collected by Pat Enright c. 10 Oct '99

More or less rugulose, like black avocado skin

Dark red/black fine lines towards rear of labellum

Margins surprisingly regular; not or only very finely fringed



Darker striae apparently NOT proud on either inner or outer surfaces

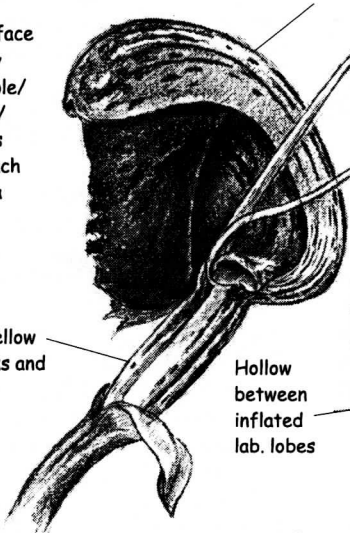
Small very dark form from Wairarapa, Pat Enright, collected about 22 Sept '00.

Dorsal dull olive grey/green with purplish striations and blobs

Smooth outer surface of labellum; wholly dark blackish purple/crimson with grey/green central boss (inside throat) (each surface cell with a glint of highlight appearing almost white).

Ovary greenish/yellow with purple streaks and infusion

Peduncle almost uniformly brownish/purple



Deep blackish/red

Dark blackish crimson with raised ribs which reflect light

Greenish quite dark grey shading to dull blackish crimson,

Virtually white

Very dark black crimson

Hollow between inflated lab. lobes

Lat. sepal





Notes, letters, questions, comments

Peter de Lange wrote (10 August), "I had a great travel back (from Wellington) looking at Kanuka around the foothills of the Ruahine Range (Taihape Side - Colenso's old turf). Saw plenty of *Corybas papa*, *C. iridescens*, *C. orbiculatus* (bucket loads!!!), also a few *C. rivularis* type things which I will need to check out against Bruce's tag names.

I can also "botanically" confirm *C. papa* from Mt Pirongia! On BASALT NOT calcareous siltstone (but still dripping wet). Here it grew with *C. orbiculatus* - a nice find as its scarce up our way (at least I think it is).

My motel unit in Stratford provided a nice vista - *Winika cunninghamii*, *Earina aestivalis*, *E. autumnalis* and *E. mucronata* all together on an old ?elm. Owner was unimpressed but told me they were "natural" - looked planted to me.

Anyway - back home to a mountain of kanuka specimens. On that front found *Corybas oblongus*, *C. cheesemanii*, and *Pterostylis trullifolia* in an old kanuka stand at the back of Waikumete Cemetery, New Lynn, Auckland - nice to see old friends hanging on in the filthy city.

Peter de Lange wrote (20 September), "Had a day on **Great Barrier Island** last Friday - to check out proposed modifications to Okiwi Airstrip. In so doing I had another wander across Hikarimata (Mt Hobson) and updated my orchid list for the island. One pleasant surprise was *Caladenia alata* - hitherto I have only seen this up at Te Aupouri but, thanks to Ian's Book and Eric's photo therein I could definitely identify the beast - red barred labellar disc, 2 rows of orange tipped calli, yellow midlobe with recurved orange apex and one orange callus either side of the midlobe. Great col-

ours ranging from white through lilac to pink. Very, very common (incidentally I found the same species yesterday at Waikumete Cemetery - so it's in Auckland as well - though it's scarce at Waikumete. Anyway here's what I have seen on GBI since I first started looking at orchids out there in 1989."

Acianthus sinclairii

Bulbophyllum pygmaeum

B. tuberculatum

Caladenia alata

C. atradenia

C. bartlettii

C. chlorostyla

C. pusilla

Chiloglottis cornuta

Corybas acuminatus

C. cheesemanii

C. macranthus

C. oblongus

C. trilobus agg.

Danhatchia australis

Drymoanthus adversus

Earina aestivalis

E. autumnalis

E. mucronata

Gastrodia cunninghamii - I have not seen

but there is a recent herbarium record in

AKU!

G. aff. sesamoides

Microtis unifolia

M. aff. parviflora

Orthoceras novae-zeelandiae

Genoplesium pumilium

Prasophyllum aff. colensoi

P. aff. patens - not seen only known from

Kirk record in the 1800s.

Pterostylis agathicola

P. alobula

P. banksii

P. brumalis

P. cardiostigma

P. paludosa
P. trullifolia
P. aff. graminea
Spiranthes novaezelandiae – not seen but
seen herbarium specimens
Thelymitra aemula
T. carnea
T. colensoi
T. formosa

T. pulchella agg.
T. tholiformis
T. aff. ixioides
T. aff. pauciflora
Winika cunninghamii

“This is – of course – a first approximation. I would be very surprised if there were not more *Corybas* (esp. *C. rivularis* agg.) and *Pterostylis* “things” lurking out there.”

Botanists rescue British orchid from extinction

From the *Evening Standard*, September 2000, by Paul Stokes

Britain's rarest wild flower has bloomed in North Yorkshire after being nurtured by botanists for 11 years.

The red and yellow lady's slipper orchid is now under 24-hour guard at an undisclosed location to protect it from thieves, who could be paid thousands of pounds for the specimen by unscrupulous collectors.

The plant was grown from a seedling in a laboratory and replanted in the wild by conservationists in autumn 1989. It had been taken from the only other known example of the lady's slipper orchid, a plant which has been guarded elsewhere in England since the 1970s.

Flowers from the plant were handpollinated and seed capsules sent to the Sainsbury Orchid Conservation Project at the Royal Botanical Gardens at Kew.

There they were micro-propagated and in 1989 six of the seedlings were planted in North Yorkshire.

The new lady's slipper is a survivor of one of those seeds, which are vulnerable to many predators such as slugs, snails, voles and rabbits.

The orchid's growth has been closely monitored and experts hope more seedlings can be established in the wild.

English Nature has been to the forefront of the project to save the lady's slipper and has identified a further 600 wild plant species in need of priority protection.

Ian Taylor, from English Nature, said: “The orchid actually bloomed as long ago as June but we kept it quiet until now as those in the know might have used the information as a clue to its possible location.

“It was a major milestone after more than a decade of work and we hope the next step is to have some young plants appearing.

“They are such stunning flowers – different, exotic, sometimes sinister, sometimes beautiful.

“It is almost as if they don't belong in the British countryside but somewhere like the Tropics. But they are here and their rarity is like a precious jewel.”

Attempts are under way to grow more lady's slippers from seedlings at two public viewing sites in Yorkshire, but it is expected to be years before they bloom.

English Nature's species recovery programme has so far saved 45 endangered plant species from extinction and in the past 10 years has spent more than 1 million pounds on direct recovery work.

Anne Fraser wrote (September 2000), "You will be interested to hear that the recent trip to Te Paki area by Orchid Group members was successful regarding the observation of *Thelymitra matthewsii*.

"A new site was recorded for the Far North, near the coast, between Twilight Beach and Cape Maria van Diemen. There are large areas of suitable habitat here, but as we did the round trip (a fairly long walk) we were not able to cover all the likely sites. So, despite a stiff trek across sandhills and a very boggy swamp, I will certainly be checking them out in the future. Four plants were seen in two sites.

"In the Shenstone Block more open areas were accessed and six new population sites were recorded. Some of these areas only held one plant, illustrating the almost ephemeral character of this species, and its ability to colonise suitable available habitat. Some early sites previously recording plants have none this year.

"Although the areas covered were quite extensive a good number of plants were seen, and the presence of satisfactory numbers of plants not flowering this season (presumably young plants) bodes well for future populations. Rubbish Dump hill site also has a nice group of plants again, but only in the higher site.

"A few open flowers were seen, and several in which the ovary had begun to swell. Early flowering or self-fertilisation? The opinion of the group was that the very wet season experienced in the North has not done the orchids any harm, and all plants looked healthy.

"However, despite the almost universal occurrence of *T. matthewsii* in suitable habitat in the Shenstone Block, very real threats to that habitat exist and recognition of them should be to the fore always, in our enjoyment of its presence.

"The extension of localities in new site recordings, always possible to my mind, is very satisfactory and because it is more remote, it is possibly more secure."

Orchids saved from extinction

From the *Evening Standard*, September 2000.

The future of two rare orchids has been secured, thanks to the vigilance of wardens at nature reserves. The military orchid, so-called because it resembles a soldier, was thought to be extinct in the UK at the beginning of the last century, but was rediscovered in the 1940s.

Now one of its last remaining homes is Homefield Wood in Buckinghamshire, and its numbers have jumped from 37 in 1984 to 180 this year.

The monkey orchid, a close relation of the military orchid, has always been rare in the UK. It has been restricted to the Thames Valley since the 1600s. It can now be found on only three sites but numbers have risen from 60 to more than 300 in the past 10 years.

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Have a happy and safe
festive season, everybody

Close relations: orchids like ours

The Great Sun Orchid (*Thelymitra grandiflora*), water colour by WH Nicholls, about 1933, from Charles Barrett's *Gems of the bush*, (Sun Nature Book No.5), published by the Sun News-Pictorial, Melbourne, 1934. (*Thelymitra grandiflora* = *T. aristata*).





Original papers

Thelymitra hatchii "Waitere"

By Margaret Menzies, Omoana, Taranaki

I first found two *Thelymitra* plants on the Waitere Track at Omoana, after the land had been planted in pine trees and stock was kept out of the block. Sheep love eating orchid plants it seems. It was such a thrill to see such brightly coloured flowers and of course, I thought I had found something new and unique.

First find 27 Dec 1994. Two mature plants, one 450mm tall and leaf 300mm in length; the other close by and similar. Ten flowers and eight flowers, 2 to 3 flowers open on each at a time; five plants in a close area. Waitere Track is 400m in altitude and the bank is facing east. The plants were on a slip of rubble about 1m high in the side of the bank and seedlings grew amongst the clumps of soil. As I didn't have a camera in 1994, I sketched the flower and coloured it as accurately as I could. The colour is the same as this years' photo. I also sent a pickled flower to Brian Molloy (who identified it as *T. hatchii*) and I sent one fresh flower to Bruce Irwin who

seemed to think it was a *T. hatchii* hybrid. Val Smith and Bob Talbot arrived to photograph it another year but it was not warm enough to open.

29 Dec 99. We went to Omoana to muster in sheep off the block and luckily enough I took my camera in case the *Thelymitra* was still intact. The seedlings had been grazed off the slip but out of four mature plants on the bank, there was one with four flowers! By about 10 or 11am, two had opened wide for my camera as you can see in the figure. I didn't notice any perfume nor did I get back to check on seed-heads but next time back there were a lot of seedlings around the slip so I collected three, in danger of being trodden on and these are doing well in a pot at home now, up to about 75mm tall. Seedlings seemed to grow with ease on the slip. Allan Ducker has three from a previous visit and others have collected them too which is just as well because the slip has now been graded off to make way for forestry traffic.

WITAHĪ 2000

The annual field days will be held this year on Friday evening to Sunday 8 - 10 December.

Contact Trevor Nicholls for details: 33 Hinekura Ave, Taupo 2730.

Phone: 07 378 4813.

email: nicholls@reap.org.nz.

Illustrations opposite

Top: *Thelymitra hatchii* "Waitere".

Figs for "The Column" (see p. 15 et seq.)

Anticlockwise from middle left:

Fig. 1. Putative hybrid *P. agathicola*/ aff. *graminea* at Bream tail Reserve.

Fig. 2. *P. "brumobula"* with insensitive labellum.

Fig. 3. Two juvenile rosettes of *P. "brumobula"* showing net veining as in *P. trullifolia*.

Fig. 4. *Corybas "aestivalis"* showing bed of dark calli inside the labellum.

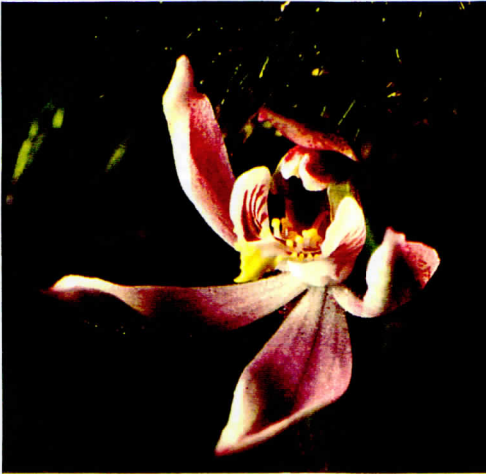




Fig

5 5
6 7
8





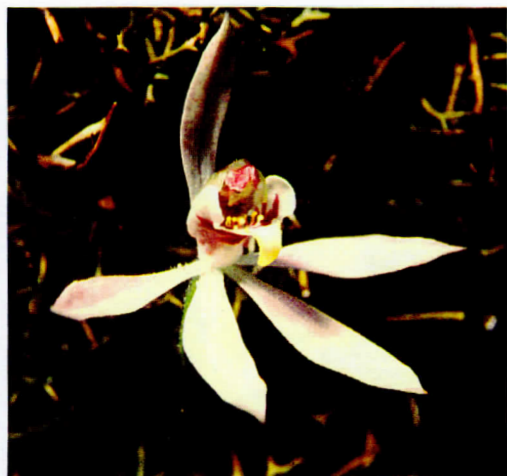
Illustrations above: *Anticlockwise from top left:*

Fig. 9. Twin flowered *Corybas* "aestivalis" in the Shenstone Block.

Fig. 10. *Caladenia* aff. *fuscata* from the Shenstone Block

Fig. 11. *Thelymitra imberbis*, a first for the Shenstone Block

Fig. 12. *Thelymitra* aff. *longifolia*, yellow fascia fading to orange in maturity



Fig

13 14
17 15
16



The column: Eric Scanlen *T. matt.* at Te Paki September 2000

Boring *Thelymitra matthewsii* demanded its annual flowering check so Anne Fraser drove all day from Ongarue on 1 September to direct the survey. Margaret Menzies, Allan Ducker and the Column stopped at Bream Tail Reserve to find a fine *Caladenia atradenia* already open plus an hybrid(?) *Pterostylis* aff. *graminealagathicola* (Fig. 1) between colonies of the putative parents. NB. *P.* aff. *graminea* is said to be the normal northern taxon.

2 Sept. broke fine at Te Paki after a night of starry splendour that we bright-lights slaves never cease to rejoice in. The four headed up Cheeseman Track to Prime Site in the Shenstone Block, slashing back the *Hakea sericea* with the Column's trusty hook to make it negotiable. A well checked, bare iron pan area, near the beginning, yielded its first *T. matthewsii* bud to sharp eyed Margaret; much to the Column's chagrin because he had just had a fruitless look around it for the umpteenth time. Up at Prime Site, numbers of mature buds were found, some 25% with

swelling ovaries obviously past flowering; as early as 2 September? Some plants were new (from dormant tubers?), outside the marker squares of sticks and some squares were empty! Notably the bud and corkscrew seedling from July 1998 [J68 p18] which had both flowered in 1999 [J73 p18] were now absent (or dormant?) This pattern was repeated several times indicating that plants may be seedlings one year, flower for one or two following years then disappear. This closely follows Bruce Irwin's hypothesis in J67 p16. The temptation to uncover tubers was firmly resisted because the species faces enough difficulties surviving in this harsh habitat without that. Poor sites had no seedlings but several good sites had 2 or 3 seedlings per mature plant and Anne was as busy as a clucky chook recording all the details.

Allan and the Column set off down Pink Track (flagged last year with pink ribbon) cutting back the offensive hakea and leading the sharp eyed girls to two more iron pans with 1 or 2 *T. matt.* flower buds and seedlings. The track makers grimaced at each new triumphant yell, having missed all of these plants as they passed!

Caladenia "speckles" [J74 Fig 9] were all in leaf and the field party had learned, from Margaret's photo that Anne's find [J74 p17] from near the lake on Shenstone Track, had also been *C.* "speckles". Allan's hunt on the divide [J74 p17] had also uncovered this upstart, it transpired, at the bush overlooking Lake Ngakeketa and he has video of it at Kaimaumuau giving it fairly valid claim as a distinct taxon. It has some similarities with the earlier flowering *C. alata*, [J65 p16] both having out-thrust, pointed, lateral sepals and solitary marginal calli at the base of the mid-lobe but *C. alata's* midlobe has a rounded,

Illustrations opposite

Top:

Fig. 5. 3-D pair of *Thelymitra matthewsii* showing 4 part pollinia. Tell your left eye to look at the left picture and your right eye to look at the right picture (a matt black card between will help) then see in full depth just how the flower parts are arrayed.

Clockwise from middle left:

Fig. 6. *Pterostylis agathicola* sometimes have two flowers at Wharekawa.

Fig. 7. *Pterostylis agathicola* labellum tip, Wharekawa form.

Fig. 8. *Cyrtostylis oblonga* albino form on the left and normal form on the right.

golden tip folded under where *C. "speckles"* has a pointed yellowish tip turned down a little. *C. alata's* marginal calli are broad, flat and golden (if present) where *C. "speckles"* are long, slender and plain. Flowers on *C. "speckles"* will be eagerly sought in the October visit.

Getting back to Pink Track, it was soon reopened to the Shenstone Track near Fri 1 [J69 p27] and the flagging spirits rejoiced in the 2km reduction in tramping thereby achieved. Cheeseman Track already lops 1km off the round trip. The same pattern emerged at Fri 1 of some new plants and some absent (from old squares of sticks) and the Column had the rare opportunity of gloating over plants that the girls had missed. Allan and Margaret sought out the No. 1 colony of *P. tasmanica* to check for *P. puberula*. Whoops and hollers soon had Anne and the Column following suit on a wild pterostylis chase but only deflated expectations and *P. tasmanica* could be found in short and tall bud, some with buds looping around into the first bract axil as this colony is wont to do. Curiously this *P. tasmanica* colony thrives in mature gorse: not a common habitat for orchids which usually eschew gorse's soil nitrogen. The team had to rest up a little, after a hard day, before facing the scrumptious Parengarenga oysters and other gourmet delights at Waitiki Landing that night.

Heavy rain on Sunday morning meant more research on Allan's ever increasing and almost legendary video close-ups of orchids new and old but no trace of *P. puberula* could be found here either. Hewy relented in the afternoon to let the team have a close look at the curious pterostylis colony on the high, kanuka covered bank, above the Shenstone waterfall. It is the same *P. "brumobula"* seen at Wharekawa on 4 August. The flush of flowering had passed (3 Sept.) but numerous fresh blooms remained. The down-turned dorsal sepal, wide lateral petals and rod-like dark labellum (Fig. 2) spoke volumes for *P. brumalis* but the Veed sinus to the lateral

sepals said *P. alobula* and the juvenile rosettes with definite net-veining (Fig. 3) were reminiscent of *P. trullifolia*. This is the same taxon that has been confusing the experts here and at the Kauri Block and at Higgin's farm at Wharekawa, 350km to the south. In all three places, *P. "brumobula"* holds sway with no *P. brumalis* or *P. alobula* present so hybridisation seems unlikely. Any hypotheses out there? How about *P. "brumobula"* being the lost link for these three related pterostylis species with $2n = 40$ chromosomes? Okay, it was just a wild thought! Notice the moss in Fig. 2 that the Column grabbed for background — and uncovered one pearl-like tuber of a *Cladonia* and one spent *Corybas cryptostylis* flower! Quite fertile orchid country here in the Shenstone Block. For the record, the blob of moss was replaced with all due care after the filming.

The nearby colony of *Corybas "aestivalis"* (Fig. 4) also received video attention. This solitary Shenstone colony thrives along 13m of reed-choked stream bank, never more than ½m above water level. Numerous flowers were wide open (3 Sept.) so early, and some were spent already. Allan's video picked up the maroon cilia inside the labellum that had separated this taxon from *C. oblongus* for H. B. Matthews [J61 p16]. It was a good year for it here where the regular form of *C. oblongus* has not been reported. (N.B. two weeks later, on 17 Sept., at Mangatangi Dam in the Hunuas, the first *C. oblongus* buds were just unravelling their filiform tepals.)

4 Sept. The run to Cape Maria Van Diemen became a must because Anne and the Column had long looked at the high sandy hills thereabouts as possible *T. matthewsii* country. This beautiful piece of NZ has to be tramped to be appreciated. Te Werahi Beach is superb, isolated, wilderness! The dratted stream was up though and pinkies had to get wet to keep socks and boots dry in its crossing. Herangi Hill led the team away from the NZ Walkway

but *T. matthewsii* was missing. Nor was it on strips of iron pan below the Walkway further south. But a stop for lunch on mattresses of flowering manuka, driven flat by the westerly gales here, seemed incongruous on this calm fine day especially with Allan chatting to his beloved on the yuppy 'phone. Getting nearer to Twilight Beach, Aussie golden bell frogs croaked in chorus from a restiad swamp at the foot of a vast iron pan dome. One of us, who shall remain unnamed, called out that he had found a *Thelymitra carnea*, already in seed. Margaret checked it out followed by Anne and the Column to see a dinkum *T. matthewsii*, green corkscrew leaf and all! So it was here. An hour spent quartering part of the dome turned up two more seed heads to Margaret's keen eye causing muted celebration. None of these plants were more than twenty paces from the Walkway but much of this iron pan is too exposed to the westerly gales to let even much hakea take root so the chances of much *T. matthewsii* here are slim indeed. The track from Twilight Beach (more spectacular raw wilderness) went from desert sands to underwater from the flooded Te Werahi stream. Negotiating the flooded track plus the stream crossing then the slog up the puggy pasture saw four very weary souls climbing thankfully into the trusty Carona for a quiet run to where? Rubbish Dump Hill of course, just up the road.

Ernie's patch of *T. matthewsii* had increased and sported numerous corkscrew seedlings but Ian's patch was dormant. The top *P. tasmanica* site proved barren of *P. puberula* but at least we satisfied ourselves that having *P. tasmanica* does not guarantee *P. puberula* although the reverse may be true. Allan and the Column suckered for the dishes that night but it was worth it for the great dinner that the girls rustled up back at the quarters.

5 Sept. had Allan out at daybreak to hakea-slash Allans Track, linking Shenstone and Pink Tracks mid loop. The spiny Aussie

Hakea sericea forms impenetrable barriers especially around the iron-pan where *T. matthewsii* resides so the long handled slasher was at last giving the team access to these long sought sites. When the Column stumped unenthusiastically onto the scene, Allan was jubilantly erecting a barricade on Shenstone Track to direct the rest of us up to his latest find, another *T. matthewsii* on the first iron pan he had encountered. Good value. The girls weren't far behind having had to arrange care for "Cattl", Anne's latest stray cat, would you believe? As usual, they managed to put the lads to shame by turning up several more of these rarities (orchids, not cats) there and on the next ridge of iron pan and also spotted another colony of *P. tasmanica* on this 800m track. That makes four colonies in 2 square kilometres of the Shenstone Block where the only other green-hood reported is *P. "brumobula"*! But time was waiting for no woman so the quartet pushed on to Fri 2 where *T. matthewsii* were in evidence and one was half open. It sported no sign of a post anther lobe even under a 20 power lens. Sat 1 too had a healthy colony. 7 plants and 18 seedlings — where the Column had sneaked a look on 2 Sept. and reported 5 plants and no seedlings — which just goes to show how fast those thread-like seedlings grow, doesn't it? Sat 2 is a stretched S shaped ridge of iron pan with scattered *T. matthewsii*. Two open ones like purple eyes with yellow pupils were peeping out of some mingimingi (*Leucopogon* spp.) in a warm, sheltered, sand crater. Both had one only pollinium hanging down off the rostellum at 3pm but by the time the Column's turn came to focus up, another had dropped (**Fig. 5** in 3-D) yet neither had disintegrated on the sticky stigma as yet. Self pollinating — yet with coherent pollinia? No post anther lobe and solitary flowered — yet tied into thelymitra which normally has a post anther lobe and multiple flowers? Why are there always more questions than answers?

The four were pleased to have found five new *Thelymitra matthewsii* sites and were

happy that the orchid was holding its own against the elements in its strange, desert-like habitat. The shortcut tracks now gave everyone better access about the Shenstone Block which is great for *T. matthewsii* provided mountain bikers etc. don't get wind of the circuit! DoC were ring-barking a lone pine up Allans Track before it was finished. Yet enigmatically, the three new tracks now had always to be trodden to monitor the new finds thereon so we had in reality, made more work for Anne, hadn't we? Another fine dinner cooked by the girls and moreporks to lull them to sleep, marked the all-too-early conclusion of the Te Paki phase of a worthwhile field trip.

Anne slipped away early on 6 Sept. for a lecture at Hamilton whilst the other three took a more leisurely trip. Morning coffee was with 88 year old Barbara Hoggard who was eager for company to quarter her favourite patch of orchid scrub across the Kaimaumu Road. But it was too early for most orchids and only one flower on the first *Cryptostylis subulata* was showing.

But a lunch-stop at the quarry between Whangaroa and Kaeo proved *most* interesting. It wasn't the beauty of the quarry workings that were the prime attraction nor Rex Blumhardt, but he had spent his youth in the district and suggested this as easy access to waterfalls and pools likely to support Allan Cunningham's little darling of 6 Nov. 1826, *Corybas rivularis* s. s. Allan and the Column scrambled up past two respectable waterfalls and there, on a mossy bank by a quiet section of stream, lay a sizeable colony of their quarry, only 150m from the quarry. The lack of reporting *C. rivularis* for 178 years may be due more to lack of looking than to lack of orchids. Leaves were all well developed but buds were only vestigial at this early stage so closer looks will be mandatory for the October and November field trips.

Twin *Pterostylis agathicola*

The orchid eye of Wharekawa, Geoff Stacey, unhappy with the opossum predation in the Hunua foothills at Wharekawa [J76 p26] in a good season for *Pterostylis agathicola*, set up a vigil for further twin flowered specimens in the kauri bush at the back of Ross Higgins' farm. Geoff's health-promoting hikes soon rewarded his efforts with another good specimen (**Fig. 6**) which he covered with a bottomless bucket and chicken netting to thwart the pesky Aussie marsupials. Only when the flowers opened did he put a call through to the Column who turned up smartly on 4 August, camera at the ready to capture this rarity.

Also the labella on *P. agathicola* have been a source of debate being maroon and lumpy on top in the Kauri Block, Te Paki but usually dark brown to near black on top and at least sometimes with a papillose surface. The high ridge down the middle of the labellum is, in cross section, a raised loop, squeezed shut at the bottom, thus forming a capillary tube. At the tip the tube's end is variously wound into a spiral (Kauri Block and Mangatangi Dam) or else ends in a simple arch (Bream Tail and Wharekawa) with the flattened edges of the labellum usually curled under, more on the left than the right, thus giving the tip that characteristic twist to the right. All this showed up only recently in a study of photos which have been lying unloved for up to 40 years. So a reversed lens 4½ x shot was taken on a single flowered specimen with Geoff's able help on the cable release (**Fig. 7**). Wharekawa specimens, as you can see, are the simple arch, dark brown/maroon type, encrusted in papillae, here with tiny rain splashes hither and thither despite the hooded galea. Drawings of some of the others are included, carefully traced from projected images.

Two metres away *Cyrtostylis oblonga* were

Opposite (clockwise from top left):

Fig. 13. *Caladenia* "speckles" showing 2 marginal calli and a hooked down apiculus on the anther.

Fig. 14. *Thelymitra* "rough leaf" at Scott Point

Fig. 15. *Caladenia alata* in the bright pink.

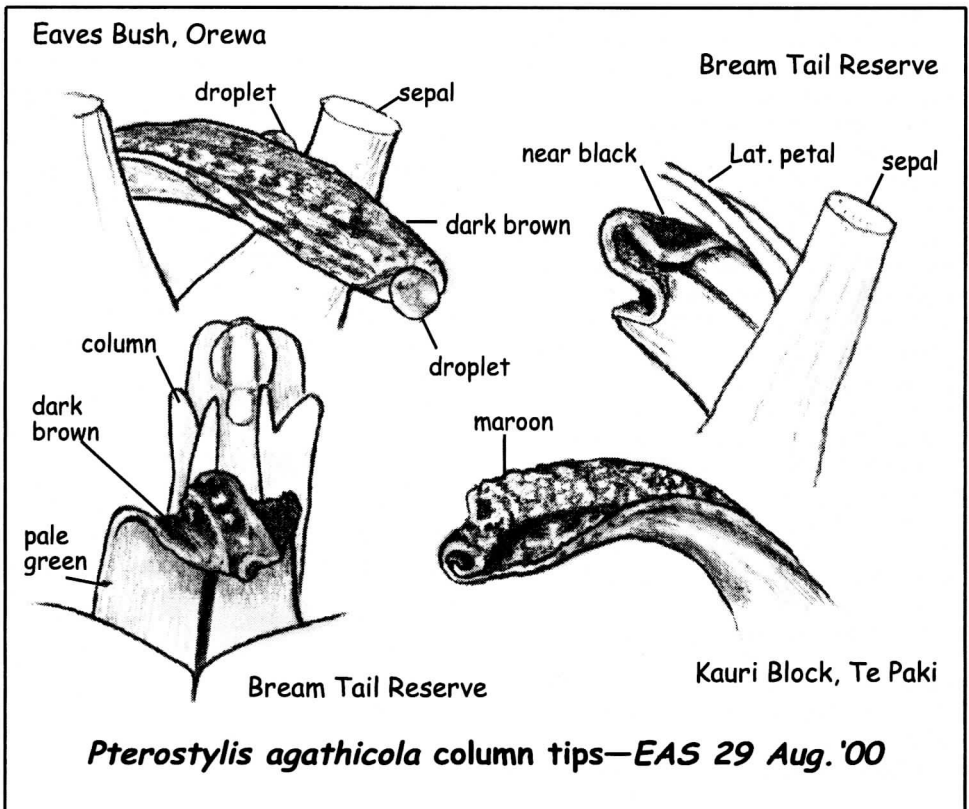
Fig. 16 *Microtis arenaria*, Rubbish Dump Hill.

Fig. 17 *Thelymitra malvina* at Lake Ohia

flowering with the regular coral pinks in the majority but also with occasional albinos so out came the trusty camera (Fig. 8) to make up for the Scott Point fiasco [J73 p 20].

Near a handy lunch spot on the ridge top, amidst the tanekaha, Geoff pointed out a normal looking *P. brumalis* with cobra hood and down-curved dorsal sepal BUT the sinus to the lateral sepals was a typical *P. alobula*

Vee. Shades of the normal populations at Shenstone and Kauri Blocks, Te Paki [J65 p16, J73 p19, 26]; as the Column was at pains to explain to Geoff never thinking to record the solitary(?) specimen on film! Geoff rang to say that all the *P. brumalis/alobula* in the vicinity were of this type. That piece of information set the grey matter humming! If they are hybrids, why would the population here, in the Kauri Block and the single colony found at the Shenstone Block, all be hybrid form with no other *P. alobula* or *P. brumalis* in evidence? At Rubbish Dump Hill, Te Paki, regular *P. alobula* have been photographed but *P. "brumbobula"* (to tag the taxon under review) and *P. brumalis* have not been spotted there to the Column's knowledge. The sequel is covered in "*T. matt.* at Te Paki" in this issue.



Thelymitra imberbis in the north

2 to 8 October seemed too early or too late for many species but Te Paki trip No. 2 was on. Four of us met at Bream Tail Reserve for a lunch break. *Caladenia atradenia* was open but *Corybas* “aestivalis” had only small flowers which Gael Donaghy captured on film. *Pterostylis* were plentiful and *Thelymitra carnea* (closed) kept the southerners happy. Gary Peniall helped the Column finish off the old man gorse at the end of the track.

Further north, Kao quarry had one *Corybas rivularis* s.s. in flower, awkwardly 150m above stream level. Graeme Jane’s video and still shots preceded three other photographers, tickled pink to get *C. rivularis* in its type locality. Gary and Graeme found more scattered plants upstream but the 1.5m x 1.5m first colony was the best, sporting many buds with tightly coiled tepals.

3 October broke windy at Te Paki so the long neglected Kauri Block (Radar Bush) got a surprise visit and the *Caladenias* were back! First was *C. minor* (alias *chlorostyla*, J74 p22) in the kanuka (*Kunzea ericoides*) followed by carmine and white *C. pusilla* on track-side. The latter needed some serious study to prop up the Column’s IDs from colour slides. At a junction with a side track, *T. aemula*, *T.* “rough leaf” and *T.* “sky” showed up closed but columns on spent florets came under much scrutiny. How did *T.* “rough leaf” get a rounded notch out of the top of the post anther lobe? Mental checks on *T. pauciflora* (split yellow post-anther lobe) and *T. intermedia* (incised V to the post anther lobe) left it as *T.* “rough leaf with a notch”. Interesting!

In the kauris, Gary got his first look at *Cyrtostylis oblonga* still in flower. *Pterostylis banksii* and *Corybas oblongus* by the stream, *P. agathicola* everywhere but the areas of *P. trullifolia* and the few *P.* “brumobula” were finished. Winika and *Bulbophyllum*

pygmaeum were there but the *Earina mucronata* reported by Doug McCrae could not be spotted. Whoever thought it could be rare? A fine *Thelymitra* aff. *longifolia* with the blue halo [J70 p33] stood out from the common crowd of these starry and faintly scented wonders on the return tramp.

At Rubbish Dump Hill, near Tapotupotu turn-off, *P. tasmanica* had finished, to Gary’s huge disappointment but *T. matthewsii* still had green leaves and seedlings. Each flower from September now bore a fat seed capsule like any self respecting self pollinator. Its habitat, on an “island” of tea tree and *Hakea sericea* in a “sea” of eroding red soil, may psychologically deter predators just as it had deterred NOG members from finding it for 3 years. *Caladenia pusilla* [J72 p27] was here too and numerous in one colony but only a limited range of *T.* aff. *longifolia* were spotted.

On 5 Oct, the Shenstone Block suffered an invasion by the keen quartet. *Corybas* “aestivalis” had mostly finished but the south end of the colony had large leaves, big flowers and one twin! (Fig. 9) The second flower was as big as the first and replaced the usual wire-like fertile bract. Camera fans had their feet in the bog to snap this curio. On the track-side, a pointed sepalled pink, missed by the Column again but spotted by sharp eyed Gael, was a three flowered *Caladenia* aff. *fuscata* (Fig. 10) — another previously identified only from the Column’s slides — and the poor thing got loved to bits, pinned back to a slab of moss for multiple portraits and scrutiny by four magnifiers. It earned the “aff.” because the Aussie one has solitary flowers. *Caladenia* Track had none last year; now a dozen *C. pusilla* graced the sunny places with *C. minor* in the shade and a crop of *Microtis parviflora* at the end. Most *C. pusilla* had white side-lobes, striped inside with deep carmine but two were all carmine, previously mistaken for *C. bartlettii*! [J65 p18 & J72 p28] Close examination proved them to be just a colour form of *C. pusilla*; so

confusing! Gael blew open a deep blue *T. aemula* (in early October??) with only vestigial side lobules, like the Radar Bush specimen so the Column pronounced it a *T. tholiformis*. Never, the outstretched column arms and lack of tholi (domed post anther lobe) soon had him eating his words but it sure wasn't standard *T. aemula*. On Allans Track, the team spotted one *T. matthewsii*, now totally black but with a good seed capsule. The new colony of *P. tasmanica* had no flowers leaving Gary in deepening despair. Luncheon was taken in open kanuka on Pink Track, amongst numerous sprouts of *Caladenia* "speckles" [J74 Fig 9]. One had an advanced bud but most were quite immature. Good hunting for November. Gael spotted the starry basal rosettes only, of another colony of *P. tasmanica*; adding to Gary's grief. Back on Shenstone Track, a colony of 5 *Thelymitra imberbis*, the yellow form of *T. carnea* (Fig. 11), stirred up fresh excitement. Note the apiculi below the tips of the lateral sepals. None had been seen here in the previous 3 years; do they flower only one year in 4? Two years ago, *T. "darkie"* had appeared hither and thither along the track; no sign of them this year. Do *Thelymitra* hibernate when conditions do not suit? à la *Gastrodia*, *Danhatchia* and *Chiloglottis cornuta*. Your dedicated Column had never seen *T. imberbis* in 46 years of hunting so this was a great buzz which turned to strangled mutterings when Big Foot, who shall remain nameless, stepped back on one, despite warning calls from Gael and Graeme.

Further along the track, No. 1 colony of *P. tasmanica*, in the gorse, brought more strangled mutterings and an eruption of camera gear from a rejoicing Gary who finally had fresh flower.

The return trek avoided the short-cuts and ran down several twin headed *C. minor* but the targeted *Calochilus herbaceus* was in short supply with only one bud near opening. The Column's colony of *T. "sky"* [J74 p17] was doing well in bud back in the kanuka.

The upright Veed green leaf varied considerably in width from plant to plant reinforcing thoughts that two different taxa occupied the site but stems, buds and bracts all looked like one taxon. A puzzle for the November team to solve. *Pterostylis "brumobula"* had been browsed, showing no sign of seed capsules. A plague on the slugs or whatever! Graeme spotted one closed but very blue, *T. intermedia* which was otherwise missing this season. A *T. aff. longifolia* with orange fascia to the post-anther lobe (Fig. 12) briefly held up proceedings [cf. J70 p31]. A coffee stop at the quarters was greeted by a long tailed cuckoo telling us just what it thought of us. Orchid addicts get sensitive about that sort of thing!

Despite a hard day, the team Carona-ed off to the Earth Wall track where Lisa Forester assured us that *Calochilus herbaceus* was in flower by the gate. The plants blended so well with the fountain sedges that, the Column found, they could easily be seen then lost but Graeme spotted four, in bud only, sprouting from mid sedge fountain. Gael excelled herself on the way home, spotting an open *C. herbaceus* on a road bank, from the moving car! Another first for Gary and it was somehow sad to see, an otherwise perfectly sane character, slipping willingly into incurable native orchid addiction! Right at the road edge, *T. imberbis* stood closed in a desert like and precarious site. Debate ran late that night mainly about *Caladenia* confusion but we had only started.

6 October was fine and calm so Graeme and his 4WD took us down Te Pahi stream and up Ninety Mile Beach to Scott Point. The Column headed straight for the *Petalochilus saccatus* site, [J65 p14] ignoring all the *Microtis parviflora*, *T. aff. longifolia*, (some flowering on only 50mm stems), lawns of finished *Cyrtostylis reniformis* and *Acianthus sinclairii* en route, all to no avail. As for last year, there was no sign of *Caladenia* or *Petalochilus* in the gale blasted, cushion tea tree. The team tired of the seemingly aimless

scrambling and headed for a partially sheltered hollow further north. Now we call it *Caladenia* gully. A link track through chest high but still storm-blasted tea tree, had more patches of *A. sinclairii* where Graeme knew to look for other orchids. *A. sinclairii* uses a range of fungi so where it grows, a variety of other orchids can be expected. Several finished, red stemmed *Caladenia*, had the maroon “ink-line” down the spent sepal keels and some had three seed capsules, like *C. aff. fuscata*. Finally the Column spotted a single open flower and insisted on first look with the lens, even though Gary, who had crawled right past it into the tea tree, declared that he *should have* seen it first. It had longer tepals than the Shenstone specimen, quite similar to *C. “papillosa”* [J74 Fig. 10] but with none of its eccentricities. Gael assured us that the maroon ink-line adorned the outer sepal keels, (this photographer failed to look), the sepals were pointed and the disc calli followed the Shenstone pattern. That is, two large mushroom-like calli (all of 0.5mm tall) at the back with seven pairs of yellow topped calli up the disc to the midlobe, the front pair leaning forwards. The large rear calli had 2 tiny calli each for “feet”. But the yellow midlobe was trough shaped, with only 2 marginal calli (not the expected 4) each side of its base. The Shenstone flower had a translucent white spike standing in the base of the column, three times the height of the large disc calli. The spike was reminiscent of the third column arm sometimes seen in *Thelymitra*. It was absent in the Scott Point flower. The Shenstone one also had a long leaf, 185 x 3.5mm, whereas Scott Point’s had shorties of about 50mm. Cameras flopped out for the rare spectacle of *C. aff. fuscata* (the Column insisted, wrong again!) in flower and this time the flower survived intact, despite numerous flash blasts. His three companions put the Column to shame with their detailed measurements and notes about all the orchids found. When the films were processed, the Scott Pt flower displayed a speckled dorsal

sepal and a down-hooked point to the anther; it was *C. “speckles”*! (Fig. 13 herein & J74 Fig. 9) Doubts still surround the IDs of *C. aff. fuscata* and *C. “speckles”*; another project for November.

It was a revelation to observe the norms and the variations of common old *Caladenia pusilla* along the link track; i.e. marginal calli at the base of the midlobe were normally 2 per side, sometimes 1 per side, or 1 & 2, or 2 & 3, and in one case 3 & 4. Sepals were usually rounded but one had tiny apiculi at the tips and another had 90° points. A pale maroon line, blurred at the edges and widening toward the base, ran down the keel of each sepal. Disc calli were yellow topped, normally comprising 2 large, oval, rear ones, then an arc of 4, then 7 pairs to the midlobe. One disc had two stray calli to one side and one freak had 3 arcs of four with 9 pairs in addition. Mid-lobes were always trough shaped and bright yellow but one had a low ridge on centre almost like *C. aff. fuscata*. The Column was all thumbs lowering the labellum with a gorse prickle whilst gazing through the twenty x magnifier but the others seemed more adept at this micro manipulation. One Scott point flower had the *C. bartlettii*-type, all carmine, side lobes but the norm was white with deep carmine stripes. All *C. pusilla* flowers were solitary. If Dr. Winifred Curtis’ *C. pusilla* = Dan Hatch’s *C. bartlettii*, wouldn’t *C. bartlettii* take precedence? It was named 30 years earlier in 1949.

Gael’s ever sharp eyes spotted a healthy patch of *Pterostylis trullifolia* [1] with its net veined leaves, confirmed by the Column. Several *T. “rough leaf”*, with un-notched columns (Fig. 14) started to open in the afternoon heat. One posed several times after a minimum of warm breath and warm finger-thumb work persuaded its stupid lateral petals to keep off the column.

A hasty retreat from Scott Point beat the incoming neap tide easily. A brief but exhilarating stop at the shearers’ quarters for a

cuppa preceded a canter (?) up Papawiri hill for *T. sanscilia* and *T. "rough leaf"*. Nothing was open and the first could not be detected unless the many young buds were it, waiting for November. *T. "rough leaf"* had a rounded notch in the top of the column again, causing more debate because we had now seen the whole range from flush through shallow notch to 90° notch. *T. imberbis* showed up again. Also present were *T. aemula*, (a huge succulent one came away the Column's many thumbs and he was suitably chided) and *T. carnea*, both closed, also boring old *C. pusilla*. Some *T. aemula* florets had finished and sported the atypical column with negligible side lobules and flattened tholiformis-type post-anther lobe! An early flowering form?

7 Oct The call of the Earth Wall brought the team traipsing down that long white track to the mysterious sod wall which is slowly eroding into oblivion. The albino *Calochilus herbaceus* and its normally coloured companions were absent for the third year in a row. Could they too be dormant all this time or have we lost them? Two small colonies of dried off, normal 100mm tall *Genoplesium pumilum* were spotted, quite unlike others in the district which can reach 400mm. Sparse and closed *T. aemula* and *T. aff. ixioides* were on track-side. Many finished *Caladenia alata* had no seed capsules but a pitiful few in brush-wood debris were still complete. Nearer the wall, numerous white and pink *C. alata* flowers began to appear much to the delight of first timers, Gael and Gary. A double sized, strong pink (20mm across) took everyone's breath away (Fig. 15). It displayed its disc calli without need for gorse prickle work, bringing out all the cameras except Gary's whose batteries had thrown in the towel. This is late for *C. alata* but there were numerous fresh flowers to be seen and this year, all had their golden marginal calli, one each side of the mid-lobe. The known plant of *T. sanscilia* "avec cilia" [J70 p35] showed only a feeble leaf. Wrong conditions this year or too shady

now under the kanuka? The 16th now tedious *T. imberbis* of the field trip popped up along the track. Here they were more randomly distributed as were Bob Goodger's [J73 p29]. One open *T. carnea* posed for its portrait.

An old tip near Te Hapua yielded a sea of excellent standard model *T. aff. longifolia*, including a blue halo, a mauve *T. pauciflora* (they are usually blue in the north) and a *T. "rough leaf"*.

The other Rubbish Dump Hill, 19k to the NW, then came in for more attention, with Graeme's find of three stout *Calochilus herbaceus* plants and their half open flowers at Ian's *T. matthewsii* site but the last was still absent. Gael then became toast of the day (after determinedly examining every *Microtis* we saw) by spotting *M. arenaria* [1] (Fig. 16) in the middle of the top road at sunset.

Gael and Graeme still found time to visit the Shenstone Track for a last look at *C. pusilla* and spotted the *T. aff. ixioides* which appeared to have been open (curses!) that afternoon.

The excellent farewell dinner at the Kanuka Restaurant was enjoyed by all.

At Lake Ohia on the homeward trip Gary in bare feet, tiptoed down the access track of rotary slashed gorse then tiptoed straight back, inarticulate with that disbelieving look on his face. He had seen his first *T. malvina* with two flowers wide open. Gael captured it on film before we spotted more and many more! Then her camera battery too collapsed from the strain but the Column risked a few shots on a dwindling film supply (Fig. 17). Everywhere were stars of blue/mauve with up to ten flowers open at once. Just delightful. Graeme and Gary saw an Italian honey bee working two flowers, futilely looking for non-existent nectar and unable to access the pollinia. A few *Cryptostylis subulata* lurked in the reeds and a solitary white *Caladenia alata* peeped out of the tea tree. Graeme happened on an early *T. pulchella* s.s. (no cilia or fimbria) 500m from his camera across that black ooze. Back he went determined to

“get” it as the Column and Gary departed for the Kao quarry to pick up you-know-who’s forgotten tripod! 3 flowers were now open on *Corybas rivularis*. Many more buds were showing for November.

White Hills, just south of the turn-off to Matauri Bay, hosted a lunch break where an array of already seen *Thelymitra* included a *T. imberbis* and Graeme’s spent *T. carnea* with withered deep carmine tepals. The

Column dropped the wet blanket of, “That’s how the pink ones go as they fade.” but Graeme and Gael were unconvinced so keep that in mind next time you are passing any Sep/Oct.

The “too early, too late” field trip had turned into a boomer with top eye, Gael, champion for many of the finds.

[1] Mark these into your Te Paki species list in J73 p. 22, with “g” for Gael.



Historical reprint

The *Thelymitra imberbis* story

In 1853 JD Hooker wrote in *Flora Novae Zelandiae* Part 1,

Thelymitra imberbis, Hook. fil.; *gracilis*, caule paucifloro, folio lineari, floribus erectis parvis flavis, bracteis ovario brevioribus, sepalis petalisque late obovato-oblongis acutis, staminodiis columnae aequilongis apice crenatis nudis v. obscure fimbriatis.

HAB. Northern Island. Bay of Islands, etc., *Colenso*, *Sinclair*, etc.

Stems slender, 4 inches to 1 foot high. *Leaf* narrow linear. *Flowers* few, small. *Bractea* broad, acuminate, shorter than ovary. *Perianth* yellow, ¼ inch long; sepals and petals broad, acute. *Column* as long as the bluny crenate or fimbriate staminodia.

In 1864 he added in his *Handbook*, “Much better specimens of this ... are wanted to establish their distinctness; this is very like the Tasmanian *T. carnea*, but the flowers are said to be yellow.”

In 1906 TF Cheeseman noted in his *Manual*, “In the original description the flowers are said to be yellow, but they are flesh-coloured in all the specimens I have seen. It is probably identical with the Australian *T. carnea* R.Br.” He added in his appendix “Mr RH Matthews sends a variety with cream-coloured flowers from Kaitaia (Mongonui County).”

In 1925 Cheeseman thought it “...very closely allied to the Australian *T. carnea*...”

In 1946 Rupp and Hatch “...reduced Hooker’s *T. imberbis* to varietal rank with some hesitation. Specimens in Rupp’s herbarium received from HB Matthews are more robust than any form of *T. carnea* he has seen, and the column is much stouter. But the morphology of the flowers is almost identical, and there does not seem to be any distinction warranting specific separation.” They called it *Thelymitra carnea* var. *imberbis*.

In 1962 Willis accepted the NZ plant as *T. carnea*, in 1970 Moore followed suit, as have all commentators since.



Australian notes: David McConachie

Propagation of terrestrial orchids with Malcolm Thomas

From ANOS Victorian Group *Bulletin* June 1998

This workshop discussed fungal problems, tuber removal methods and deflasking terrestrials.

Fungal problems

Mainly seen as leaves/plants dying back. It is important to remove any affected plants as soon as a problem is noticed for fungus can spread very quickly through the pot. Members of this workshop could give no real answers on how to combat this other than removal of infected material, for to spray with fungicide may mean the killing of associated mycorrhizal fungi on which the plant is dependent.

It was suggested that mature plants may not depend on a fungal association but, to enable satisfactory germination, it was essential to have mycorrhizal fungi many pot where seed was to be sown. By the way, LaTrobe University scientists say that possum poo is a good source of mycorrhizal fungi. All you need is a pair of tweezers and a lot of patience.

Tuber removal

To increase the number of tubers (particularly of those species that do not multiply vegetatively) the new tuber may be removed so that a second tuber will grow in its place.

When

This is usually done from July/August. (Although July is usually too early, some people have found the new tuber sufficiently mature.) The benefit of acting early is that the plant then has more time to grow a second new tuber before entering dormancy. Timing is a matter of experience and judgment! If you tip the pot out and find the tubers haven't yet reached maturity

(check the size against the old tuber), then simply repot the plants and wait another month. Terrestrials are rarely affected by being disturbed in this way. For *Diuris* and *Thelymitra*, most agree it is best to carry out the task at the time the first flower opens.

For autumn flowering species, e.g. *Pterostylis sanguinea* complex and *Eriochilus spp.*, do not tuber remove while the flowers are open for the new tuber will be too small. Try these species in July/August; well after the flower has died off.

Species suitable for tuber removal

Pterostylis grandiflora, especially the Victorian clones which don't multiply as well as clones from other States, all *Thelymitra* and *Diuris* species that do not form colonies, Rufa Group *Pterostylis*, *Eriochilus* and any other solitary species, BUT MOST DEFINITELY NOT *Caladenia* or those species that have a sheath of fibre around the tuber. They are not amenable to this method. There has also been some success with *Prasophyllum* species.

What to do

Carefully tip the pot out and remove the plants from the soil. (The weakest point on the plant is where the old tuber meets the plant stem; and it is absolutely essential not to break the old tuber from the stem.)

Hold the plant and old tuber firmly in the finger of one hand so as to keep them from moving at the join. Some growers use a razor blade (one blade per plant to avoid viral infections being spread) and cut the new tuber free. Other growers simply take the new tuber in their other hand and twist it away. (The new tuber is very obvious, being pearly white as opposed to the old tuber being quite 'dirty'.)

Carefully lay the plant and old tuber down and continue until all new tubers have been removed.

Repotting

Everyone seems to have their own way of repotting the old tuber and stem and the fresh new tubers that have just been removed. The choice is yours.

1. Repot the plant and old tuber in the mix whence they came and pot the new tubers in a separate pot, giving them less water as though they had gone dormant.
2. As above, but put the new tubers into the Andrew Paget mix (50% raw polystyrene balls and dead finely milled sphagnum) repotting them into normal mix once they have begun to shoot next season.
3. Put the old tuber and the plant in the

front of the pot and put the new tubers towards the back of the pot. Water normally and there is no need to repot at the end of the year, but you will have to wait several more months until the plants shoot to know the results of your efforts.

4. As above. But put a higher level of mix over the area where the new tubers are planted so that some water drains off to the lower side. This should keep then keep new tubers drier.

Repot the old tuber and the plant in the old mix and place the new tubers in a plastic bag with dry gravelly mix. Keep them in a cool place until repotting time. As long as the tubers do not sweat they will simply remain dormant. Now, there are some choices to test various theories!

The New Zealand orchids: 2001

This list is published annually: it is the editor's personal view, current as of publication, but a fluid thing, continually modified by reading, conversation and observation.

- Acianthus sinclairii* Hook.f. *Flora NZ* 1:245 (1853). *Flora II* called it *Acianthus fornicatus* var. *sinclairii*.
- Adenochilus gracilis* Hook.f. *Flora NZ* 1:246 t56A (1853).
- Aporostylis bifolia* (Hook.f.) Rüpp & Hatch *Proc. Linn. Soc. NSW* 70:60 (1946). There has been a suggestion that there are two taxa: if so we may see the revival of one of the specific epithets *traversii* or *macrophylla*.
- Bulbophyllum pygmaeum* (J.E.Smith) Lindl. *Genera & Spec. Orch. Plants* 58 (1830).
- Bulbophyllum tuberculatum* Colenso *TNZI* 16:336 (1884).
- Caladenia alata* R.Br. *Prodr.* 1:324 (1810). *Flora II* called it *C. carnea* var. *exigua*. See Hatch E.D. and McCrae D. *NZNOG Newsletter* 32:5-6 (1989).
- Caladenia atradenia* D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(5):221 (1997). *Flora II* called it *C. carnea* var. *minor* forma *calliniger*. Similar to the Australian *C. iridescens*, and was for a time called *C. aff. iridescens*.
- Caladenia bartlettii* (Hatch) D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(5):227 (1997). *Flora II* called it *C. carnea* var. *bartlettii*. It has been confused with *Caladenia carnea*, and its similarities to *Caladenia pusilla* have recently been noted (W.M.Curtis *Students' Flora Tasm.*

- Pt. 4A*:133 (1980)). See Scanlen E. *NZNOG Journal* 1999; 72: 22. Recently found well south of the "kauri zone".
- Caladenia chlorostyla* D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(5):223 (1997). Was tagged *C. "green column"*. The name *Caladenia minor* Hook.f. *Flora NZ* 1:247 t56B (1853) should probably no longer be used (see Scanlen E. *NZNOG Journal* 1999; 72: 22).
- Caladenia lyallii* Hook.f. *Flora NZ* 1:247 (1853). There seem to be two or three taxa currently included in *C. lyallii* agg. – see Gibbs M. *NZNOG Journal*; 35:19 (1990), *The NZ orchids: natural history and cultivation* t20. *C. alpina* may also be in NZ (St George. *NZNOG Journal* 63:4 [1997]).
- Caladenia nothofageti* D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(5):226 (1997).
- Caladenia variegata* Colenso *TNZI* 17:248 (1885). Has been tagged *Caladenia "big pink"*: see Scanlen E. *NZNOG Journal* 1999; 72: 22).
- Caladenia aff. carnea*. A pink-flowered form similar to *C. variegata*, but with only a clear two rows of labellar calli.
- Caladenia aff. fuscata*: A small pink caladenia which appears similar to this variable Australian species, though it may have several flowers (see Scanlen E. *NZNOG Journal* 1999; 72: 22). It appears to be identical with Matthews's *C. "nitido-lutea"*.
- Caleana minor* R.Br. *Prodr.* 1:329 (1810). Occasional trans-tasman vagrant, sometimes regarded as a *Paracaleana*. Of several forms in Australia, this is a self-pollinating taxon.

- Calochilus aff. herbaceus***. In *Flora II* as *C. campestris*, has been identified as *C. herbaceus*, though there is some doubt as to its identity. See McCrae D. *NZNOG Newsletter*. 24:9. (1987).
- Calochilus paludosus*** R.Br. *Prodr.* 1:320 (1810).
- Calochilus robertsonii*** Benth. *Flora Austr.* 6:315 (1873).
- Chiloglottis cornuta*** Hook.f. *Flora Antarctica* 1:69 (1844). A transtasman species (or aggregate of taxa with wide variation in the labellar calli, currently under study).
- Chiloglottis formicifera*** R.D.Fitzg. *Austr. Orch.* 1 (3): t9 (1877). Sometime transtasman vagrant, not seen in the wild in NZ for fifty years. The NZ specimens have many characteristics of *C. trapeziformis*.
- Chiloglottis valida*** D.L.Jones *Austr. Orch. Research* 2:43 (1991). Transtasman vagrant, was mistaken for *C. gunnii*.
- Corybas acuminatus*** M.A.Clem. & Hatch *NZJB* 23 (3):491 (1985). *Flora II* mistakenly called it *C. rivularis* - q.v.).
- Corybas carsei*** (Cheeseman) Hatch *TRSNZ* 75:367 (1945). *Flora II* included it in *C. unguiculatus*. See Irwin J.B. *NZNOG Newsletter*. 23:8. (1987). May be identical with the Australian *C. fordhamii*.
- Corybas cheesemanii*** (Kirk) Kuntze *Rev. Gen. Plant.* 6:657 (1891). *Flora II* included it in *C. aconitiflorus*. See Clarkson B.D. *Vegetation of Egmont National Park* 1986. p87.
- Corybas cryptanthus*** Hatch *TRSNZ* 83:577 (1956).
- Corybas iridescens*** Irwin & Molloy *NZJB* 34(1):1 (1996). Was included by Irwin in the *C. rivularis* group [q.v.] as *C. "A"*.
- Corybas macranthus*** (Hook.f.) Rchb.f. *Beitr. Syst. Pflk.* 67 (1871). North and South Island forms differ somewhat. A possible hybrid with *C. trilobus* has the general shape of *C. macranthus* except for a rounded dorsal sepal. A form on the Chathams is said to be distinct (see de Lange, P. J.; Sawyer, J.W.D.; Ansell, R. 1999: Checklist of indigenous vascular plant species recorded from Chatham Islands. DoC, Wellington).
- Corybas oblongus*** (Hook.f.) Rchb.f. *Beitr. Syst. Pflk.* 67 (1871). Are there two forms? see Goodger R. *NZNOG Journal*: 61. (1996).
- Corybas orbiculatus*** (Colenso) L.B.Moore *Flora NZ II*:118 (1970). This is not the taxon named *C. orbiculatus* in *Flora II*, but is that tagnamed *C. "short tepals"*; see Molloy B, *NZNOG Journal*. 51:12-14 (1994).
- Corybas papa*** Molloy & Irwin *NZJB* 34(1):5 (1996). Irwin included it in the *C. aff. rivularis* group [q.v.] as *C. "Mt Messenger"*.
- Corybas rivularis*** (A.Cunn.) Rchb.f. *Beitr. Syst. Pflk.* 67 (1871). This was Cunningham's original name and it is now applied to the plant Irwin tagged as *C. "Kerikeri"* - see Molloy BPJ & Irwin JB. *NZJ Bot.* 34:1-10 (1996). Irwin pointed out in 1989 that a range of taxa have affinities with *C. rivularis*; they were misnamed *C. orbiculatus* in *Flora II* and one is now known by the older Hatch name *C. macranthus* var. *longipetalus* as well as by Irwin's tagname *C. "Waiouru"* (this taxon has, furthermore, been found at Glenross, the type locality for *Colenso's Corysanthes papillosa*); others in the *C. rivularis* complex include *C. "Kaimai"*, *C. "rest area"*, *C. "Kaitarakihī"* and *C. "whiskers"*, [Irwin J. B. *NZNOG Newsletter*. 32:1-4 (1989). *NZNOG Journal*. 47:7-9 (1993). *NZNOG Journal*. 55:22-24 (1995)]. See also *C. rivularis*, *C. orbiculatus*, *C. papa* and *C. iridescens*.
- Corybas rotundifolius*** (Hook.f.) Rchb.f. *Beitr. Syst. Pflk.* 67 (1871). Was included in *C. unguiculatus* and later tagged *C. aff. unguiculatus* - see Hatch E.D. *NZNOG Journal*. 38:4-5. (1991).
- Corybas trilobus*** (Hook.f.) Rchb.f. *Beitr. Syst. Pflk.* 67 (1871). A number of *Corybas* with 3-lobed leaves show differences in flowering time, size, and sometimes structure (Gibbs M. *NZNOG Newsl.*; 29:2-7 [1989]). Variants in the *Corybas trilobus* complex include the tiny unnamed July-flowering form, *C. "Trotters"* (*NZNOG Newsl.*; 28:10-13 [1988]), *C. "Rimutaka"* (*NZNOG Journal*; 58:8-9 [1996]), some possible *C. trilobus* hybrids with taxa having long dorsal sepals (*ibid.*; 58:4-7 [1996]), two distinct taxa tagged *C. "round leaf"* and others, including perhaps Colenso's *Corysanthes hypogaea*. A form on the Chathams appears distinct (see de Lange, P.J.; Sawyer, J.W.D.; Ansell, R. 1999: Checklist of indigenous vascular plant species recorded from Chatham Islands. Department of Conservation, Wellington).
- Cryptostylis subulata*** (Labill.) Rchb.f. *Beitr. Syst. Pflk.* 15 (1871). Tanstasman migrant, now well established in Northland. See Graham D.K.F. *NZ Journal of Botany*. 14:275. (1976).
- Cyrtostylis oblonga*** Hook.f. *Flora NZ* 1:246 (1853). *Flora II* called it *Acianthus reniformis* var. *oblonga*. See Jones D. and Clements M. *Lindleyana*. 2(3):156. (1987). Kores has suggested *Cyrtostylis* should be re-included in *Acianthus*.
- Cyrtostylis reniformis*** R.Br. *Prodr.* 1:322 (1810). *Flora II* called it *Acianthus reniformis* var. *reniformis*. See Jones and Clements *ibid.*
- Danhatchia australis*** (Hatch) Garay & Christenson *Orchadian* 11(10):469 f471 (1995). Was known as *Yoania australis*.
- Drymoanthus adversus*** (Hook.f.) Dockrill *Australasian Sarcanthinae* 32 13 (1967).
- Drymoanthus flavus*** St George & Molloy *NZJB* 32:416 fl (1994).
- Earina aestivalis*** Cheeseman *TNZI* 51:93 (1919).
- Earina autumnalis*** (G.Forst.) Hook.f. *Flora NZ* 1:239 (1853).
- Earina mucronata*** Lindl. *Bot. Reg.* sub t1699 (1834).
- Gastrodia cunninghamii*** Hook.f. *Flora NZ* 1:251 (1853).
- Gastrodia minor*** Petrie *TNZI* 25:273 t20 f5-7 (1893).
- Gastrodia "long column" agg.*** there are a number of undescribed *Gastrodia* with a long column. See Wilson H. *Field Guide - Stewart Island plants* 1982. p294.
- Gastrodia aff. sesamoides***: different from the Australian species *Gastrodia sesamoides* - see

- Ogle C. *NZNOG Journal*. 51:9 (1994).
- Genoplesium nudum** (Hook.f.) D.L.Jones & M.A. Clem. *Lindleyana* 4(3):144 (1989). Was included in *Prasophyllum* – see Hatch E.D. *NZNOG Newsl.* 37:18. (1991).
- Genoplesium pumilum** (Hook.f.) D.L.Jones & M.A. Clem. *Lindleyana* 4(3):144 (1989). Was included in *Prasophyllum* – see Hatch E.D. *NZNOG Newsl.* 37:18. (1991).
- Microtis arenaria** Lindl. *Genera & Spec. Orch. Plants* t306 (1840). Mentioned in *Flora II* under *M. unifolia* as *M. biloba*; and see *NZNOGJ.* 58:16-18. (1996).
- Microtis oligantha** L.B.Moore *NZJB* 6:473 f1 (1969). An apparently distinct taxon on the Chathams is similar (see de Lange, P.J.; Sawyer, J.W.D.; Ansell, R. 1999: Checklist of indigenous vascular plant species recorded from Chatham Islands. DoC, Wellington).
- Microtis parviflora** R.Br. *Prodr.* 1:321 (1810). True *M. parviflora* may occur in NZ. See *NZNOGJ.* 62:5-6. (1996). There may be several taxa in the *M. parviflora* agg. Some may be *M. aemula*, common throughout the Pacific: see *NZNOGJ.* 62:5-6. (1996).
- Microtis unifolia** (G.Forst.) Rchb.f. *Beitr. Syst. Pflk.* 62 (1871). There may be more than one *Microtis* in the *M. unifolia* agg. (for instance Colenso's *M. papillosa* and *M. longifolia* have been treated as synonyms): see *NZNOGJ.* 62:5-6 (1996), and. 67:4-6 (1998).
- Orthoceras novae-zeelandiae** (A.Rich.) M.A. Clem., D.L.Jones & Molloy *Catalogue Austr. Orch.* 100 (1989). Was regarded as identical with the Australian *O. strictum*. But the differentiating features – longer vs shorter floral bracts and round vs pointed labellae – are all present in NZ. Is *O. strictum* here? Or will one of the synonyms (*O. solandri*, *rubrum*, *caput-serpentis*) be revived – see Goodger R. *NZNOG Journal*; 60. (1996), and Bates R. *NZNOG Journal*; 71. (1999).
- Prasophyllum colensoi** Hook.f. *Flora NZ* 1:241 (1853). Probably a number of taxa, possibly including the Australian *P. tadgellianum*, *P. rogersii* or *P. pauciflorum*.
- Prasophyllum aff. patens**: was regarded as identical with the Australian *P. patens*, but now regarded as at least one undescribed New Zealand taxon.
- Pterostylis agathicola** D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(6):266 f (1997). Was named *P. graminea* var. *rubricaulis* and later tagnamed *P. "rubricaulis"*.
- Pterostylis alobula** (Hatch) L.B.Moore *NZJB* 6:486 f3 (1969).
- Pterostylis alveata** Garnet Vict. *Naturalist* 59:91 (1939). Found in 1998 near Nelson – see Donaghy et al. *NZNOG Journal*. 68: 1998.
- Pterostylis areolata** Petrie *TNZI* 50:210 (1918).
- Pterostylis australis** Hook.f. *Flora NZ* 1:248 (1853).
- Pterostylis banksii** A.Cunn. in Hook.f. *Flora NZ* 1:248 (1853).
- Pterostylis banksii** var. *silvicultrix* F. Muell. *Veg. Chath. Is.* 51 (1864) is a separate taxon from the Chatham Islands.
- Pterostylis** aff. *banksii*. A smaller taxon than true *P. banksii*, common around Wellington, and apparently found elsewhere too.
- Pterostylis brumalis** L.B.Moore *NZJB* 6:485 f3 (1969).
- Pterostylis cardiostigma** D.A.Cooper *NZJB* 21 (1):97 (1983).
- Pterostylis cernua** D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(6):267 f (1997).
- Pterostylis foliata** Hook.f. *Flora NZ* 1:249 (1853).
- Pterostylis graminea** Hook.f. *Flora NZ* 1:248 (1853). There may be several taxa in the *P. graminea* agg.
- Pterostylis humilis** R.S.Rogers *TRSSA* 46:151 (1922).
- Pterostylis irsonianana** Hatch *TRSNZ* 78:104 t18 (1950).
- Pterostylis irwinii** D.L.Jones, Molloy & M.A.Clem. *Orchadian* 12(6): 269 f (1997). Was tagged *P. "Erua"*.
- Pterostylis micromega** Hook.f. *Flora NZ* 1:248 (1853).
- Pterostylis montana** Hatch *TRSNZ* 77:239 t22 (1949). **Pterostylis** aff. *montana* agg: includes several undescribed taxa; for details of one of those tagged "aff. *montana*", see *NZNOG Newsletter*. 25:12-14 (1988). **Pterostylis** "Catlins" is undescribed; illustrated in St George. *Wild orchids in the far south of NZ*. Some of the old Colenso specific epithets may well apply here – *emarginata*, *speciosa*, *subsimilis*, *auriculata*.
- Pterostylis nutans** R.Br. *Prodr.* 1:327 (1810). Occasional transtasman vagrant, recently rediscovered near Taupo – see *NZNOG Journal*. 57:38-39 (1995).
- Pterostylis oliveri** Petrie *TNZI* 26:270 (1894).
- Pterostylis paludosa** D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(6): 271 f (1997). *Flora II* included it in *P. montana*, and it has been known as "P. linearis".
- Pterostylis patens** Colenso *TNZI* 18:270 (1886). *Flora II* had it as a variety of *P. banksii*, but it is now regarded as distinct.
- Pterostylis porrecta** D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(6):272 (1997). Was tagged *P. aff. graminea*.
- Pterostylis puberula** Hook.f. *Flora NZ* 1:249 (1853). *Flora II* included it in *P. nana*, and it has been referred to as *P. aff. nana*.
- Pterostylis tanypoda** D.L.Jones, Molloy & M.A. Clem. *Orchadian* 12(6):273 (1997). *Flora II* included it in *P. cynocephala*, and it has been referred to as *P. aff. cynocephala*.
- Pterostylis tasmanica** D.L.Jones *Muelleria* 8 (2):177 (1994). *Flora II* included it in *P. barbata*; it has also been confused with *P. plumosa*. See Molloy B. *NZNOG Journal* 51: 14-16. (1994).
- Pterostylis tristis** Colenso *TNZI* 18:271 (1886). *Flora II* included it in *P. mutica*. See Molloy B. *Proc. 2nd Int. Orch. Conf.* 1985. p2.
- Pterostylis trullifolia** Hook.f. *Flora NZ* 1:249 (1853).

- Pterostylis venosa* Colenso *TNZI* 28:610 (1896). North and South Island plants show some differences.
- Spiranthes novae-zelandiae* Hook.f. *Flora NZ* 1:243 (1853). There seem to be several *Spiranthes* taxa in Australia and NZ; *S. sinensis* (Pers) Ames and *S. australis* Hook.f. may perhaps be here (see Molloy B.P.J. *NZNOG Journal* 21: 7-8; and 22: 8-10). One tagged *S. "Motutangi"* from the Far North is vanishingly rare.
- Thelymitra aemula* Cheeseman *TNZI* 51:94 (1919). See Molloy B.P.J. and Hatch E.D. *NZNOG Journal*. 35:20-24. (1990). Jones (*Australian Orchid Research Vol 3, 1998*) says that *T. media* also occurs in NZ and has been confused with *T. aemula*.
- Thelymitra carnea* R.Br. *Prodr.* 1:314 (1810). The NZ form may be different, if we interpret Jones DL (*Australian Orchid Research Vol 3, 1998*) correctly; if so the NZ plant is *T. imberbis* Hook. f. *Fl. NZ.*: i: 244.
- Thelymitra colensoi* Hook. f. *Handbk NZ flora* 1864; 271. This is probably the correct name (de Lange P. *Tane* 36: 1-14) for the plant known as *Thelymitra intermedia* Bergg. *Minneskr. Fisiog. Sällsk.* Lund 8:21 f (1878), a form of the *Thelymitra pauciflora* agg. (Molloy BPJ & Hatch ED. *NZJBot.* 28:105 [1990]). Moore wrongly used this name for *T. tholiformis*
- Thelymitra cyanea* (Lindl.) Benth. *Flora Austr.* 6:323 (1873). *Flora II* included it in *T. venosa*. There appear to be two forms – see Beard C. *NZNOG Journal*. 59:29. (1996); could one be *T. uniflora*?
- Thelymitra x dentata*: a sterile hybrid of *T. longifolia* and *T. pulchella*: see McCrae DP & Molloy BPJ. *Ecosystems, entomology & plants.* RSNZ Misc Series 48, 1998, p121.
- Thelymitra fimbriata* Colenso *TNZI* 22:490 (1890). Has been included in *T. pulchella* (q.v.).
- Thelymitra formosa* Colenso *TNZI* 16:338 (1884). Jones (*Australian Orchid Research Vol 3, 1998*) lists NZ in the distribution of *T. circumsepta*; which is very similar to *T. formosa*.
- Thelymitra hatchii* L.B. Moore *NZJB* 6:477 f2 (1969).
- Thelymitra* aff. *ixioides*: differs from the Australian *T. ixioides*; the NZ taxon is self-pollinating, as is one Australian taxon: the other Australian is insect-pollinated.
- Thelymitra longifolia* J.R. Forst. & G. Forst. *Charact. Gen. Plant.* 98 t49 (1776). *Thelymitra* aff. *longifolia* agg: name given to some undescribed taxa that appear to be insect-pollinated. Some may be referable to the discarded Colenso epithets, *T. nemoralis*, *purpureo-fusca*, *cornuta*, *alba*, or even Swartz's *T. forsteri*.
- Thelymitra malvina* M.A. Clem., D.L. Jones & Molloy Austr. *Orch. Research* 1:141 (1989). Jones (*Australian Orchid Research Vol 3, 1998*) does not include NZ in the distribution of this species, inviting the inference that our taxon may be different.
- Thelymitra matthewsii* Cheeseman *TNZI* 43:177 (1911).
- Thelymitra nervosa* Colenso *TNZI* 20:207 (1888). Syn. *T. decora* Cheeseman. *Flora II* called it *T. decora*; Moore was aware of Colenso's *T. nervosa* but could not place it at that time.
- Thelymitra pauciflora* agg. Jones (*Australian Orchid Research Vol 3, 1998*) did not include NZ in the distribution of this species, inviting the inference that our taxa (there appear to be more than one) may be different (Colenso's *T. cornuta* has been treated as a synonym, for instance). Plants with flowers showing a cleft extending down the back of the column resemble *T. holmesii*.
- Thelymitra pulchella* Hook.f. *Flora NZ* 1:244 (1853). There are several plants with affinities to *T. pulchella* – and furthermore the names *T. concinna* Colenso, *T. fimbriata* Colenso, *T. pachyphylla* Cheeseman and *T. caesia* Petrie have been treated as synonyms of *T. pulchella*, as Jones (*Australian Orchid Research Vol 3, 1998*) pointed out. See *NZNOGJ* 72: 8 (1999).
- Thelymitra sanscilia* Hatch *TRSNZ* 79:397 (1952). Moore regarded this as an aberrant form of *T. pauciflora* (*Flora II* p130); others now regard it as distinct.
- Thelymitra tholiformis* Molloy & Hatch *NZJB* 28:111 fl (1990). Wrongly identified as Berggren's *T. intermedia* by Moore, and included in *T. aemula* by Hatch; but see Molloy B.P.J. and Hatch E.D. *NZNOG Journal*. 35:20-24. (1990).
- Thelymitra "Ahipara"*: a cleistogamous, unnamed taxon from the far north.
- Thelymitra "Comet"*: the tagname for a large, late-flowering *Thelymitra* from the Kaweka range. Appears to be sterile, so probably a hybrid – see *NZNOG Journal*. 71: 4 (1999).
- Thelymitra "Whakapapa"*: undescribed taxon from Ruapehu – see *NZNOG Journal*. 54: 7-8 (1995).
- Thelymitra "darkie"*: undescribed taxon from the Far North.
- Thelymitra "rough leaf"*: undescribed taxon from the Far North.
- Thelymitra "sky"*: undescribed taxon from the Far North; blue, sometimes white flowers.
- Townsonia deflexa* Cheeseman *Manual NZ Flora* 692 (1906). Has been included in *Acianthus*. *T. viridis* is now regarded as a Tasmanian endemic (DL Jones: *Australian Orchid Research Vol 3, AOF*, 1998).
- Waireia stenopetala* (Hook.f.) D.L. Jones, M.A. Clem. & Molloy *Orchadian* 12(6):282 (1997). The species previously known as *Lyperanthus antarcticus*.
- Winika cunninghamii* (Lindl.) M.A. Clem., D.L. Jones & Molloy. *Orchadian* 12(5):214 (1997). The species previously known as *Dendrobium cunninghamii*.

Profile of a threatened N.Z. orchid: 5

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Pterostylis nutans R.Br.

Family: Orchidaceae

Endemic to: Indigenous to New Zealand and Australia.

Common name: Nodding orchid.

Ranking: X, Presumed Extinct. **In cultivation:** Yes

Description: A conspicuous terrestrial orchid, producing numerous green rosette leaves and a single flowering stem. The flower is rather large, and similar to our endemic hooded orchids except that it is curved in on itself, giving a pendulous appearance.

Conservancy: TT, (NL, AU).

Habitat: In New Zealand, this species has been collected from low scrub amongst grass near a World War II gun emplacement, and amongst leaf litter under podocarp trees. In Australia this common species occurs in a wide variety of seral and climax-community habitats, reaching its greatest abundance following fires.

Threats: Plant collectors; as a vagrant within the New Zealand flora this species remains naturally uncommon because it cannot set seed without its obligate insect pollination vector. This vector is not yet known from New Zealand. Without human intervention this species can only reproduce asexually. Thus it will eventually, over time, naturally die out.

Work undertaken to date

The rediscovery of this species in 1995 at Waihaha, west of Taupo, well south of its historic occurrences (Kaitaia 1910-1915, Castor Bay, Auckland North Shore, 1942), was made entirely by accident; opportunistic survey within Northland and Auckland.

Priority sites for survey

As this species is a vagrant to New Zealand, and under no threat in Australia where it is abundant, survey within New Zealand is not considered a high conservation priority.

Monitoring: objectives and priority sites

As this species is common in Australia, any monitoring in New Zealand is deemed to be of low priority.

Research questions

As this species is common in Australia, any research in New Zealand is deemed to be of low priority.

Management needs

As this species is common in Australia, any management in New Zealand is deemed to be of low priority.

Selected references

De Lange PJ, Molloy BPJ, 1995. Vagrancy within NZ threatened orchids: what are our conservation priorities? *New Zealand Botanical Society Newsletter* 40: 13-14.

Wilson CM, Given DR, 1989. *Threatened plants of NZ*. DSIR Publishing, Wellington.

